



March 21, 2013; Revised December 19, 2013

JN: 25-104422.001

County of San Diego  
San Diego County Fire Authority – Public Safety Group  
**c/o James Pine, County Fire Marshal**  
5510 Overland Ave. Ste. 310  
San Diego, CA 92123

**SUBJECT: FIRE PROTECTION PLAN – LETTER REPORT  
GILDRED BUILDING CO, LLC – OCOTILLO WELLS SOLAR FARM  
3300-12-004 (MUP); 3910-12-12-001(ER)  
APN'S: 253-390-57 & 253-390-58**

Dear Mr. Pine:

This Fire Protection Plan (FPP) – Letter Report is being submitted pursuant to Chapter 49 of the County Fire Code as an evaluation of the adverse environmental effects that a proposed project may have from wildland fire and as mitigation of those impacts to ensure that the above-referenced Project does not unnecessarily expose people or structures to a significant risk of loss, injury or death involving wildland fires.

## **PROJECT DESCRIPTION**

The Project proponent is preparing an application for development and operation of a photovoltaic (PV) or concentrated photovoltaic (CPV) solar farm to be located on privately held lands near Ocotillo Wells, California. The Project would require approval from the County of San Diego for a Major Use Permit (MUP) to allow for the construction, operation, and maintenance of such facilities for the long-term generation of clean renewable energy from solar power.

The County Assessor Parcel Numbers (APNs) that comprise the Project area for the main facilities are 253-390-57 and 253-390-58, totaling 440 acres (approximately 280 acres and 160 acres, respectively); however, the proposed Project development footprint would total approximately 338.1 acres. The development footprint for the Project includes approximately 336.4 acres of the 440 acres, plus approximately 1.74 acres of disturbance for offsite improvements for access purposes (access road/easement from Split Mountain Road). The remaining 103.6 acres of the two affected parcels would remain in their natural state. Gildred Building Co., LLC currently owns APN 253-390-57 and APN 253-390-58.

To allow for flexibility in the ultimate type of technology utilized for construction of the solar farm, four variations of PV and CPV alternative technology systems are being considered by the Project applicant. The

**PLANNING ■ DESIGN ■ CONSTRUCTION**

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proposed development footprint would remain the same with any of the technology scenarios selected. In addition to the solar panels, development would include construction of two 10,000 gallon onsite water storage tanks and an operations and maintenance building (approximately 1,040 s.f., height of 15-16 feet with finished floor elevation a minimum of one foot above base flood elevation). A third 10,000 gallon water storage tank may be installed onsite for temporary storage of brine generated during panel washing [if a reverse osmosis (RO) system is used]. Additionally, a substation (development footprint of approximately 62,500 square feet, maximum height of 35 feet) that would be dedicated to the Imperial Irrigation District (IID) and a private switchgear yard (development footprint of approximately 96,750 s.f.) with a control house are proposed; however, only a limited portion of these areas would support physical structures. The Dual-Axis Tracker System and the Dual-Axis Tracker Units, as described in detail below, would also require installation of six 125kW emergency generators located on a 12-foot by 20-foot concrete pad within the interior of the development area to enable the solar panels to be rotated to the stow position, in the event that power from the local utility is lost or when high winds occur.

The energy generated by the Project with any of the four alternative technology systems would be transmitted via a central overhead 34kV collection line to the substation proposed in the northeast corner of the site, adjacent to an existing 92 kilovolt (kV) “R-Line.” The solar farm is proposed to be connected to the R-Line with an interconnection agreement with the IID. The R-Line runs aboveground and ultimately connects to the existing San Felipe Substation, located approximately 2.1 miles to the northwest of the point of interconnection.

Each of the four layouts would also require construction of a number of equipment pads to support small enclosures to house the associated inverters/transformers (PV technology) or breakers/transformers (CPV technology). The total number of required equipment pads within the development footprint, as well as the combination of components that each would support (e.g. either transformers/inverters or breakers/transformers), would vary based upon the technology system selected.

The ultimate arrangement/number of solar panels, equipment pads and structures, and internal access roads are shown on the MUP Plot Plans prepared specific to each of the proposed solar technology systems; refer to Figures 3A through 3F, Major Use Permit Plot Plan(s), and Figure 4, Preliminary Grading Plan; however, each of these layouts are subject to modification at final engineering design. Construction of the Project is anticipated to take approximately 11 months to complete. Table 1, below, provides a brief description of the characteristics of each of the solar technologies being considered by the Project applicant.

**Table 1  
 Potential Solar Collection Systems for Ocotillo Wells Solar Farm**

Type of Solar Generating System	Description of System Components
Fixed-Axis Rack System	Series of solar panels on a fixed-axis rack system / Supported on rack pilings of 4-6 inch diameter metal I-beams or 4-inch diameter round pipe
Single-Axis Rack System	Series of single-axis tracking, rack-mounted solar panels /Supported on driven pier footings
Dual-Axis Tracker Units	Series of concentrated photovoltaic (CPV) solar trackers / Supported on driven pier footings/concrete foundation
Dual-Axis Rack System	Series of concentration photovoltaic (CPV) solar panels installed on a dual-axis rack system / Supported on pile-driven pier footings

No offsite roadway improvements are proposed along Split Mountain Road. Long-term primary access to the Project site would be provided from Split Mountain Road via a 24-foot wide all-weather road over a 40-foot wide access/utility easement extending eastward to the southwestern corner of the MUP area. Interior access would be provided by a series of looped 24-foot wide fire access roads and/or fire access and perimeter loop roads (depending on the type of solar system selected), in accordance with County of San Diego Fire Standards, that would be maintained to provide a fire buffer as well as to facilitate onsite circulation for emergency vehicles. The interior access roads would be designed and maintained to support the imposed loads of fire service apparatus (not less than 50,000 lbs) and would have an approved surface so as to provide all-weather driving capabilities. The interior fire access roads would be constructed to facilitate a maximum fire hose pull of approximately 160 feet. In addition, the Project includes east/west running fire access roads for connectivity and circulation. The purpose of the interior fire access roads is to allow for access of fire service apparatus throughout the Project site and in order to reach the inverter/transformer units. In addition, a system of internal roadways would be provided between the running rows of solar panels to allow for routine maintenance.

In order to control dust during the life of the Project, a non-toxic, biodegradable, permeable soil-binding agent or permeable rock material would be applied to all disturbed or exposed surface areas as follows: a) A permeable soil-binding agent suitable for both traffic and non-traffic areas shall be used. These agents shall be biodegradable, eco-safe, with liquid copolymers that stabilize and solidify soils or aggregates and facilitate dust suppression; or, b) Alternatively, a permeable rock material consisting of either river stone decomposed granite or gravel could be placed in a thin cover over all exposed surface area in-lieu of the binding agent referenced above. The binding agent would be reapplied approximately every two to three years for maintenance purposes.

Additionally, as the Project would have the potential to result in additional demands on the Ocotillo Wells Volunteer Fire Department (OWVFD) and/or other area emergency service providers, the Project will be conditioned to participate in the Community Facilities District (CFD) that is currently being created by the San Diego County Fire Authority (SDCFA). The Project applicant shall comply with all requirements of the CFD, as applicable, and once such specific requirements have been identified. Joining the CFD for fire protection services and payment of the required fees will ensure that fire protection services will be adequate to serve the Project, and that no significant cumulative effects occur as the result of Project implementation.

## ENVIRONMENTAL SETTING

**1. Location:** The Project site is located to the southeast of the community of Ocotillo Wells, California, within northeastern San Diego County. The Project would affect two privately-owned parcels totaling approximately 440 acres, located 0.4 mile east of Split Mountain Road and three miles south of State Highway 78 (SR 78). The affected County Assessor Parcel Numbers (APNs) are 253-390-57 and 253-390-58, totaling 440 acres (approximately 280 acres and 160 acres, respectively); however, the Project development footprint would be limited to approximately 336.4 acres of the overall 440 acres. The remaining 103.6 acres would remain undisturbed. Refer to Figure 1, Regional / Local Vicinity Map, and Figure 2, Aerial Photograph.

**2. Topography:** The overall topography generally descends gradually from northwest to southeast across the region. Although the topography of the Project area is generally flat, there are a series of low dune ridges

with hummocky areas throughout. Elevations range from approximately 90 feet above mean sea level (amsl) in the southwest corner to 50 feet amsl in the northeast corner of the Project site.

**3. Geology:** The Project area and the southern Borrego Valley in general are underlain by Quaternary alluvium. The vast majority of the Project area is mapped as SrD: Sloping Gullied Land and RoA: Rositas Fine Sand, 0-2% Slopes. There is no evidence of geological features that would pose any increased danger of wildfire potential or human safety issues.

**4. Flammable Vegetation:** Vegetation on the Project site consists almost exclusively of Sonoran creosote bush scrub, with a small area of Sonoran wash scrub along the western edge of the site. Given the extent onsite vegetation, fire hazard levels are considered to be minimal.

**5. Climate:** The climate in Ocotillo Wells is generally hot during summer months with temperatures in the upper 90's (degrees Fahrenheit) and at times reaching into the 100's. Winter temperatures tend to dip into the 50's and below over nighttime hours. The warmest month of the year is July with an average maximum temperature of 99 degrees Fahrenheit, while the coldest month of the year is January with an average minimum temperature of 43 degrees Fahrenheit. Temperature variations between night and day tend to be relatively large during summer with a difference that can reach 32 degrees Fahrenheit, and moderate during winter with an average difference of 26 degrees Fahrenheit. The annual average precipitation for Ocotillo Wells is 6.91 inches. Rainfall is fairly evenly distributed throughout the year. The wettest month of the year is January, with an average rainfall of 1.43 inches.

## PROJECT EXPOSURE TO WILDLAND FIRES

**1. Water Supply:** To allow for ongoing maintenance of the solar panels, water would be pumped from the proposed well, or alternatively, pumped from the existing onsite groundwater well and/or trucked in to the site from local suppliers. Water supplies from the well have been evaluated and deemed adequate to meet anticipated water demands for long-term maintenance of the proposed facilities. If it is determined that water from the well is too hard to be utilized for panel washing, a filtration system would be used to treat the water. Additionally, two 10,000 gallon onsite water storage tanks are proposed to support emergency fire protection services, as shown on the MUP Plot Plan(s).

### **2. Fire Access Roads:**

#### *Construction Access*

All materials for Project construction would be delivered to the site by truck. The majority of truck traffic would occur on designated truck routes and/or major streets (e.g. Split Mountain Road). Access to the site during construction would be provided from Split Mountain Road via a 24-foot wide all-weather road, graded to 28 feet, over a 40-foot wide private access/utility easement extending eastward to the southwestern corner of the MUP area.

Traffic resulting from Project construction activities would be temporary and may occur along area roadways as workers and materials are transported to and from the Project area. If directed by the County, the Project applicant would prepare a Traffic Construction Mitigation Plan to ensure that circulation on roadways utilized during construction is not adversely affected and that public safety is maintained.

#### *Long-Term Access and Onsite Circulation*

Long-term primary access to the Project site would be provided from Split Mountain Road via a 24-foot wide all-weather road over a 40-foot wide access/utility easement extending eastward to the southwestern

corner of the MUP area. Interior access would be provided by a series of 24-foot wide fire access roads and/or fire access and perimeter loop roads (depending on the type of solar system selected), in accordance with County of San Diego Fire Standards, that would be maintained to provide a fire buffer as well as to facilitate onsite circulation for emergency vehicles. The interior access roads would be designed and maintained to support the imposed loads of fire service apparatus (not less than 50,000 lbs) and would have an approved surface so as to provide all-weather driving capabilities. The interior fire access roads would be constructed to facilitate a maximum fire hose pull of approximately 160 feet. In addition, the Project includes east/west running fire access roads for connectivity and circulation. The purpose of the interior fire access roads is to allow for access of fire service apparatus throughout the Project site and in order to reach the inverter/transformer units. Signage will be installed at the end of each fire access road onsite to identify those roadways intended for use by emergency vehicles. In addition, a system of internal roadways would be provided between the running rows of solar panels to allow for routine maintenance.

In order to control dust during the life of the Project, a non-toxic, biodegradable, permeable soil-binding agent or permeable rock material would be applied to all disturbed or exposed surface areas as follows: a) A permeable soil-binding agent suitable for both traffic and non-traffic areas shall be used. These agents shall be biodegradable, eco-safe, with liquid copolymers that stabilize and solidify soils or aggregates and facilitate dust suppression; or, b) Alternatively, a permeable rock material consisting of either river stone decomposed granite or gravel could be placed in a thin cover over all exposed surface area in-lieu of the binding agent referenced above. The binding agent would be reapplied approximately every two to three years for maintenance purposes.

To facilitate circulation onsite, illuminated signage at the Project entrance off of Split Mountain Road and at each inverter station that notes the location and identification number of each electrical grid disconnect and circuit breaker would also be installed. The directory would readily identify each equipment structure to assist with emergency response.

*Access to Multiple Evacuation Routes:* Interior access would be provided by 24-foot wide fire access roads and/or fire access and perimeter loop roads (depending on the type of solar system selected). These roads would be unsurfaced (covered with a binding agent) and would serve as a fire buffer. In addition, a system of internal roadways would be provided between the running rows of solar panels to allow for routine maintenance.

*Dead Ends:* No dead-end roadways are proposed.

*Width:* The improved width of the fire access roads and/or fire access and looped perimeter roads (depending on the type of solar system selected) would be 24 feet with a base designed and maintained to support the imposed loads of fire apparatus of not less than 50,000 lbs. Internal fire access roads would be 24' all-weather paving. In addition, a system of internal roadways would be provided between the running rows of solar panels to allow for routine maintenance. Signage will be installed at the end of each fire access road onsite to identify those roadways intended for use by emergency vehicles.

*Vertical Clearance:* A minimum vertical clearance of 13'-6" shall be maintained at all times along all onsite and offsite access driveways (including brush/tree maintenance), in conjunction with the San Diego County Fire Code. Currently, there are no vertical obstructions along the proposed offsite access drive. Additionally, a switch would be installed inside of the entrance gate to the site to allow authorized Project personnel and emergency service providers to automatically place the solar panels in a stow position in the event of an emergency or high winds (applicable only to the Dual-Axis Tracker System and the Dual-Axis

Tracker Units design alternatives, which allow for panel rotation). The minimum vertical clearance of 13'-6" shall be maintained when the panels are in the stow position.

*Grade:* A maximum 10% grade will be maintained along all access roads.

*Surface:* Surface improvements for onsite roadways shall consist of an all-weather material with binding agent design, and shall be constructed and approved by the SDCFA. All roadway surfacing material shall be compacted per County standards and suitable for travel by 50,000-lb. fire protection service apparatus.

*Gates:* The perimeter of the MUP area would be fenced with a 6-foot high chain link fence with one foot of two-strand barbed wire for security purposes. A gate is proposed at the southwestern corner of the MUP area to provide secured access to the Project site. The gate would meet the requirements of San Diego County Fire Code Section 96.1.503.6 for automatic operation with battery back-up. The gate would open immediately upon emergency vehicle strobe light activation from either direction of approach and would include a Knox block key-operation switch.

**3. Setback from Property Lines:** The minimum setbacks as regulated by the County of San Diego Zoning Ordinance Section 4800 will be maintained. A schedule summarizing the specific zoning designation for each affected parcel is as follows:

Zone		
APN:	253-390-57 & -58	
Use Regulations	S92	
Neighborhood Regulations	W	
Development Regulations	Density	--
	Lot Size	8 AC
	Building Type	C
	Maximum Floor Area	--
	Floor Area Ratio	--
	Height	G
	Lot Coverage	--
	Setback	D
Open Space	--	
Special Area Regulations	--	

**4. Building Construction:** Building construction for on-site structures would be limited to non-combustible construction primarily of concrete block or steel. Project structures would consist of a varied number of inverters/transformers or breakers/transformers (dependent upon the solar technology system ultimately installed by the Project applicant) constructed on equipment building pads, and distributed within the MUP development footprint. The Direct Current (DC) obtained from the solar units would be converted into

Alternating Current (AC), which would then be transferred via overhead line to the proposed private substation located in the northeast corner of the site. Fire access roads would serve all building equipment pads. Additionally, one operations and maintenance building is proposed onsite, measuring approximately 1,040 square feet in size, at an estimated height of 15-16 feet to support maintenance activities (finished floor elevated a minimum of one foot above base flood elevation). A small-scale control room would also be constructed within the onsite switchgear yard (private).

**5. Fire Protection Systems:** Construction of the proposed operations and maintenance building and the control house (located adjacent to the substation) would include installation of an interior fire suppression system (fire sprinkler system for the operations and maintenance building and a clean agent system for the control room). Installation would occur consistent with applicable National Fire Protection Association (NFPA) Code No. 13 standards (Standard for the Installation of Sprinkler Systems). Two 10,000 gallon water onsite storage tanks shall be installed as shown on the MUP Plot Plan(s), per the request of the San Diego County Fire Marshal, to provide water for fire suppression in the event of an emergency.

**6. Defensible Space:** A 30-foot wide fuel management zone (FMZ) (measured inward from the boundary of the proposed MUP development area) and 24-foot wide perimeter fire access road (depending on the type of solar system selected) would be constructed with Project implementation to provide a fire buffer and to ensure adequate onsite circulation of fire/emergency vehicles, as needed.

**7. Vegetation Management:** All onsite vegetation will be maintained/weed-whipped on an annual basis to a maximum of six inches (including within 30 feet of all onsite structures), unless otherwise requested by the SDCFA. A minimum 30-foot wide FMZ shall be maintained around the perimeter of the MUP development footprint. Areas under the panels will be dirt with an erosion control binding agent. The brush clearing zone shall be maintained year-round by the Project proponent as required by this FPP Letter Report and SDCFA fire regulations. The Project site shall be annually maintained to remain free of dead vegetative material.

**8. Fire Behavior Computer Modeling:** Based on preliminary evaluation by the San Diego County Fire Marshal, Computer Fire Behavior Modeling is not required for this FPP – Letter Report.

**9. Signage:** An illuminated directory sign (activated via motion sensor) will be located at the entrance of the facility and a corresponding non-illuminated sign at each inverter station. The signage will depict the overall site plan and the locations of each numbered inverter structure and electrical grid disconnect and circuit breaker. Each inverter structure shall be numbered and signed to be plainly visible to the satisfaction of the SDCFA.

**10. Disconnects:** A private switchgear yard (fenced area approximately 460 feet by 250 feet) to be located in the northeastern portion of the site will house the switching gear. An override (or cut-off) switch will be provided near the main entry (on the interior of the fence) that will be used to disconnect and disrupt all AC power leaving the inverter structures spaced throughout the site.

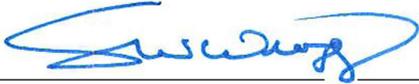
**11. Emergency Power:** As stated above, the Dual-Axis Tracker System and the Dual-Axis Tracker Units (technology systems) would also require installation of six 125kW emergency generators located on a 12-foot by 20-foot concrete pad within the interior of the development area to enable the solar panels to be rotated to the stow position, in the event that power from the local utility is lost or when high winds occur.

**12. Wind Stow Switch:** A switch will be installed inside of the entrance gate to the site to allow authorized Project personnel and emergency service providers to place the solar systems in the wind stow position

(applicable only to the Dual-Axis Tracker System and the Dual-Axis Tracker Units design alternatives, which allow for panel rotation). Any cut-off switches shall be approved by the SDCFA.

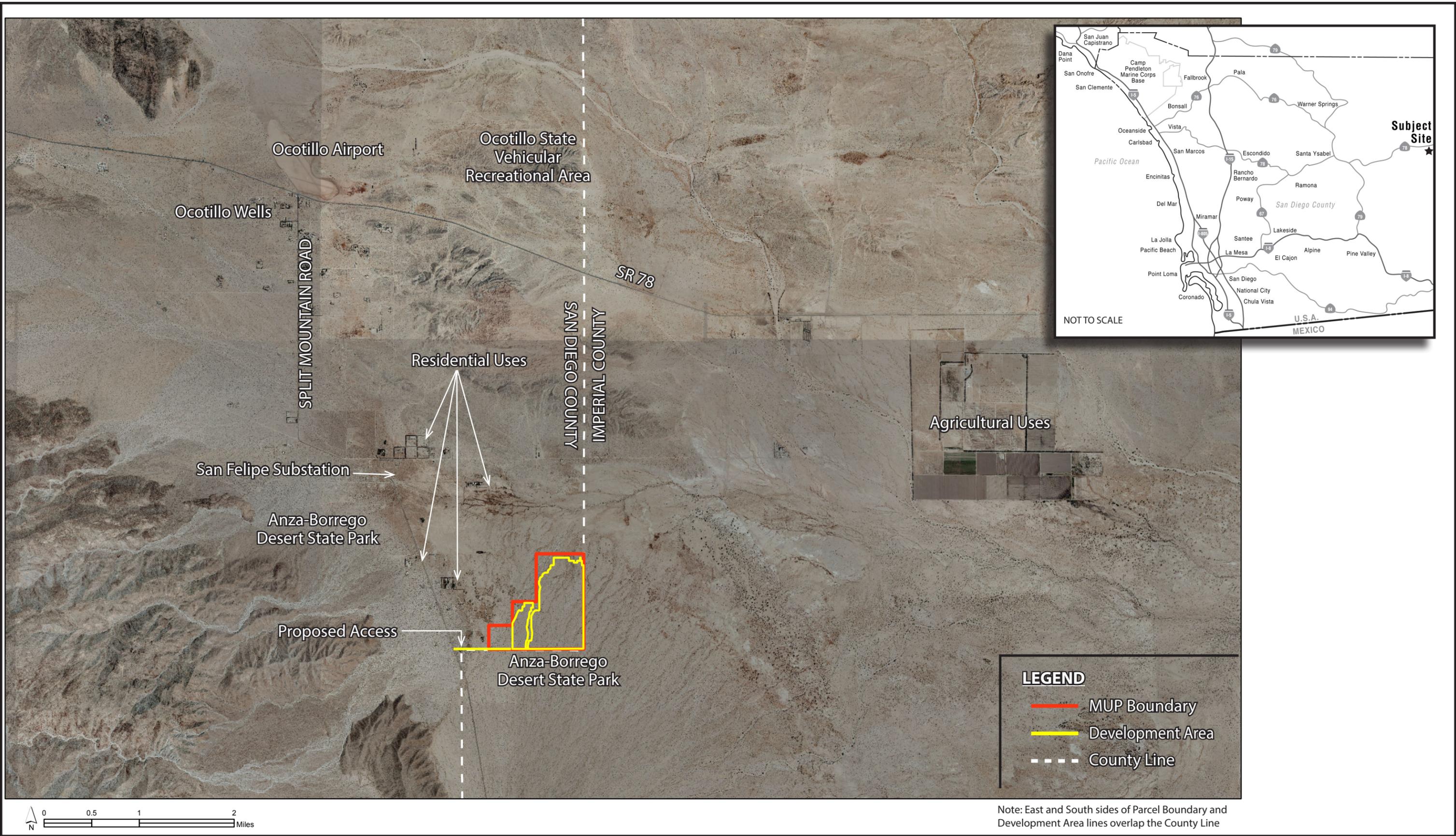
**13. Training:** Formal training will be provided to the OWVFD. Fire service training and an education program shall be provided to the OWVFD for all shifts of the fire emergency responders.

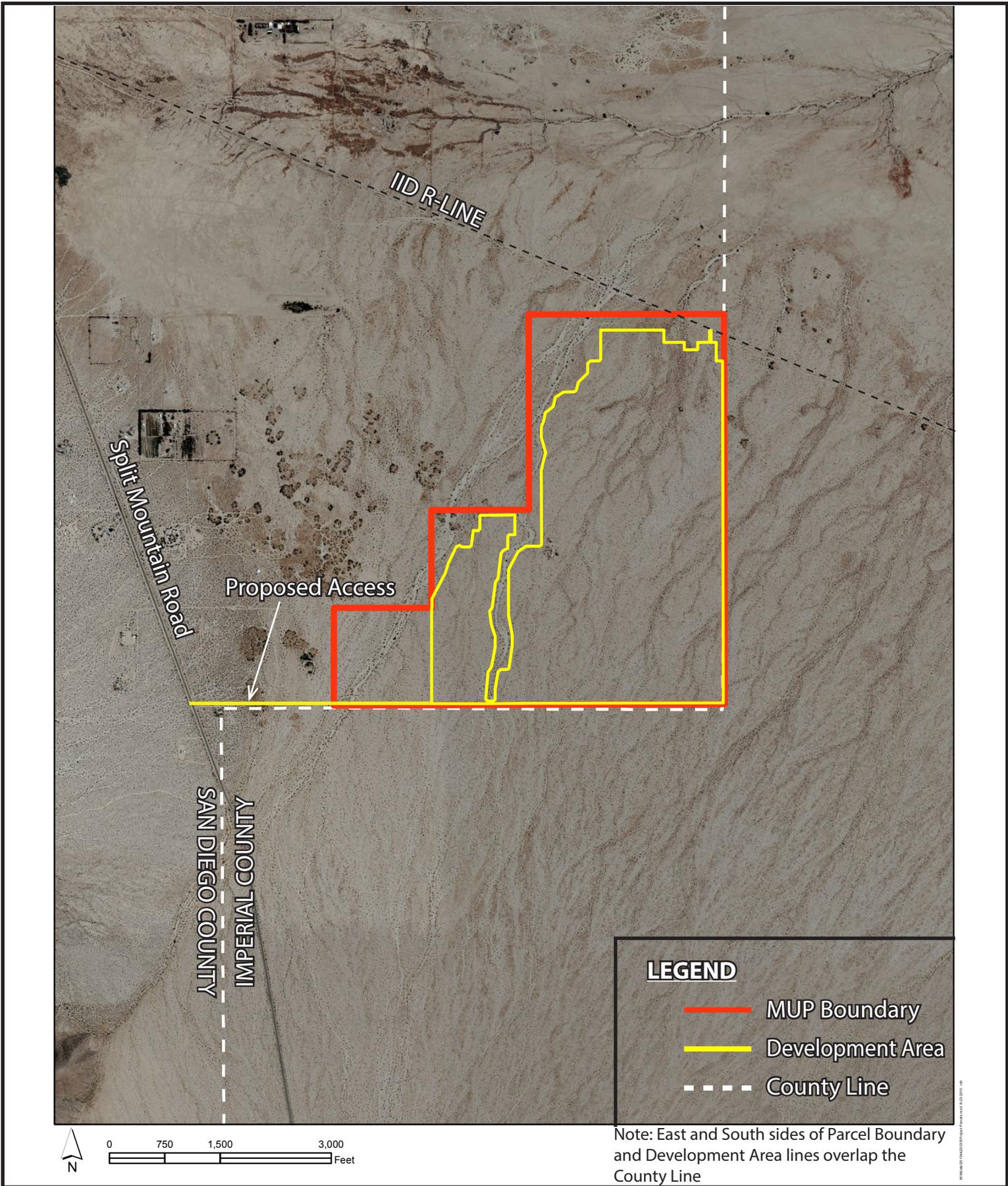
**SIGNATURES:**

 _____ Prepared by (Signature)	11/30/2012, Rev. 12/19/2013 _____ Date	Nicole Marotz, Senior Env. Planner _____ Printed Name, Title
 _____ Property Owner or Agent (Signature)	11/30/2012, Rev. 12/19/2013 _____ Date	Gildred Building Co. LLC Steve Wragg, RBF VP, Agent _____ Printed Name, Title
_____ Fire Marshal (Signature)	_____ Date	James Pine, County Fire Marshal _____ Printed Name, Title
_____ Captain (Signature)	_____ Date	Patrick Walker, Captain _____ Printed Name, Title

Attachments: Figures 1, 2, 3A – 3F, and 4; Fire Service Availability Form  
Appendix A: Wildfire Technical Report

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**NOTES**

- GROSS AREA: 440.53 AC ACRES
- DEVELOPMENT AREA: 338.10 ACRES
- GENERAL PLAN: RURAL LAND (RL80)
- REGIONAL CATEGORY: RURAL LANDS
- TOPOGRAPHIC SOURCE: VERTICAL MAPPING, FLOWN 4/20/2011
- ASSOCIATED REQUESTS: NONE
- THE APPROVAL OF THIS MAJOR USE PERMIT (MUP) AUTHORIZES THE FOLLOWING CONSTRUCTION, OPERATION, AND MAINTENANCE OF A PHOTOVOLTAIC SOLAR FARM PURSUANT TO SECTION 6952 OF THE SAN DIEGO COUNTY ZONING ORDINANCE.
- THIS PLAN IS PROVIDED TO ALLOW FOR FULL AND ADEQUATE DISCRETIONARY REVIEW OF A PROPOSED DEVELOPMENT PROJECT. THE PROPERTY OWNER ACKNOWLEDGES THAT ACCEPTANCE OR APPROVAL OF THIS PLAN DOES NOT CONSTITUTE AN APPROVAL TO PERFORM ANY GRADING SHOWN HEREON, AND AGREES TO OBTAIN VALID GRADING PERMITS BEFORE COMMENCING SUCH ACTIVITY.
- ALL BUILDINGS TO BE CONSTRUCTED OF NON-COMBUSTIBLE MATERIALS (CONCRETE, BLOCK, METAL) OR SIMILAR.
- NO LANDSCAPING PROPOSED.
- LIGHTING FOR MAINTENANCE AND SECURITY PROPOSED ONLY. SHIELDED LIGHTING LOCATED AT GATES AND SUBSTATION BUILDING AND SHALL CONFORM TO COUNTY OF SAN DIEGO OUTDOOR LIGHTING REQUIREMENTS. SEE DETAIL ON SHEET 6.
- PHASING - PROJECT WILL BE IMPLEMENTED IN SEVERAL PHASES WITHOUT REGARD TO SEQUENCE.
- ALL DISTURBED AREAS WOULD BE COVERED WITH GRAVEL OR A BINDING AGENT TO REDUCE DUST.
- SEE PRELIMINARY GRADING PLAN FOR PROPOSED GRADING.
- ONLY SMALL DIRECTIONAL, LIMITS OF OPEN SPACE AND SAFETY SIGNAGE ARE PROPOSED.
- NO DEVELOPMENT WILL OCCUR IN THE AREAS IDENTIFIED ON THE PLOT PLAN AS "OPEN SPACE".
- SEE PLOT PLANS FOR LEGEND.
- THE ENTIRE SITE IS SUBJECT TO INUNDATION BY THE 100-YEAR FLOOD AND IS WITHIN FEMA MAP NO. 0607300675F. THE LIMITS OF THE 100-YEAR FLOOD ALONG THE WATERCOURSE WHICH FLOWS THROUGH THE PROPERTY.
- SITE ACCESS GATE(S) TO BE EQUIPPED WITH FIRE DEPARTMENT APPROVED STROBE LIGHT ACTIVATION AND KNOX KEY-OPERATED SWITCH.
- SOLAR RELATED FACILITIES (PANELS, RACKING, ELECTRICAL CONNECTIONS, INVERTER/TRANSFORMER PADS, OWN BUILDINGS, CONTROL ROOM, EMERGENCY GENERATOR, SUBSTATION, SWITCHGEAR YARD, FENCING, AND INTERNAL ACCESS, ETC.) SHOWN ON THE PLOT PLAN MAY BE RELOCATED, RECONFIGURED, AND/OR RESIZED WITHIN THE SOLAR FACILITY DEVELOPMENT AREA (EXCLUSIVE OF THE OPEN SPACE AREAS) WITH THE ADMINISTRATIVE APPROVAL OF THE DIRECTOR OF DPUL WHEN FOUND IN CONFORMANCE WITH THE INTENT AND CONDITIONS OF PERMIT'S APPROVAL. TRANSFORMER/INVERTER/GENERATOR LOCATIONS CAN BE RELOCATED/RECONFIGURED WITHOUT REQUIREMENT OF MINOR DEVIATION. THE TRANSFORMER/INVERTER/GENERATOR MUST COMPLY WITH THE NOISE ORDINANCE AND MUST BE ELEVATED 1' ABOVE FLOOD ELEVATION. THE 24" FIRE ACCESS ROAD WIDTHS MAYBE REDUCED ADMINISTRATIVELY WITH THE APPROVAL OF THE COUNTY AND FIRE AUTHORITY HAVING JURISDICTION OVER THE PROJECT.
- PROVIDE OVERRIDE SWITCH CONTROL NEAR MAIN ENTRY TO ALLOW FIRE DEPARTMENT TO MOVE TRACKERS INTO STOW POSITION.

**EXISTING EASEMENTS PER TITLE REPORT**

DESCRIPTION	DISPOSITION
BOY SCOUTS OF AMERICA	TO REMAIN
GILROD BUILDING CO. EASEMENT	TO REMAIN
20' PRIVATE ACCESS/UTILITY EASEMENT - 2012-0230124	TO REMAIN
40' PRIVATE ACCESS/UTILITY EASEMENT - 2012-0230125	TO REMAIN

○ BASED ON DATA FROM PRELIMINARY TITLE REPORT BY CHICAGO TITLE COMPANY, ORDER NO. 930021658-050, DATED NOVEMBER 13, 2013.

**EXISTING EASEMENTS**

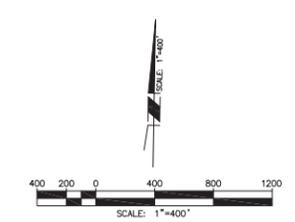
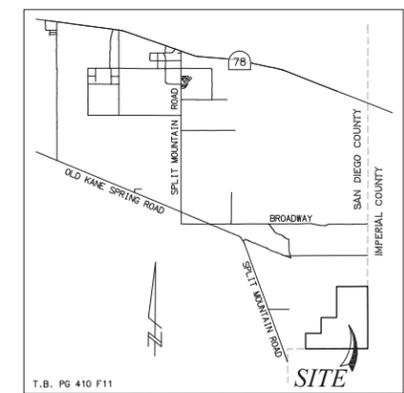
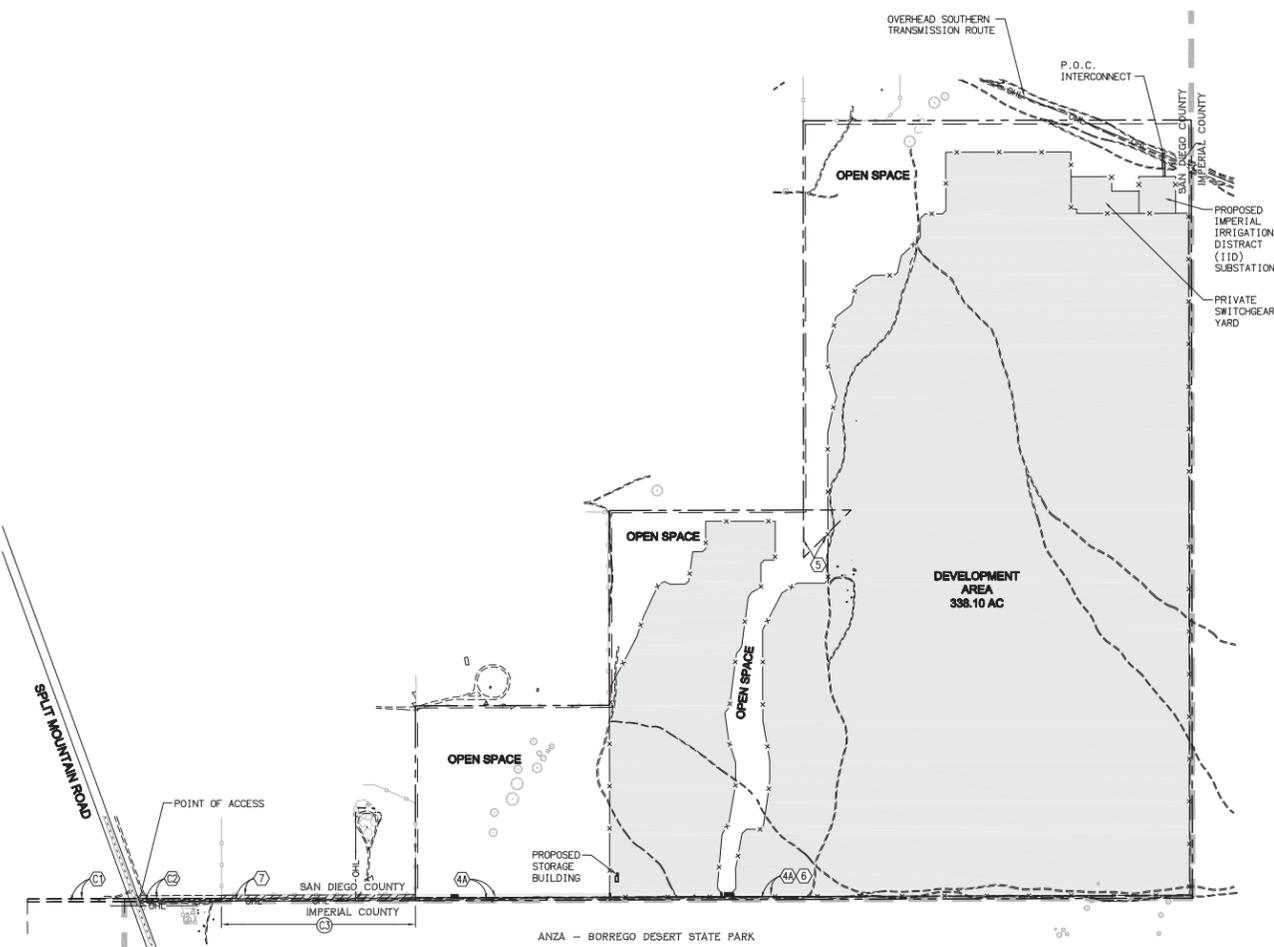
DESCRIPTION
20' PUBLIC HIGHWAY EASEMENT
20' PUBLIC HIGHWAY EASEMENT

**RECORDED EASEMENT**

DESCRIPTION
40' PRIVATE ACCESS/UTILITY EASEMENT - 2010-0512253

**EXISTING ZONING (NO CHANGE)**

ZONE	APN	253-39057858
USE REGULATIONS	SR2	
NEIGHBORHOOD REGULATIONS	W	
DENSITY	---	
LOT SIZE	BAC	
BUILDING TYPE	C	
MAXIMUM FLOOR AREA	---	
FLOOR AREA RATIO	---	
HEIGHT	G	
LOT COVERAGE	---	
SETBACK	D	
OPEN SPACE	---	
SPECIAL AREA REGULATIONS	---	



**ASSESSOR PARCEL NUMBER**  
253-390-57      253-390-58

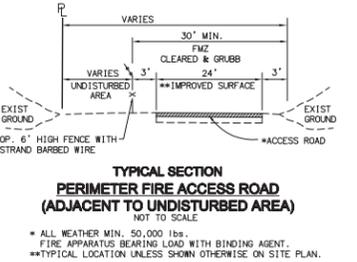
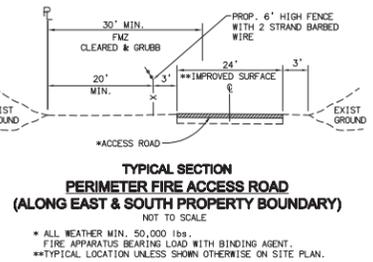
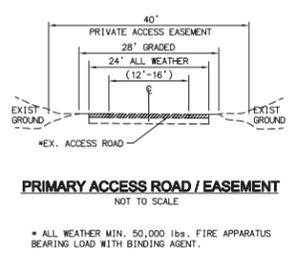
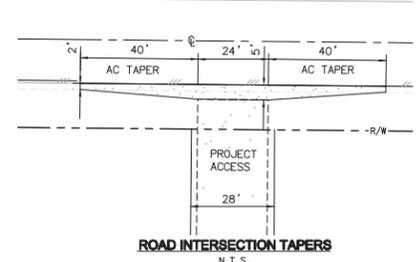
**LEGAL DESCRIPTION**  
THE SOUTHWEST QUARTER OF SECTION 36, THE SOUTHWEST QUARTER OF THE SOUTHWEST QUARTER, THE EAST HALF OF THE SOUTHWEST QUARTER AND THE NORTHEAST QUARTER OF SECTION 36, TOWNSHIP 12 SOUTH, RANGE 8 EAST, SAN BERNARDINO MERIDIAN, IN THE COUNTY OF SAN DIEGO, STATE OF CALIFORNIA, ACCORDING TO UNITED STATES GOVERNMENT SURVEY.

**BASIS OF BEARINGS**  
THE BASIS OF BEARINGS FOR THIS SURVEY IS THE CALIFORNIA COORDINATE SYSTEM (NAD83) ZONE 8, BASED LOCALLY UPON THE FOLLOWING CORN STATIONS PH P487, PH P488 & PH USCC AS PUBLISHED BY THE CALIFORNIA SPATIAL REFERENCE CENTER

**BENCHMARK**  
ELEVATIONS AS SHOWN HEREON ARE IN TERMS OF THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88) PER NGS DATA SHEETS DX0333, DX0335, & DX0338 BASED LOCALLY UPON THE FOLLOWING NGS BENCH MARKS. (NGS ELEVATIONS DERIVED FROM USING VERTCON TO CONVERT FROM NAVD29)  
BM H 579 = 28.30      DATUM    NAVD88  
BM K 579 = 28.30      DATUM    NAVD88  
BM M 579 = 28.30      DATUM    NAVD88

**APPLICANT**  
GILROD BUILDING COMPANY  
550 WEST C STREET, SUITE 1820  
SAN DIEGO, CA 92101  
(619) 683-5544  
CONTACT: RICH GEISLER

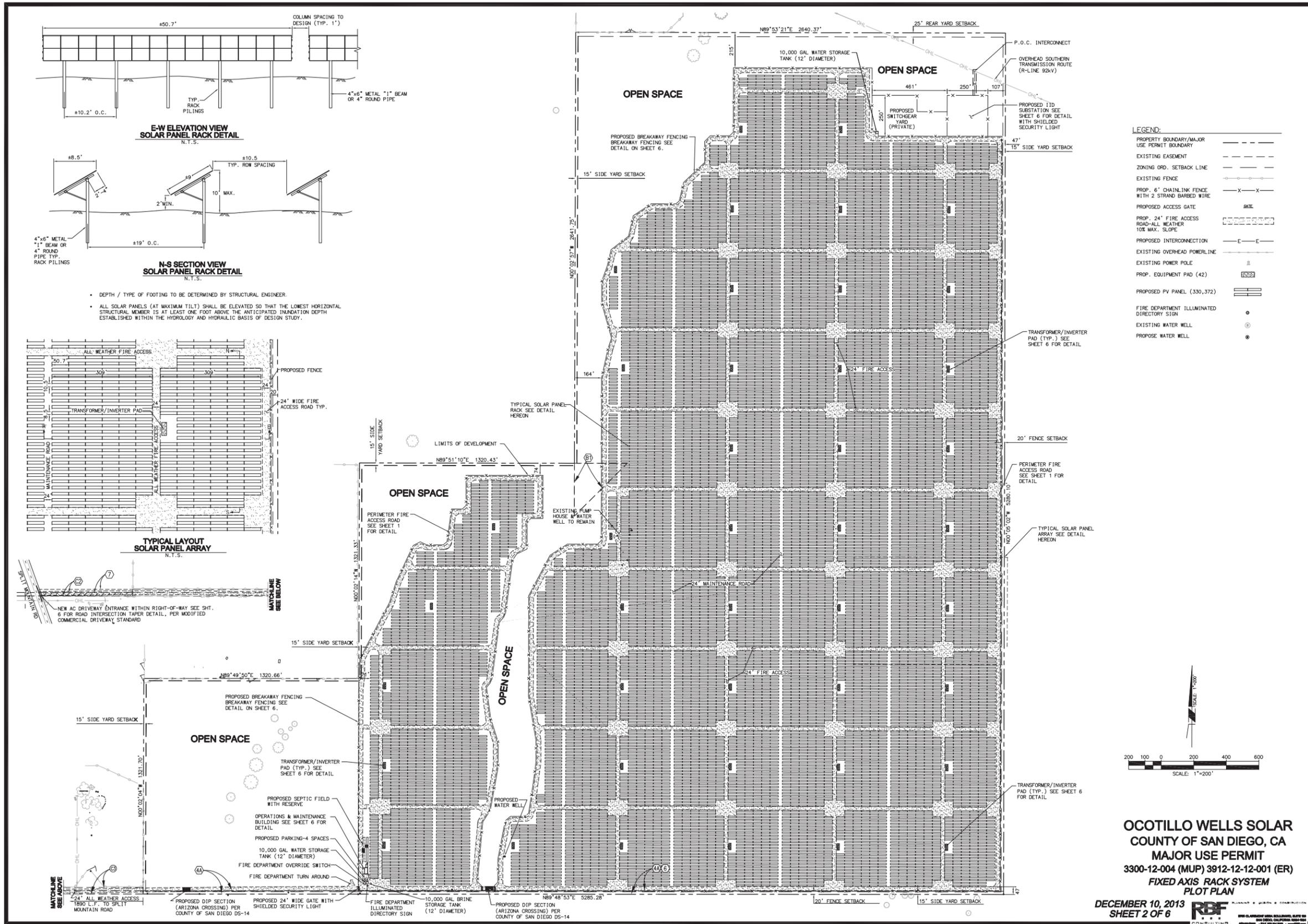
**SHEET INDEX**  
SHEET 1 - TITLE SHEET  
SHEET 2 - PLOT PLAN FIXED AXIS RACK SYSTEM  
SHEET 3 - PLOT PLAN SINGLE AXIS RACK SYSTEM  
SHEET 4 - PLOT PLAN DUAL AXIS RACK SYSTEM  
SHEET 5 - PLOT PLAN DUAL AXIS TRACKER UNITS  
SHEET 6 - ELEVATIONS/DETAILS

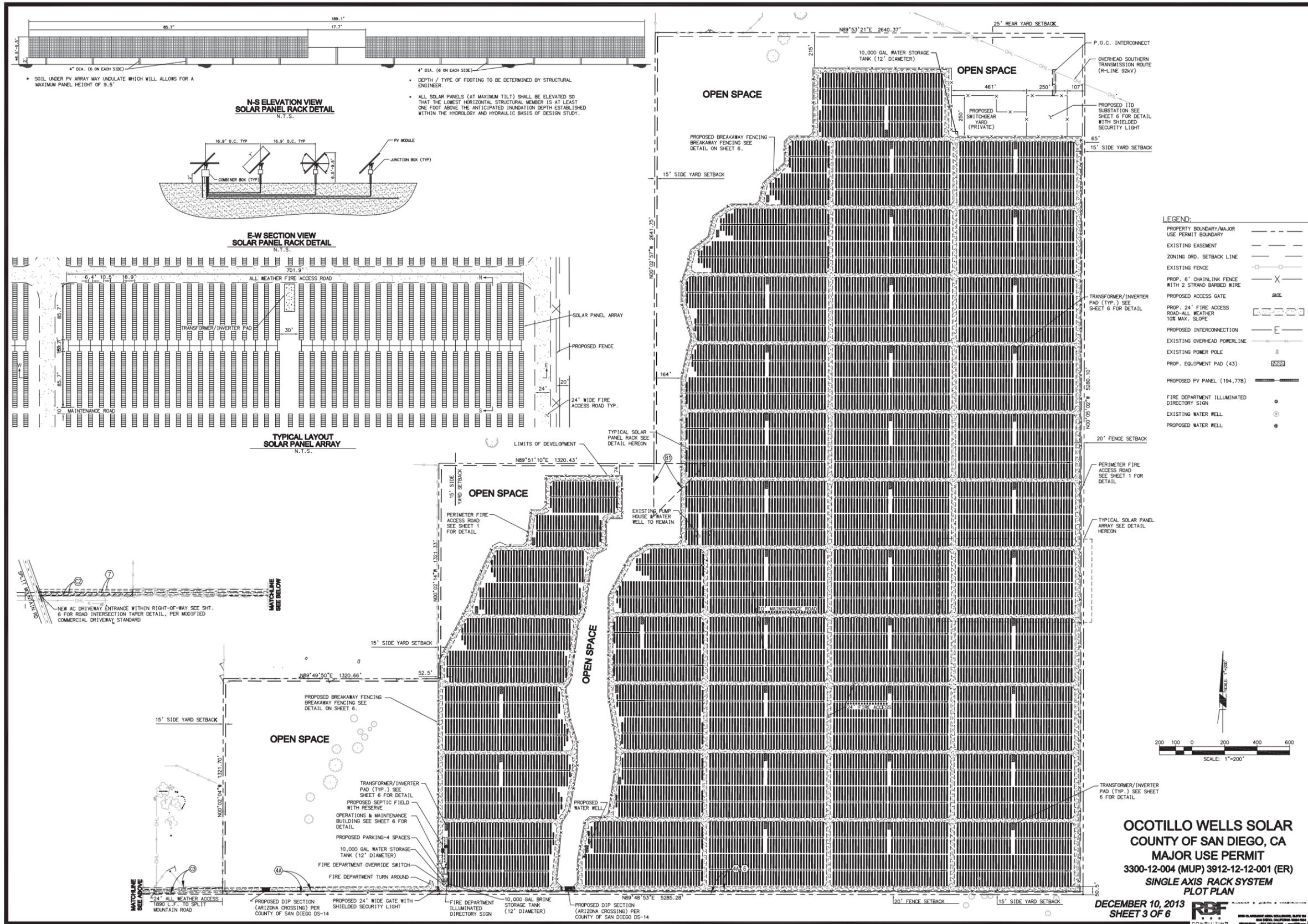


**OCOTILLO WELLS SOLAR**  
COUNTY OF SAN DIEGO, CA  
MAJOR USE PERMIT  
3300-12-004 (MUP) 3912-12-12-001 (ER)

**TITLE SHEET**  
DECEMBER 10, 2013  
SHEET 1 OF 6  
**RBF CONSULTING**



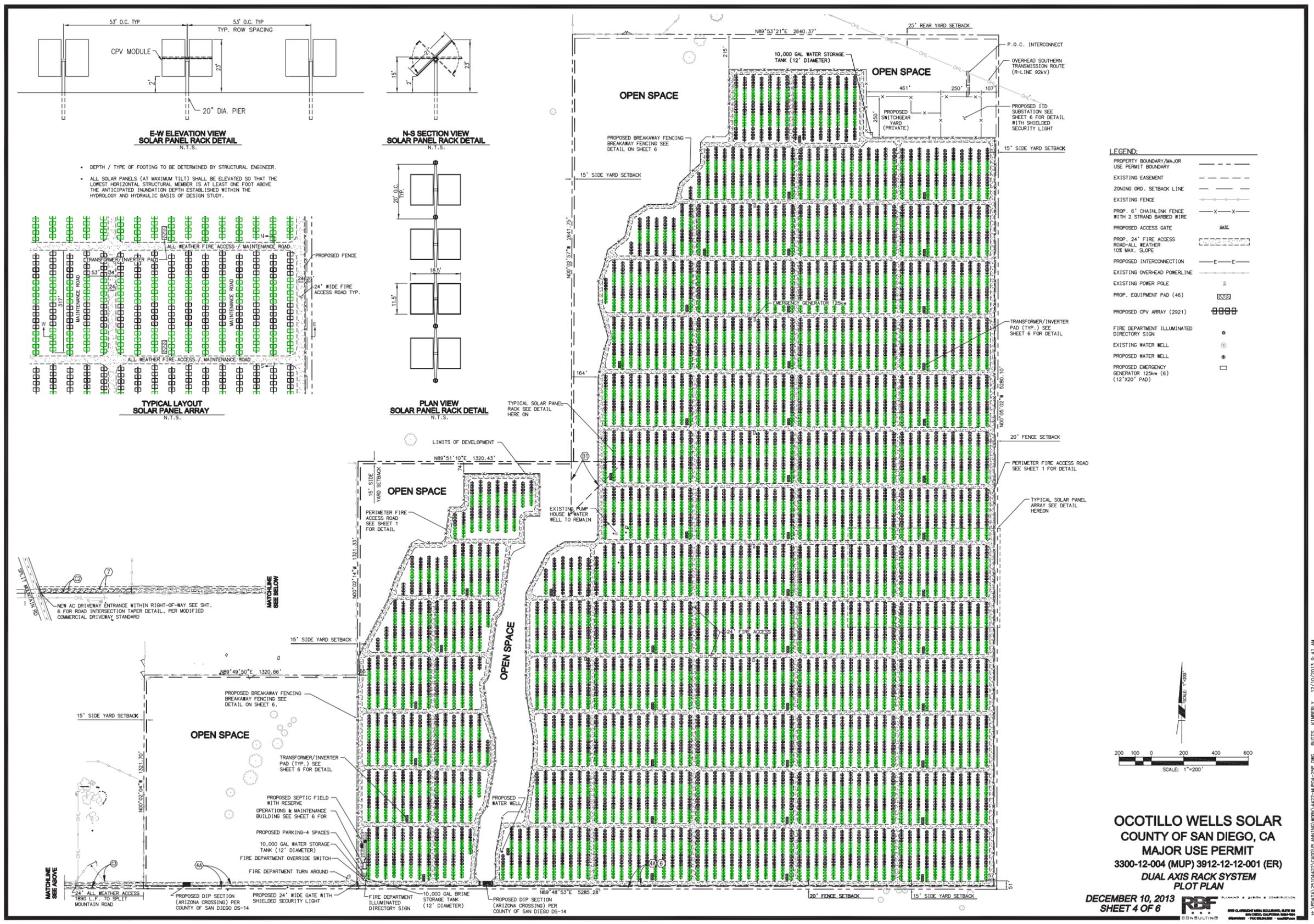


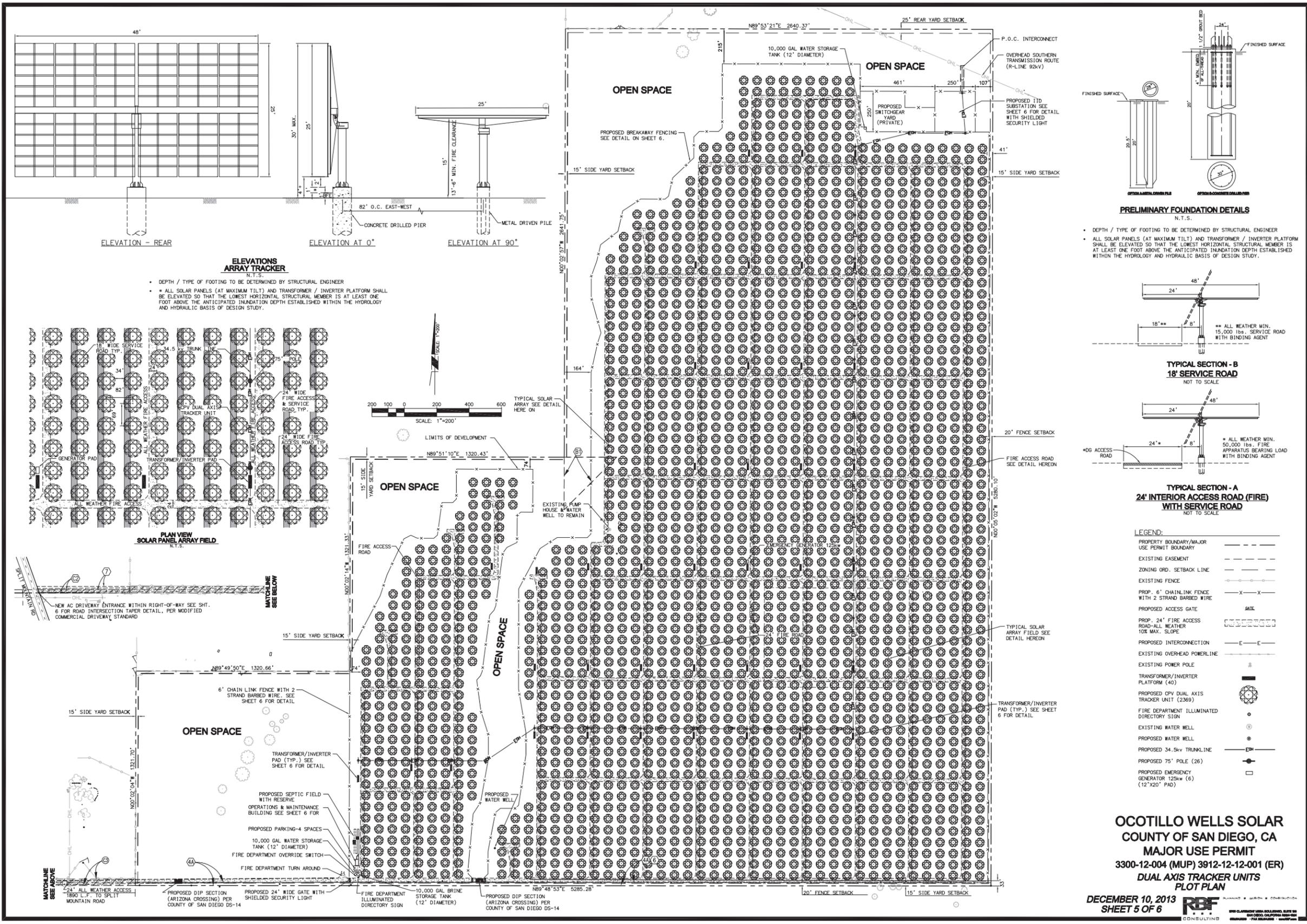


**OCOTILLO WELLS SOLAR**  
**COUNTY OF SAN DIEGO, CA**  
**MAJOR USE PERMIT**  
**3300-12-004 (MUP) 3912-12-12-001 (ER)**  
**SINGLE AXIS RACK SYSTEM**  
**PLOT PLAN**

DECEMBER 10, 2013  
 SHEET 3 OF 6







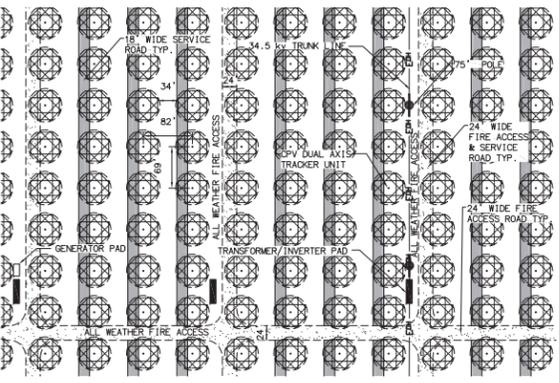
ELEVATION - REAR

ELEVATION AT 0°

ELEVATION AT 90°

**ELEVATIONS ARRAY TRACKER**  
N.T.S.

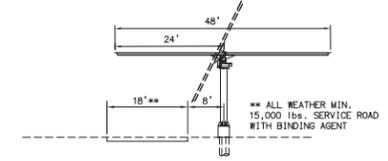
- DEPTH / TYPE OF FOOTING TO BE DETERMINED BY STRUCTURAL ENGINEER
- ALL SOLAR PANELS (AT MAXIMUM TILT) AND TRANSFORMER / INVERTER PLATFORM SHALL BE ELEVATED SO THAT THE LOWEST HORIZONTAL STRUCTURAL MEMBER IS AT LEAST ONE FOOT ABOVE THE ANTICIPATED INUNDATION DEPTH ESTABLISHED WITHIN THE HYDROLOGY AND HYDRAULIC BASIS OF DESIGN STUDY.



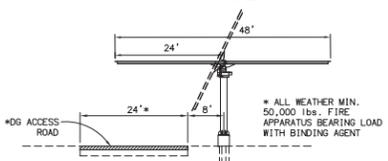
PLAN VIEW SOLAR PANEL ARRAY FIELD

**PRELIMINARY FOUNDATION DETAILS**  
N.T.S.

- DEPTH / TYPE OF FOOTING TO BE DETERMINED BY STRUCTURAL ENGINEER
- ALL SOLAR PANELS (AT MAXIMUM TILT) AND TRANSFORMER / INVERTER PLATFORM SHALL BE ELEVATED SO THAT THE LOWEST HORIZONTAL STRUCTURAL MEMBER IS AT LEAST ONE FOOT ABOVE THE ANTICIPATED INUNDATION DEPTH ESTABLISHED WITHIN THE HYDROLOGY AND HYDRAULIC BASIS OF DESIGN STUDY.



TYPICAL SECTION - B  
18' SERVICE ROAD  
NOT TO SCALE



TYPICAL SECTION - A  
24' INTERIOR ACCESS ROAD (FIRE)  
WITH SERVICE ROAD  
NOT TO SCALE

**LEGEND:**

- PROPERTY BOUNDARY/MAJOR USE PERMIT BOUNDARY
- EXISTING EASEMENT
- ZONING ORD. SETBACK LINE
- EXISTING FENCE
- PROP. 6' CHAIN LINK FENCE WITH 2 STRAND BARBED WIRE
- PROPOSED ACCESS GATE
- PROP. 24' FIRE ACCESS ROAD-ALL WEATHER 10% MAX. SLOPE
- PROPOSED INTERCONNECTION
- EXISTING OVERHEAD POWERLINE
- EXISTING POWER POLE
- TRANSFORMER/INVERTER PLATFORM (40)
- PROPOSED OPV DUAL AXIS TRACKER UNIT (2369)
- FIRE DEPARTMENT ILLUMINATED DIRECTORY SIGN
- EXISTING WATER WELL
- PROPOSED WATER WELL
- PROPOSED 34.5kV TRUNKLINE
- PROPOSED 75' POLE (26)
- PROPOSED EMERGENCY GENERATOR 125kw (6) (12'x20' PAD)

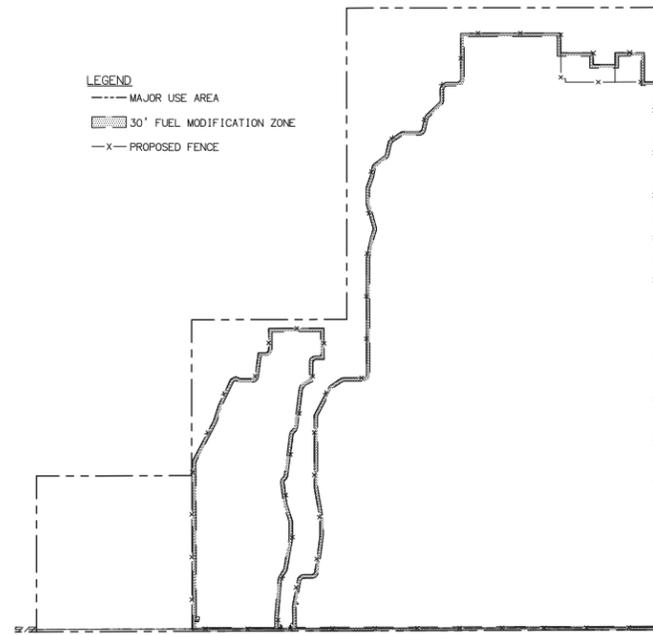
**OCOTILLO WELLS SOLAR  
COUNTY OF SAN DIEGO, CA  
MAJOR USE PERMIT  
3300-12-004 (MUP) 3912-12-12-001 (ER)  
DUAL AXIS TRACKER UNITS  
PLOT PLAN**

DECEMBER 10, 2013  
SHEET 5 OF 6

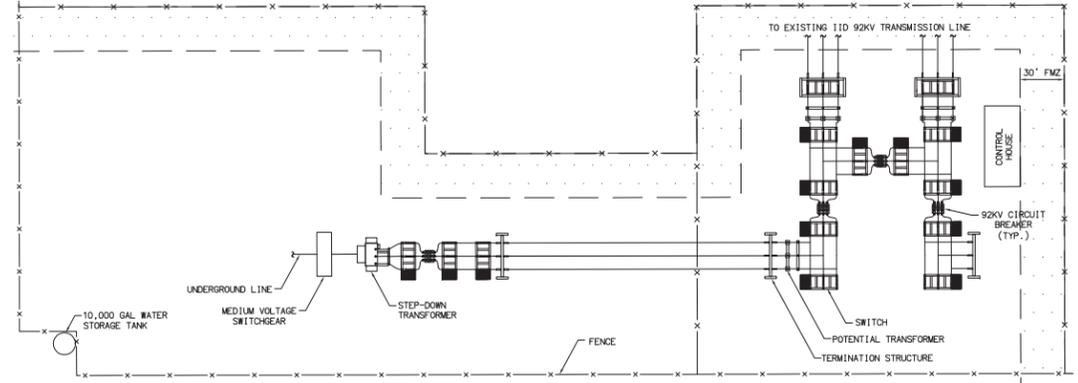


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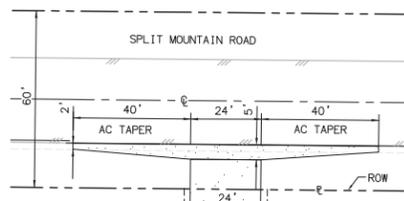




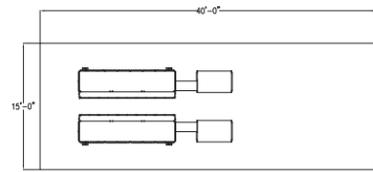
**FUEL MODIFICATION ZONE**  
SCALE: 1"=500'



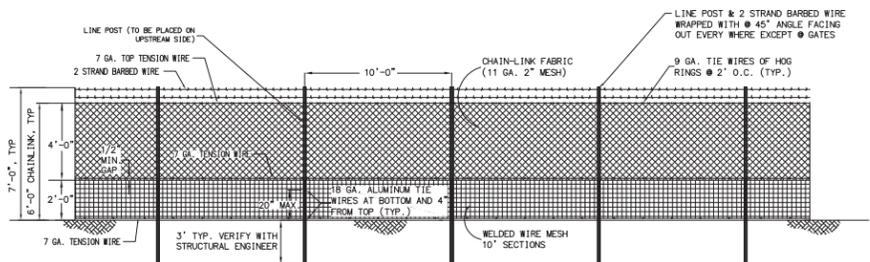
**PRIVATE SWITCHGEAR YARD** N.T.S.  
**IMPERIAL IRRIGATION DISTRICT (IID) SUBSTATION** N.T.S.



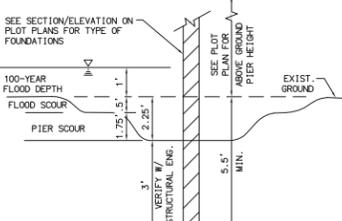
**ROAD INTERSECTION TAPERS**  
N.T.S.



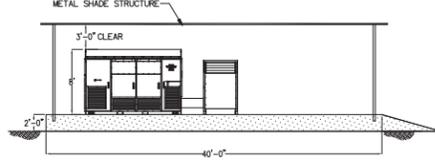
**LAYOUT PLAN EQUIPMENT PAD**  
N.T.S.



**ELEVATION BREAKAWAY FENCING DETAIL**  
N.T.S.

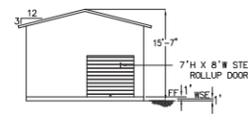


**TYPICAL SECTION PIER FOUNDATION DETAIL**  
N.T.S.

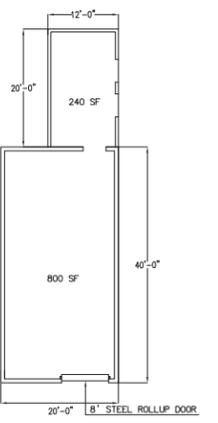


**ELEVATION EQUIPMENT PAD**  
N.T.S.

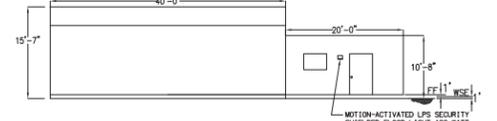
ALL SOLAR PANELS (AT MAXIMUM TILT) AND EQUIPMENT PADS / SUB-STATION SHALL BE ELEVATED SO THAT THE LOWEST HORIZONTAL STRUCTURAL MEMBER/FINISH FLOOR IS AT LEAST ONE FOOT ABOVE THE ANTICIPATED INUNDATION DEPTH ESTABLISHED WITHIN THE HYDROLOGY AND HYDRAULIC BASIS OF DESIGN STUDY.



**SOUTH ELEVATION**  
N.T.S.

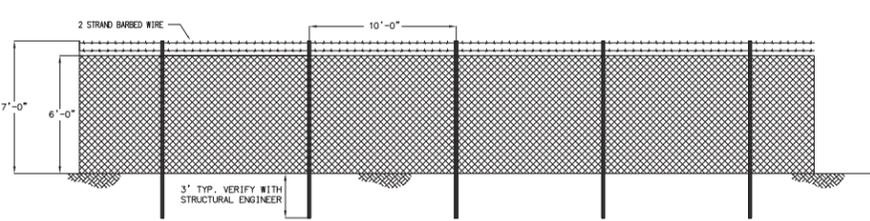


**FLOOR PLAN**  
N.T.S.  
TOTAL=1,040 SF

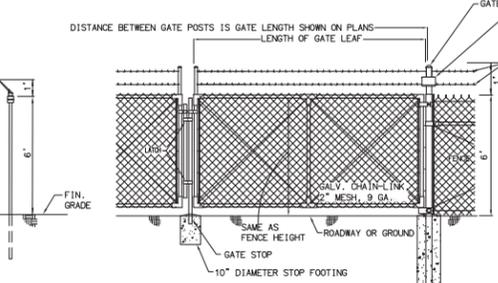


**ELEVATION-OPERATIONS & MAINTENANCE BUILDING**  
N.T.S.

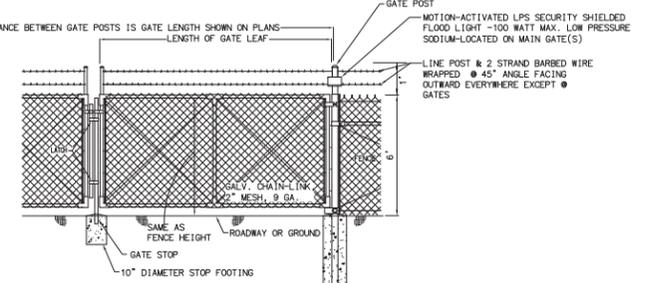
FINISH FLOOR SHALL BE ELEVATED AT LEAST ONE FOOT ABOVE THE ANTICIPATED INUNDATION DEPTH ESTABLISHED WITHIN THE HYDROLOGY AND HYDRAULIC BASIS OF DESIGN STUDY.



**ELEVATION CHAINLINK FENCING**  
N.T.S.



**SECTION TYPICAL FENCE**  
6' CHAIN-LINKED FENCE WITH 2 STRAND BARBED WIRE

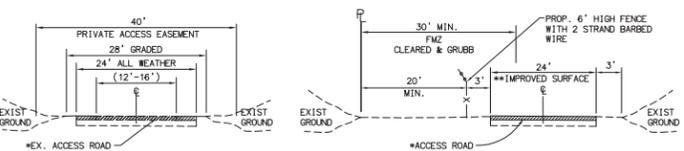


**ELEVATION HALF / DOUBLE DRIVE GATE**  
N.T.S.

**OCOTILLO WELLS SOLAR**  
COUNTY OF SAN DIEGO, CA  
MAJOR USE PERMIT  
3300-12-004 (MUP) 3912-12-001 (ER)

DECEMBER 10, 2013  
SHEET 6 OF 6  
**RBF CONSULTING**

14: Y:\DATA\25104422\OCOTILLO\ANNING\WORK\1442-MUP06-25P.DWG BUTTS, KIMBERLY 12/10/2013 8:56 AM

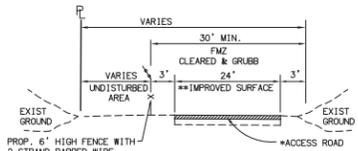


**PRIMARY ACCESS ROAD / EASEMENT**  
NOT TO SCALE

\* ALL WEATHER MIN. 50,000 lbs. FIRE APPARATUS BEARING LOAD WITH BINDING AGENT.

**TYPICAL SECTION  
PERIMETER FIRE ACCESS ROAD  
(ALONG EAST & SOUTH PROPERTY BOUNDARY)**  
NOT TO SCALE

\* ALL WEATHER MIN. 50,000 lbs. FIRE APPARATUS BEARING LOAD WITH BINDING AGENT.  
\*\* TYPICAL LOCATION UNLESS SHOWN OTHERWISE ON SITE PLAN.



**TYPICAL SECTION  
PERIMETER FIRE ACCESS ROAD  
(ADJACENT TO UNDISTURBED AREA)**  
NOT TO SCALE

\* ALL WEATHER MIN. 50,000 lbs. FIRE APPARATUS BEARING LOAD WITH BINDING AGENT.  
\*\* TYPICAL LOCATION UNLESS SHOWN OTHERWISE ON SITE PLAN.

**FIXED AXIS RACK SYSTEM  
IMPERVIOUS SURFACES TABLE**

ITEM DESCRIPTION	#	TOTAL AREA	UNIT
SUBSTATION	1	25,000	SF
SWITCHGEAR YARD	1	40,000	SF
O & M BUILDING	1	1,040	SF
TRANSFORMER/INVERTER PAD (15'x40')	42	25,200	SF
4" DIA. PIER	45,547	0.1	SF
WATER TANK, 10,000 GAL., 12" DIA.	2	800	SF
<b>TOTAL</b>		<b>92,040</b>	<b>SF</b>

TOTAL IMPERVIOUS AREA BEFORE PROJECT: 0.04 AC  
TOTAL IMPERVIOUS AREA AFTER PROJECT: 2.11 AC

**SINGLE AXIS RACK SYSTEM  
IMPERVIOUS SURFACES TABLE**

ITEM DESCRIPTION	#	TOTAL AREA	UNIT
SUBSTATION	1	25,000	SF
SWITCHGEAR YARD	1	40,000	SF
O & M BUILDING	1	1,040	SF
TRANSFORMER/INVERTER PAD (15'x40')	28	16,800	SF
4" DIA. PIER	45,547	0.1	SF
6" DIA. PIER	3600	0.2	SF
WATER TANK, 10,000 GAL., 12" DIA.	2	800	SF
<b>TOTAL</b>		<b>83,640</b>	<b>SF</b>

TOTAL IMPERVIOUS AREA BEFORE PROJECT: 0.04 AC  
TOTAL IMPERVIOUS AREA AFTER PROJECT: 1.92 AC

**DUAL AXIS RACK SYSTEM  
IMPERVIOUS SURFACES TABLE**

ITEM DESCRIPTION	#	TOTAL AREA	UNIT
SUBSTATION	1	25,000	SF
SWITCHGEAR YARD	1	40,000	SF
O & M BUILDING	1	1,040	SF
TRANSFORMER/INVERTER PAD (15'x40')	46	27,600	SF
20" DIA. PIER	12,286	26.763	SF
WATER TANK, 10,000 GAL., 12" DIA.	2	800	SF
<b>TOTAL</b>		<b>121,223</b>	<b>SF</b>

TOTAL IMPERVIOUS AREA BEFORE PROJECT: 0.04 AC  
TOTAL IMPERVIOUS AREA AFTER PROJECT: 2.78 AC

**DUAL AXIS TRACKER UNITS  
IMPERVIOUS SURFACES TABLE**

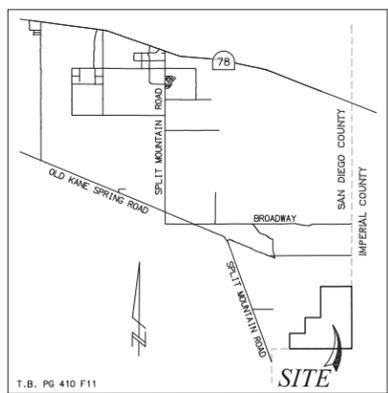
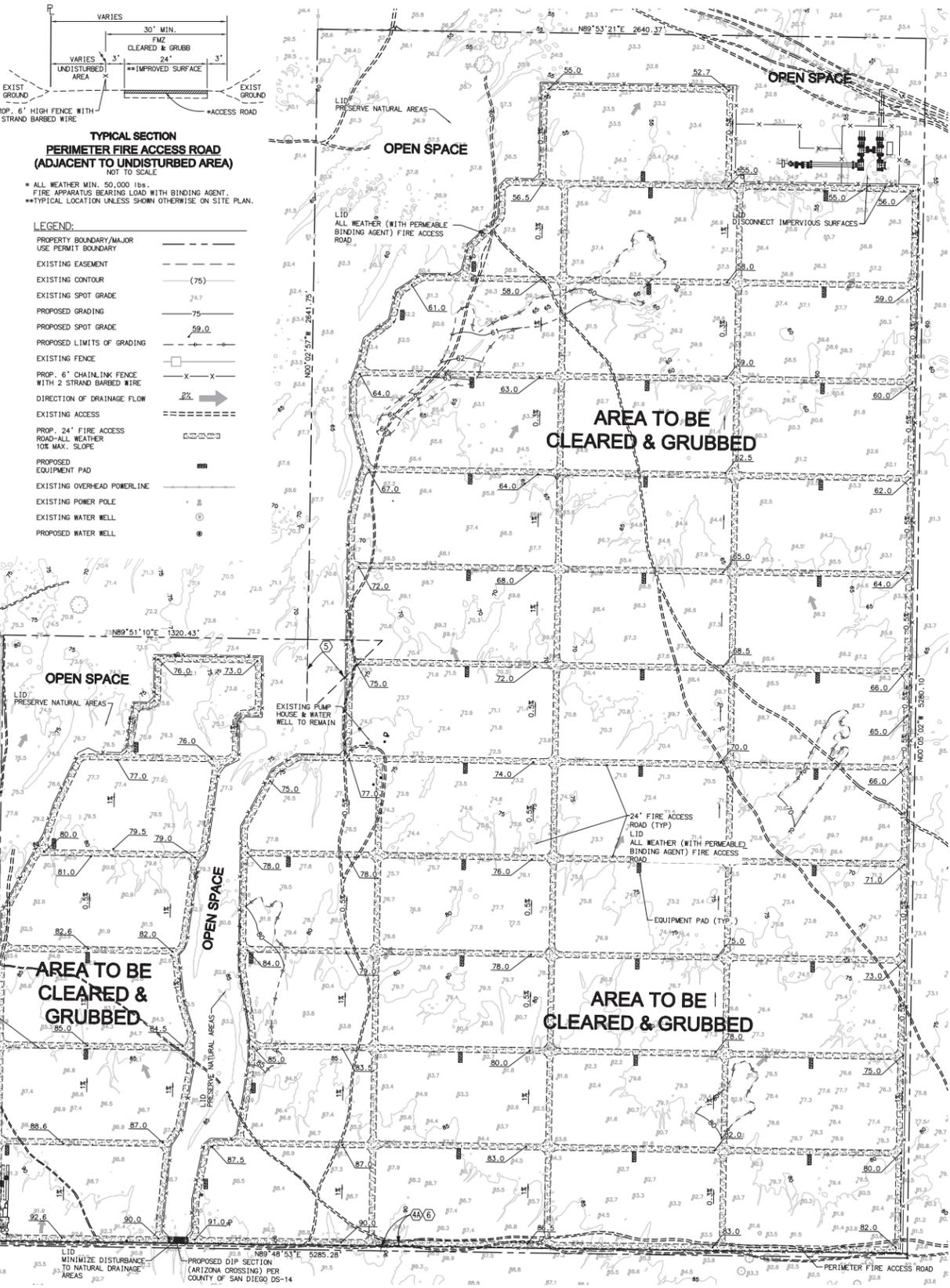
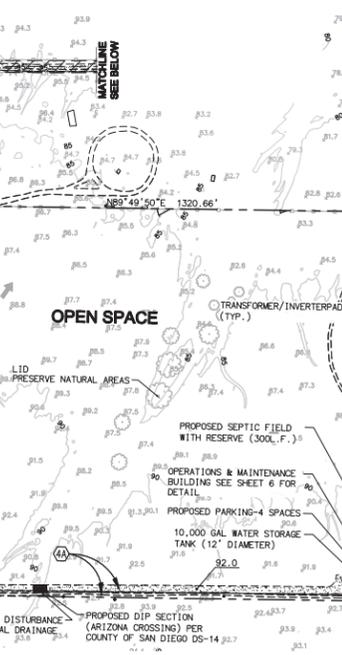
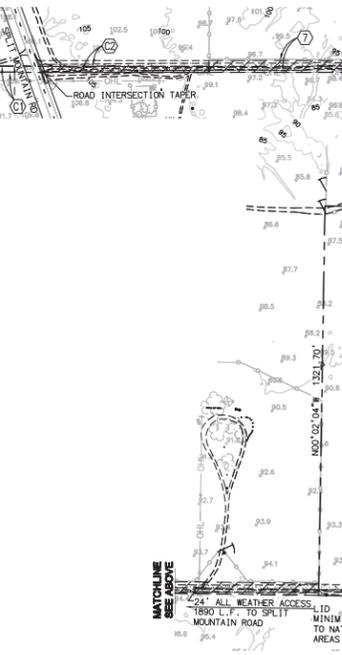
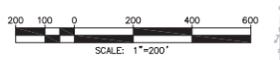
ITEM DESCRIPTION	#	TOTAL AREA	UNIT
SUBSTATION	1	25,000	SF
SWITCHGEAR YARD	1	40,000	SF
O & M BUILDING	1	1,040	SF
TRANSFORMER/INVERTER PAD (15'x40')	40	24,000	SF
24" DIA. PIER	2369	7439	SF
WATER TANK, 10,000 GAL., 12" DIA.	2	800	SF
<b>TOTAL</b>		<b>76,679</b>	<b>SF</b>

TOTAL IMPERVIOUS AREA BEFORE PROJECT: 0.04 AC  
TOTAL IMPERVIOUS AREA AFTER PROJECT: 1.76 AC

- LEGEND:**
- PROPERTY BOUNDARY/MAJOR USE PERMIT BOUNDARY
  - EXISTING EASEMENT
  - EXISTING CONTOUR (7.5)
  - EXISTING SPOT GRADE
  - PROPOSED GRADING
  - PROPOSED SPOT GRADE
  - PROPOSED LIMITS OF GRADING
  - EXISTING FENCE
  - PROP. 6' CHAINLINK FENCE WITH 2 STRAND BARBED WIRE
  - DIRECTION OF DRAINAGE FLOW
  - EXISTING ACCESS
  - PROP. 24" FIRE ACCESS ROAD-ALL WEATHER 10% MAX. SLOPE
  - PROPOSED EQUIPMENT PAD
  - EXISTING OVERHEAD POWERLINE
  - EXISTING POWER POLE
  - EXISTING WATER WELL
  - PROPOSED WATER WELL

**NOTES**

- GROSS AREA: 440.53 ACRES
- DEVELOPMENT AREA: 338.10 ACRES
- TOPOGRAPHIC SOURCE: VERTICAL MAPPINGS, 4/20/2011
- THIS PLAN IS PROVIDED TO ALLOW FOR FULL AND ADEQUATE DISCRETIONARY REVIEW OF A PROPOSED DEVELOPMENT PROJECT. THE PROPERTY OWNER ACKNOWLEDGES THAT ACCEPTANCE OR APPROVAL OF THIS PLAN DOES NOT CONSTITUTE AN APPROVAL TO PERFORM ANY GRADING SHOWN HEREON, AND AGREES TO OBTAIN VALID GRADING PERMITS BEFORE COMMENCING SUCH ACTIVITY.
- PROPOSED SLOPE RATIOS: N/A
- ALL DISTURBED AREAS WILL BE SURFACED WITH GRAVEL OR A BINDING AGENT TO REDUCE DUST.
- AVERAGE SLOPE: 4.1% - NO RPO STEEP SLOPES ON SITE.
- GRADING PLAN APPLIES TO ALL FOUR SOLAR TECHNOLOGY SYSTEM ALTERNATIVES INCLUDED IN THE MAJOR USE PERMIT APPLICATION. GRADING, ROADS AND EQUIPMENT PADS LOCATIONS ARE SHOWN AS TYPICAL.



**EXISTING EASEMENTS PER TITLE REPORT**

DESCRIPTION	DISPOSITION
ACCESS EASEMENT - BOY SCOUTS OF AMERICA	TO REMAIN
ACCESS EASEMENT - GILDED BUILDING CO.	TO OUTCLAIM
20' PRIVATE ACCESS/UTILITY EASEMENT - 2012-0230124	TO REMAIN
40' PRIVATE ACCESS/UTILITY EASEMENT - 2012-0230125	TO REMAIN

BASED ON DATA FROM PRELIMINARY TITLE REPORT BY CHICAGO TITLE COMPANY, ORDER NO. 930021658-USO, DATED NOVEMBER 13, 2013.

**EXISTING EASEMENTS**

DESCRIPTION
20' PUBLIC HIGHWAY EASEMENT
20' PUBLIC HIGHWAY EASEMENT

**RECORDED EASEMENT**

DESCRIPTION
40' PRIVATE ACCESS/UTILITY EASEMENT - 2010-0512253

- SUMMARY OF LID/SITE DESIGN BMPs**
- PRESERVE NATURAL AREAS
  - MINIMIZE DISTURBANCE TO NATURAL DRAINAGE AREAS
  - MINIMIZE & DISCONNECT IMPERVIOUS SURFACES
  - MINIMIZE SOIL COMPACTION
  - UNMANNED FACILITY, PERSONNEL WILL ONLY BE ON SITE IN THE EVENT OF REQUIRED MAINTENANCE ACTIVITIES

- SUMMARY OF SOURCE CONTROL BMPs**
- EQUIPMENT CLEANING (SOLAR PANELS, NOT VEHICLES OR OTHER MECHANICAL EQUIPMENT) WILL BE TERMINATED PRIOR TO CAUSING RUNOFF
  - BINDING AGENT TO ALL ACCESS ROADS AND ON ALL DISTURBED OR EXPOSED SURFACE AREAS

**TOPOGRAPHY AND GRADING**

VOLUME OF CUT: 370,000 CY  
VOLUME OF FILL: 370,000 CY  
EXPORT/IMPORT: 0 CY  
GRADING QUANTITIES SHOWN ARE RAW CUT AND FILL VOLUMES.

MAXIMUM SITE RETAINING WALL HEIGHT: N/A  
OUT SLOPE HEIGHT: N/A  
FILL SLOPE HEIGHT: N/A

TOTAL DISTURBED AREA BEFORE PROJECT: 4.00 AC  
TOTAL DISTURBED AREA AFTER PROJECT: 338.10 AC

**ASSESSOR PARCEL NUMBER**  
253-390-57      253-390-58

**LEGAL DESCRIPTION**  
THE SOUTHWEST QUARTER OF SECTION 36, THE SOUTHWEST QUARTER OF THE SOUTHWEST QUARTER, THE EAST HALF OF THE SOUTHWEST QUARTER AND THE NORTHEAST QUARTER OF SECTION 36, TOWNSHIP 12 SOUTH, RANGE 8 EAST, SAN BERNARDINO MERIDIAN, IN THE COUNTY OF SAN DIEGO, STATE OF CALIFORNIA, ACCORDING TO UNITED STATES GOVERNMENT SURVEY.

**BASIS OF BEARINGS**  
THE BASIS OF BEARINGS FOR THIS SURVEY IS THE CALIFORNIA COORDINATE SYSTEM (NAD83) ZONE 6, BASED LOCALLY UPON THE FOLLOWING CORS STATIONS PH P487, PH P488 & PH USGS AS PUBLISHED BY THE CALIFORNIA SPATIAL REFERENCE CENTER

**BENCHMARK**  
ELEVATIONS AS SHOWN HEREON ARE IN TERMS OF THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88) PER NGS DATA SHEETS DX0333, DX0335, & DX0338 BASED LOCALLY UPON THE FOLLOWING NGS BENCH MARKS. (NGS ELEVATIONS DERIVED FROM USING VERTCON TO CONVERT FROM NAVD83)

BM H 579 = 28.30      DATUM: NAVD88  
BM K 579 = 28.30      DATUM: NAVD88  
BM M 579 = 28.30      DATUM: NAVD88

**OWNER/APPLICANT**  
GILDED BUILDING COMPANY  
650 WEST C STREET, SUITE 1820  
SAN DIEGO, CA 92101  
(619) 683-5544  
CONTACT: RICH GEISLER

**OCOTILLO WELLS SOLAR**  
COUNTY OF SAN DIEGO, CA  
**PRELIMINARY GRADING PLAN**  
3300-12-004 (MUP) 3912-12-001 (ER)

DECEMBER 10, 2013  
SHEET 1 OF 1

**RBF CONSULTING**





**COUNTY OF SAN DIEGO  
DEPARTMENT OF PLANNING AND LAND USE: Zoning  
PROJECT FACILITY AVAILABILITY FORM, Fire**

*Please type or use pen*

Gilded Building Co 619-232-6361  
 Owner's Name Phone  
 550 W C St. #1820  
 Owner's Mailing Address Street  
 San Diego CA 92101  
 City State Zip

ORG \_\_\_\_\_  
 ACCT \_\_\_\_\_  
 ACT \_\_\_\_\_  
 TASK \_\_\_\_\_  
 DATE \_\_\_\_\_ AMT \$ \_\_\_\_\_

**F**

DISTRICT CASHIER'S USE ONLY

**SECTION 1. PROJECT DESCRIPTION**

**TO BE COMPLETED BY APPLICANT**

- A.  Major Subdivision (TM)  Specific Plan or Specific Plan Amendment  
 Minor Subdivision (TPM)  Certificate of Compliance: \_\_\_\_\_  
 Boundary Adjustment  
 Rezone (Reclassification) from \_\_\_\_\_ to \_\_\_\_\_ zone.  
 Major Use Permit (MUP), purpose: Solar Development  
 Time Extension... Case No. \_\_\_\_\_  
 Expired Map... Case No. \_\_\_\_\_  
 Other \_\_\_\_\_
- B.  Residential ..... Total number of dwelling units \_\_\_\_\_  
 Commercial ..... Gross floor area \_\_\_\_\_  
 Industrial ..... Gross floor area 1,000  
 Other ..... Gross floor area \_\_\_\_\_
- C. Total Project acreage \_\_\_\_\_ Total lots \_\_\_\_\_ Smallest proposed lot \_\_\_\_\_

Assessor's Parcel Number(s)  
 (Add extra if necessary)

253-390-57	
253-390-58	

Thomas Bros. Page 411 Grid F-11  
 Lower Ocotillo Valley  
 Project address Street  
 n/a  
 Community Planning Area/Subregion Zip

OWNER/APPLICANT AGREES TO COMPLETE ALL CONDITIONS REQUIRED BY THE DISTRICT.

Applicant's Signature: Richard Arslan Date: 3/30/12  
 Address: 1660 Hotel Cr N. #225 SD CA 92108 Phone: 619-683-5574  
 (On completion of above, present to the district that provides fire protection to complete Section 2 and 3 below.)

**SECTION 2: FACILITY AVAILABILITY**

**TO BE COMPLETED BY DISTRICT**

- District name San Diego County Fire Authority  
 Indicate the location and distance of the primary fire station that will serve the proposed project: Ocotillo Wells FS, 5841 Highway 78, 6.75 miles
- A.  Project is in the District and eligible for service.  
 Project is not in the District but is within its Sphere of Influence boundary, owner must apply for annexation.  
 Project is not in the District and not within its Sphere of Influence boundary.  
 Project is not located entirely within the District and a potential boundary issue exists with the \_\_\_\_\_ District.
- B.  Based on the capacity and capability of the District's existing and planned facilities, fire protection facilities are currently adequate or will be adequate to serve the proposed project. The expected emergency travel time to the proposed project is 15.6 minutes.  
 Fire protection facilities are not expected to be adequate to serve the proposed development within the next five years.
- C.  District conditions are attached. Number of sheets attached: 3  
 District will submit conditions at a later date.

**SECTION 3. FUELBREAK REQUIREMENTS**

**Note: The fuelbreak requirements prescribed by the fire district for the proposed project do not authorize any clearing prior to project approval by the Department of Planning and Land Use.**

- Within the proposed project 30+ feet of clearing will be required around all structures.  
 The proposed project is located in a hazardous wildland fire area, and additional fuelbreak requirements may apply. Environmental mitigation requirements should be coordinated with the fire district to ensure that these requirements will not pose fire hazards.

This Project Facility Availability Form is valid until final discretionary action is taken pursuant to the application for the proposed project or until it is withdrawn, unless a shorter expiration date is otherwise noted.

[Signature] JAMES PINE, FIRE MARSHAL 858-495-5434 4/16/12  
 Authorized signature Print name and title Phone Date

On completion of Section 2 and 3 by the District, applicant is to submit this form with application to:  
 Zoning Counter, Department of Planning and Land Use, 5201 Ruffin Road, Suite B, San Diego, CA 92123



DPLU-399F (12/09)



# County of San Diego

HERMAN REDDICK  
PROGRAM MANAGER  
(858) 974-5813  
FAX (858) 974-5928

PUBLIC SAFETY GROUP  
SAN DIEGO COUNTY FIRE AUTHORITY  
8525 Gibbs Drive, Suite 201, San Diego, CA 92123

KEN MILLER & RALPH STEINHOFF  
FIRE SERVICES COORDINATOR  
(858) 974-5920  
FAX (858) 974-5928

April 16, 2012

County of San Diego  
Department of Planning and Land Use  
5201 Ruffin Road, Suite B  
San Diego, CA 92123

Attn: Mark Slovick, Project Planner

RE: **MPA11-003 Gildred Borrego Solar MUP**  
San Diego County Fire Authority  
APN: 253-390-57,58  
**Project Conditions**

Please accept the following conditions regarding fire protection for the above project:

## **IMPACT TO EMERGENCY SERVICES**

This project, along with all other development, has a cumulative impact on the emergency services for this community. To mitigate for this impact, the project will be conditioned to participate in the Community Facilities District currently being created by the SDCFA.

## **FIRE PROTECTION PLAN**

A Fire Protection Plan—Letter Report shall be provided and be formatted per the County of San Diego Guidelines for Determining Significance and Report Format and Content Requirements—Wildland Fire and Fire Protection. The report should include discussion of how the project will comply with section 605.11.4 of the County Fire Code. For your reference, section 605.11.4 is provided below.

***Sec. 605.11.4 Ground-mounted photovoltaic arrays.*** *Ground-mounted photovoltaic array installations shall meet the requirements of sections 605.11.4.1 through 605.11.4.4.*

***Sec. 605.11.4.1 Fire apparatus access roads.*** *Fire apparatus access roads to ground-mounted photovoltaic arrays, associated equipment structures and operations/maintenance buildings shall comply with section 503.*

**Exception:** Private residential and agricultural systems less than 10 acres in size and where the energy generated is primarily for on-site use are exempt from this requirement.

**Sec. 605.11.4.1.1 Perimeter fire apparatus access roadway.** Ground-mounted photovoltaic arrays 10 acres or larger in size shall provide a fire apparatus access roadway around the perimeter of the project. The perimeter fire apparatus access roadway shall comply with section 503.

**Sec. 605.11.4.2 Fuel modification.** Combustible vegetation within the array and to a distance of 30 feet from the array and associated equipment shall be reduced to a height of no more than 6 inches. The fuel modification zone may be increased when required by the fire code official or as recommend by a fire protection plan.

**Exception:** For private residential and agricultural systems less than 10 acres in size and where the energy generated is used primarily on-site, the required fuel modification zone may be reduced to 10 feet from the array and associated equipment.

Operation/maintenance buildings shall be provided with fuel modification zones that comply with section 4907.2.

**Sec. 605.11.4.3 Water supply.** Water supply for fire protection and suppression shall be provided for equipment structures and operations/maintenance buildings as required by section 507.

**Exception:** Equipment shelters used solely for the equipment associated with the array when the exterior walls and roof assemblies are constructed with non-combustible materials.

**Sec. 605.11.4.4 Identification.** Ground-mounted photovoltaic arrays with multiple equipment structures shall include a means of readily identifying each equipment structure. The fire code official may require a lighted directory map of the project to be installed on-site near the entrance to the facility for projects of 10 or more acres in size.

## **TECHNICAL REPORT**

As an appendix to the fire protection plan, a detailed technical report prepared by a qualified engineer, specialist, or fire safety specialty organization needs to be submitted for the proposed project. The technical report needs to address—but is not limited to—the following items:

- Hazards of the proposed facilities to emergency responders.
- Discussion on how to properly de-energize equipment.
- Signage recommendations (provide figures for each):
  - At each disconnecting means depicting what equipment it de-energizes.

- Each inverter structure is to be numbered and signed (To be visible from at least 1,000 feet)
- Lighted directory at the main entrances depicting the overall site plan and the locations of each numbered inverter structure (show location on plot plan).
- Recommended training for emergency personnel. Training will be provided prior to commissioning and on an as requested basis.
- Provide information on the unique hazards of concentrated photovoltaic systems.

Please call or email me if you have any questions or need clarification – (858) 495-5434 or [James.Pine@sdcounty.ca.gov](mailto:James.Pine@sdcounty.ca.gov).

Best regards,



James Pine, Fire Marshal  
San Diego County Fire Authority  
Public Safety Group

# APPENDIX A:

## WILDFIRE TECHNICAL REPORT

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## 1 INTRODUCTION

This Fire Protection Plan (FPP) identifies and prioritizes the measures necessary to adequately mitigate potential fire hazards associated with photovoltaic (PV) or concentrated photovoltaic (CPV) solar farms. It considers the property location, topography, geology, flammable vegetation (fuel types), and climatic conditions. It also considers the water supply, fire access roads, setbacks from the property lines, structure ignitability and fire resistive building materials, fire protection systems, defensible space, and vegetation management.

The Ocotillo Wells Solar Farm Project proposes the use of either PV or CPV technology for the production of solar energy. The FPP - Technical Report has been prepared to identify pre-suppression actions that would reduce risk directly associated with the proposed PV or CPV Solar Farm, actions that would protect and enhance fire suppression resources, and actions that could protect the Solar Farm from ignition caused by other sources.

In addition to the historical challenges that firefighters are faced with when arriving onto a fire scene, solar systems introduce new hazards including electrical shock both during and post fire incident, as well as concerns associated with the inhalation of unusual materials. These new hazards have resulted in firefighters having to adapt to new firefighting procedures, strategies, and tactics.

This report outlines the potential hazards associated with the systems, strategies, and tactics, and provides an overall incident plan for use by emergency responders. In addition, as recommended by the California Department of Forestry and Fire Protection (CAL FIRE), this report provides a basic framework advancing the knowledge and understanding for the emergency responders of the hazards and related implementation measures for Solar Farm fire potential.

### A. SOLAR FARM'S EFFECT ON FIRE RISK

The installation, operation, and maintenance of a PV or CPV Solar Farm may include activities that could elevate the probability of ignition. Typical fire risk associated with electricity generating projects and Solar Farms include the following:

1. Transmission lines contacting vegetation that could cause an ignition.
2. Maintenance equipment and activities associated with the system or vegetation clearing along the lines that could cause an ignition.
3. Vehicles used by the Solar Farm operations that could cause an ignition (catalytic converter, faulty brakes, etc.).

4. Components of the system malfunctioning which could create an ignition.

## B. HAZARDS TO EMERGENCY RESPONDERS

This report has been prepared to identify the specific hazards to emergency responders and firefighters as related to the installation, operation, and maintenance of a PV or CPV Solar Farm. These hazards include the following:

1. Contact with the system components (including any conduit or components between the modules and disconnect/isolation switches).
2. During daylight hours, the panels in such a solar system are always producing energy, or are energized.
3. Incidences involving Solar Farms are unique in that components may remain energized within the system components even after all power has been de-energized.
4. Depending on the level of damage to the system, the connection to “ground” may have been lost.
5. Electrical conductive tools create a hazard of electrical shock as the system may still be energized.
6. Burning PV or CPV solar modules produce toxic vapors.
7. The inverters and combiner boxes are in the inverter structures and present very hazardous conditions for emergency responders. The inverters convert the Direct Current (DC) produced by the solar units into Alternating Current (AC), which would then be transferred from the inverters via underground gathering lines to a pole. The power would then be transferred via overhead lines to the point of interconnect. Depending on the design and manufacturer, these components could be located at various locations on the inverter structure.
8. Inadequate signage for locating the inverters or other controls.

## C. PROTECTION OF THE PROJECT SITE FROM OFF-SITE WILDLAND FIRE EXPOSURE

If a Solar Farm is in a very high fire hazard severity zone, the project would need to be designed with fuel modification zones (FMZs), fire breaks, and/or separation from vegetation. Implementation of these design measures would reduce the risk of exposure from wildland fires. In addition, vegetation within the solar array area should be

maintained at a height of six inches or less. Lastly, setbacks should be designed to further reduce the potential from offsite wildland fire exposure.

## 2. FIRE OPERATIONS AND TACTICS FOR SOLAR SYSTEMS

Following a size-up (visual assessment of site conditions) of a fire incident, the choice of a strategic mode should be made by the Incident Commander (IC) following normal fire department standard operating procedures (SOPs). The tactics used to implement the strategy should also be based upon normal SOPs for responding to an emergency incident for a Solar Farm.

### A. STRATEGY

When a fire incident occurs in the vicinity of or within the boundaries of a Solar Farm, CAL FIRE requires that the following items be considered when developing a strategy:

1. Fire conditions found on arrival
2. Whether the Solar Farm itself is burning or fire is confined to the surrounding vegetation
3. Threatened exposures including wildland areas
4. Water and additional resources available

Once the IC has completed a size-up, he/she should determine the strategy and assign tasks to the fire suppression resources assigned to the incident. Due to the hazards associated with Solar Farms, the IC must adjust the strategy and potentially rearrange the order of the tactics to deal with the specific solar technology. If the IC chooses an offensive strategy, it needs to be supported as any other fire operation, with an emphasis on disabling all power sources to and from the Solar Farm.<sup>1</sup>

### B. TACTICS

With the increase in fire emergency responders to solar system emergencies, firefighters need to understand the hazards and related factors necessary for fire operations involving PV or CPV solar sites. CAL FIRE encourages all emergency responders are trained for the following:

- Ability to recognize solar systems

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<sup>1</sup> Fire Operations for Photovoltaic Emergencies. CAL FIRE—Office of the State Fire Marshal. November 2010

- Ability to identify system locations
- Ability to identify hazards with solar systems
- Ability to perform size-up
- Have knowledge of strategies and tactics

Operating at incidents where solar systems are present may require firefighters to adjust their actions somewhat; however, these adjustments should be similar to those that are necessary with many other types of electrical equipment or power generating sources.

The primary danger to firefighters working around a solar system is electrical shock. Following are the hazards and recommendations for firefighting tactics for a fire incident at a Solar Farm site.

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#### FIREFIGHTER ELECTRICAL SAFETY – INCIDENT PLAN

##### “Components are always hot!”

The single most critical message of emergency response personnel is to always consider PV and CPV Solar Farms and all their components as electrically energized. The inability to power-down solar panels exposed to sunlight makes this an obvious hazard during the daytime.<sup>2</sup>

All hazards should be appropriately marked or barricaded.

##### Ingress and Egress

Long-term primary access will be provided from Split Mountain Road via a 24-foot wide all-weather road over a 40-foot wide access/utility easement extending eastward to the southwestern corner of the site. Interior access will be provided by a series of looped 24-foot wide fire access roads and/or fire access and perimeter loop roads (depending on the type of solar system selected), in accordance with County of San Diego Fire Standards, that will be maintained to provide a fire buffer as well as to facilitate onsite circulation for emergency vehicles. The interior access roads will be designed and maintained to support the imposed loads of fire service apparatus (not less than 50,000 lbs) and will have an approved surface so as to provide all-weather driving capabilities. The interior fire access roads will be constructed to facilitate a maximum fire hose pull of approximately 160 feet. In addition, east/west running fire access roads are proposed for connectivity and

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<sup>2</sup> Fire Fighter Safety and Emergency Response for Solar Power Solar Farms. A DHS/Assistance to Firefighter Grants (AFG) Funded Study. Prepared by: Casey C. Grant, P.E. Fire Protection Research Foundation. The Fire Protection Research Foundation One Batterymarch Park Quincy, MA, USA 02169-7471. May 2010.

circulation. Signage will be installed at the end of each fire access road onsite to identify those roadways intended for use by emergency vehicles. No dead-end roadways are proposed.

A secured gate would be provided off of the main access drive from Split Mountain Road. The gate would meet San Diego County Fire Code Section 96.1.503.6 requirements for automatic operation with battery back-up. The gate would open immediately upon emergency vehicle strobe light activation from either direction of approach and would include a Knox-box key-operation.

### Avoid Hazards

During the overall fire suppression and mop-up phases of an onsite fire, firefighters should avoid all potential electrical hazards until there is confirmation that the Solar Farm no longer poses an electric shock hazard. Firefighters must avoid inadvertently damaging solar components with their tools.<sup>3</sup>

### Provide Ability for Electrical Solar Farm Isolation for Emergency Responders

A key task by emergency response personnel is the isolation or shutdown of electrical power. This is especially important for this commercial PV or CPV Solar Farm which would generate high levels of electricity and poses significant fire-fighting challenges. The inverters and DC combiner boxes are contained within the inverter structures. The solar arrays will be arranged in blocks with disconnects for each block of solar arrays located at the inverter structures. Though the utilization of the disconnect will disrupt all AC power leaving the inverter structure, the solar arrays and all DC power lines will still be energized during the daytime. If a fire or emergency action is isolated to one block of inverter structures, this would not require de-energizing the entire Solar Farm. It is important, however, to have a disconnect to quickly de-energize the entire Solar Farm in the event that a fire or emergency action involves multiply panels/arrays within the Solar Farm site. There will be a disconnect located at the main service panel to the project site. There will also be a disconnect for any other power source(s) that may be connected to the Solar Farm. Additionally, a switch will be installed inside of the entrance gate to the site to allow authorized Project personnel and emergency service providers to automatically place the solar panels in a stow position in the event of an emergency or high winds (applicable only to the Dual-Axis Tracker System and the Dual-Axis Tracker Units design alternatives, which allow for panel rotation).

Damaged solar panels/arrays should never be touched without verifying whether or not the solar panels/arrays are energized. Firefighters should never cut the wiring in a Solar Farm. Specialized tools may be required for disconnecting the module wiring. Firefighters

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<sup>3</sup> Fire Operations for Photovoltaic Emergencies. CAL FIRE—Office of the State Fire Marshal. November 2010

should consider controlling fires within Solar Farms rather than removal, due to the inherent electrical hazard. Solar modules, support structures, tracking assemblies, and conduit should not be disassembled, damaged or removed by firefighters until all of the Solar Farm's components are isolated or de-energized by a qualified technician or electrician. The phone number of a responsible entity who can dispatch a local technician in a timely manner should be displayed on the lighted directory at the entrance and on each inverter structure. Firefighters should limit their activities to containment of the fire until it can be confirmed that the Solar Farm is isolated or de-energized.

In extraordinary circumstances, where all other tactics or options have been exhausted, solar panels must be removed. Care should be taken to use non-conductive tools since the modules and frames may still be energized. Damaged solar components should not be touched without verifying whether or not the Solar Farm is energized. Specialized tools may be required to disconnect wiring. Firefighters should consider containing fires within Solar Farms rather than removal due to the inherent hazard and limited electrical safety training afforded to firefighters.

### Isolation of Inverters

Isolation of the inverters and disconnecting the Solar Farm from the main electrical panel will be an important task. It is recommended that assistance from a local solar technician be utilized to disable and confirm that all the hazards have been mitigated.

At any incident where a Solar Farm is present, the IC should designate a "Utilities Group" early to aid in locating and disabling inverter structures and Solar Farm components. This can greatly decrease the electric shock hazard to all crews operating on the fire ground. Firefighters must remember that all solar components must be considered "HOT" during daylight. Additionally, in this commercial Solar Farm, there are likely to be several arrays. Firefighters must be aware that if only a single array is isolated, all of the other arrays will most likely remain energized. Care must be exercised when operating the other energized arrays.

An emergency response plan identifying all tasks and the parties responsible for providing the electrical isolation for emergency responders is recommended.

### Isolating the Fire

Another priority will be preventing further extension of a fire and isolating it to its area of origin. If the Solar Farm itself is on fire, it must be assumed to be "hot" during daylight. Fire suppression crews should avoid physical contact with Solar Farm components until it can be confirmed by a qualified solar technician or electrician that all power sources have been isolated. It may take time for the technician to respond and locate all of the Solar Farm controls.

## Extinguishing Fires

CALFIRE recommends that dry chemical extinguishers should be used to contain or extinguish electrical fires. Water should be used to extinguish any ordinary combustibles under or near the Solar Farm, or if the volume of fire requires its use. If water is used, a 30° fog pattern from at least a 30-foot distance, at 100 pounds per square inch (psi) is recommended. Full PPE must be used due to the potential toxic inhalation hazard if panels are burning. Fire crews should position themselves upwind and out of any toxic atmosphere.<sup>4</sup>

Construction of the proposed operations and maintenance building and the control house (located adjacent to the substation) would include installation of an interior fire suppression system (fire sprinkler system for the operations and maintenance building and a clean agent system for the control room). Installation would occur consistent with applicable National Fire Protection Association (NFPA) Code No. 13 standards (Standard for the Installation of Sprinkler Systems). Incident Termination

CALFIRE also recommends that the IC request the assistance from local solar technician to assist with disabling the Solar Farm and confirmation that all of the hazards have been mitigated before the incident is terminated and the scene is turned over to the owner or responsible party.

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### TRIP, SLIP OR FALL HAZARDS

Solar systems are comprised of metal, glass, conduit and cable, all of which are slippery when wet. As previously noted, firefighters should avoid contact with solar system components. In addition, firefighters should use caution if using narrow maintenance access ways for a fire incident onsite.

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### FIREFIGHTER INHALATION HAZARDS

The inhalation hazards from the chemicals inherent in solar modules engulfed in a fire or explosion can be mitigated through the use of firefighters wearing Self Contained Breathing Apparatus (SCBA's) and personal protective equipment during firefighting and overhaul operations. It is the decision of the IC whether or not the emergency constitutes sheltering the population "in-place" downwind of the emergency. Fire or explosion emergencies involving large number of solar arrays, as in this commercial application, may necessitate evacuating downwind of the emergency.<sup>5</sup>

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<sup>4</sup> Fire Operations for Photovoltaic Emergencies. CAL FIRE—Office of the State Fire Marshal. November 2010

<sup>5</sup> Ibid

## BATTERY HAZARDS

In some PV and CPV solar systems, batteries are used to store solar-generated electricity. Batteries are used most frequently in off-grid PV or CPV solar systems, although batteries are also used in grid-tied applications to have electricity available in the event of a power failure.<sup>6</sup>

However, this PV or CPV Solar Farm as proposed does not include the use of batteries for electricity storage. The Dual-Axis Tracker System and the Dual-Axis Tracker Units would also require installation of six 125kW emergency generators, located on a 12-foot by 20-foot concrete pad within the interior of the development area, to enable the solar panels to be rotated to the stow position in the event that power from the local utility is lost or when high winds occur.

Solar modules themselves have no storage capacity. Inverters have capacitors which do store energy; however, the energy within the capacitors is discharged soon after power to the inverters is disconnected.<sup>7</sup>

## 3. SUMMARY

CALFIRE recommends that the first line at attack in a fire incident, in which a PV or CPV solar system is involved, is ensuring that the firefighters on scene are trained in identifying such systems and the methods to control them. In addition, CAL FIRE stresses that they must know how to adjust their assessment of the incident involving solar components to ensure appropriate actions are applied to the incident. In any incident, the desired outcome is to always mitigate and/or control the situation in a safe and efficient manner.<sup>8</sup>

The strategy and tactics firefighters choose are critical to both the outcome and the safety of all members working on the scene. CAL FIRE indicates that the basics for ensuring safe, controlled, and mitigated incidents involving PV or CPV solar sites are as follows:

- Always wear protective clothing and SCBA
- Avoid wearing jewelry
- Use hand tools with insulated handles
- Locate battery storage area (if applicable)

<sup>6</sup> Fire Operations for Photovoltaic Emergencies. CAL FIRE—Office of the State Fire Marshal. November 2010

<sup>7</sup> Ibid

<sup>8</sup> Ibid

- Be aware that biting and stinging insects could inhabit the module frame and electrical junction boxes
- Lock out/tag out system disconnects should be located and disconnected
- It is recommended that minimally, the fire emergency responders attend training entitled, "Fire Operations for Photovoltaic Emergencies," CALFIRE-Office of the State Fire Marshal, November 2010. The Fire Service Training and Education Program (FSTEP), provides this specific training need to local fire agencies in California.
- The project site must be signed to accurately identify and locate locations and hazards on the project site. Recommended signage requirements are as follows:
  - The phone number of a responsible entity who can dispatch a local technician in a timely manner should be displayed on the lighted directory at the entrance and on each inverter structure.
  - Signs to be placed at each disconnecting point and what equipment it de-energizes.
  - Each inverter structure will be numbered with a sign that is plainly visible with numbers that contrast with their background and is to the satisfaction of the Fire Authority.
  - A lighted directory located at the entrance to the site (from the access drive off of Split Mountain Road) depicting the overall site plan and the locations of each numbered inverter structure (also must be shown on the plot plan) for the site.
  - Signage will be installed at the end of each fire access road onsite to identify those roadways intended for use by emergency vehicles.
- The solar arrays will be arranged in blocks with disconnects for each block of solar arrays located at the inverter structures. Though the utilization of the disconnect will disrupt all AC power leaving the inverter structure, the solar arrays and all DC power lines will still be energized during the daytime.
- A switch will be installed inside of the entrance gate to the site to allow authorized Project personnel and emergency service providers to automatically place the solar panels in a stow position in the event of an emergency or high winds (applicable only to the Dual-Axis Tracker System and the Dual-Axis Tracker Units design)

alternatives, which allow for panel rotation). The minimum vertical clearance of 13'-6" shall be maintained when the panels are in the stow position.

The tactical approach to a fire incident near or within a Solar Farm site must be stressed with all fire suppression personnel (i.e., stay clear). Serious injury can occur with PV or CPV Solar Farms on a sunny day, and the danger to fire service personnel is real.<sup>9</sup>

At the conclusion of an incident, emergency personnel should leave the property in the safest condition possible. A post-incident focused size-up and safety analysis should be conducted.

## REFERENCES

Fire Operations for Photovoltaic Emergencies. CAL FIRE—Office of the State Fire Marshal. November 2010

Fire Fighter Safety and Emergency Response for Solar Power Solar Farms. A DHS/Assistance to Firefighter Grants (AFG) Funded Study. Prepared by: Casey C. Grant, P.E. Fire Protection Research Foundation. The Fire Protection Research Foundation One Batterymarch Park Quincy, MA, USA 02169-7471. May 2010

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<sup>9</sup> Fire Fighter Safety and Emergency Response for Solar Power Solar Farms. A DHS/Assistance to Firefighter Grants (AFG) Funded Study. Prepared by: Casey C. Grant, P.E. Fire Protection Research Foundation. The Fire Protection Research Foundation One Batterymarch Park Quincy, MA, USA 02169-7471. May 2010