DR-ALT-33

Information Required:

In order to facilitate preparation of the SA/DEIS document and allow further analysis of the project site with alternative sites, please provide the precise locations of the four alternative sites (Township/Range/Section and/or parcel numbers) and GIS data if available.

Response:

The alternative sites are located in the following sections. Township and range are abbreviated as T and R respectively. North, South, East and West are abbreviated N, S, E and W respectively. All descriptions are relative to the San Bernardino Baseline and Meridian.

Cibola:	T 8 S, R 21 E, Sections 15, 16, 20, 21, 22, 23, 26, 27, 28, 29, 33, 34, 35
Palen Pass:	T 2 S, R 17 E, Sections 20, 21, 28, 29, 3031, 32, 33
	T 3 S, R 16 E, Sections 1, 11, 12, 13, 14, 23, 24
	T 3 S, R 17 E, Section 4, 5, 6, 7, 8, 18, 19
Desert Center:	T 4 S, R 15 E, Sections 21 33, 34, 35
	T 5 S, R 15 E, Sections 3, 4, 5, 6, 7, 8, 9, 10, 15, 16, 17, 18, 19, 20, 21, 22
Palo Verde Mesa	T 7 S, R 21 E, Sections 1 2, 11, 14, 15, 22, 23

DR-ALT-34

Information Required:

Please identify the size (total acreage) and dimensions of each alternative site.

Response:

All four of the alternative sites are irregularly shaped. Approximate total acreages of the sites (rounded to the nearest hundred acres) are as follows:

- Cibola 6,700 acres
- Palen Pass 4,100 acres
- Desert Center 10,900 acres
- Palo Verde Mesa 3,800 acres

DR-ALT-35

Information Required:

For private property sites, please indicate the number of individual landowners comprising ownership of the alternative site, the assessor's parcel numbers, and the acreage of each separate parcel and landowner.

Response:

The Palen Pass alternative site is entirely on public lands administered by the Bureau of Land Management (BLM).

The Cibola alternative site is situated on land owned by two separate landowners. Twenty-eight parcels are owned by the Metropolitan Water District of Southern California and one parcel is owned by the US Government. The following table (Table DR-ALT-35-1) identifies the assessor's parcel number, acreage, and landowner address of each separate parcel. The publicly available data from the Riverside County Assessor does not provide landowner names, only addresses. It is assumed that each separate address represents a separate landowner.

Table DR-ALT-35-1 Parcel Information Cibola Alternative Site

APN	Acres	Landowner Address
879230001	161.2992006	P.O. Box 54153, Los Angeles, CA 90054
879230003	162.5420479	P.O. Box 54153, Los Angeles, CA 90054
879230005	81.32716282	P.O. Box 54153, Los Angeles, CA 90054
879230008	40.68631492	P.O. Box 54153, Los Angeles, CA 90054
879230010	20.24720609	P.O. Box 54153, Los Angeles, CA 90054
879230011	20.60765626	P.O. Box 54153, Los Angeles, CA 90054
879230012	10.02423842	P.O. Box 54153, Los Angeles, CA 90054
879230013	5.022640217	P.O. Box 54153, Los Angeles, CA 90054
879230014	5.058877186	P.O. Box 54153, Los Angeles, CA 90054
879230015	30.50637904	P.O. Box 54153, Los Angeles, CA 90054
879230016	10.19510804	P.O. Box 54153, Los Angeles, CA 90054
879230017	39.93407189	P.O. Box 54153, Los Angeles, CA 90054
879230018	222.3670087	P.O. Box 54153, Los Angeles, CA 90054
879230023	646.7260771	P.O. Box 54153, Los Angeles, CA 90054
879230024	324.1067005	P.O. Box 54153, Los Angeles, CA 90054
879240001	40.34044988	P.O. Box 54153, Los Angeles, CA 90054
879240002	40.32463001	P.O. Box 54153, Los Angeles, CA 90054

Table DR-ALT-35-1 Parcel Information Cibola Alternative Site

APN	Acres	Landowner Address
879240037	649.5514241	P.O. Box 54153, Los Angeles, CA 90054
879240038	408.7656738	P.O. Box 54153, Los Angeles, CA 90054
879250001	162.8178485	P.O. Box 54153, Los Angeles, CA 90054
879250002	484.1950376	P.O. Box 54153, Los Angeles, CA 90054
879250003	1.012407541	US Dept of the Interior, Washington, DC 21401
879250008	650.2558394	P.O. Box 54153, Los Angeles, CA 90054
879250011	161.565108	P.O. Box 54153, Los Angeles, CA 90054
879250013	161.3051289	P.O. Box 54153, Los Angeles, CA 90054
879261019	650.5731154	P.O. Box 54153, Los Angeles, CA 90054
879261020	491.0928921	P.O. Box 54153, Los Angeles, CA 90054
879261021	653.6303881	P.O. Box 54153, Los Angeles, CA 90054
879261022	406.1841269	P.O. Box 54153, Los Angeles, CA 90054

The Desert Center alternative site is situated on 103 separate parcels owned by approximately 53 landowners. The following table (Table DR-ALT-35-2) identifies the assessor's parcel number, acreage, and landowner address of each separate parcel. The publicly available data from the Riverside County Assessor does not provide landowner names, only addresses. It is assumed that each separate address represents a separate landowner.

Table DR-ALT-35-2 Parcel Information Desert Center Alternative Site

APN	Acres	Landowner Address
808022001	80.50953125	901 N Green Valley No 200, Henderson, NV 89074
808022002	80.60601467	901 N Green Valley No 200, Henderson, NV 89074
808022003	161.5014712	901 N Green Valley No 200, Henderson, NV 89074
808022006	114.3832675	3633 E Inland Empire Boulevard, Ontario, CA 91764
808022026	7.294912264	3133 7th Street, Riverside, CA 92501
808040001	10.10674887	P.O. Box 122910, San Diego, CA 92112
808040002	10.10057631	21502 E Nightingale Court, Queen Creek, AZ 85242
808040003	20.19696408	101 Holiday Drive, La Selva Beach, CA 95076
808040005	5.045138267	3700 Wilshire Boulevard No 990, Los Angeles, CA 90010
808040006	10.11488052	P.O. Box 998, San Juan Capistrano, CA 92693
808040007	10.10871184	7400 NW 103th Street, Oklahoma City, OK 73162

Table DR-ALT-35-2 Parcel Information Desert Center Alternative Site

APN	Acres	Landowner Address
808040008	10.09639343	9353 Bolsa Avenue Suite H, Westminster, CA 92683
808040009	80.94262323	901 N Green Valley No 200, Henderson, NV 89074
808040010	161.3602956	901 N Green Valley No 200, Henderson, NV 89074
808051001	4.261569355	4607 Lakeview Canyon Road 401, Westlake Village, CA 91361
808051002	44.04020232	4825 N 72nd Way, Scottsdale, AZ 95251
808051003	39.52061955	2001 S Barrington No 315, Los Angeles, CA 90025
808051004	39.2462755	P.O. Box 641, Beaumont, CA 92223
808051005	39.87846154	940 Eagle Mountain Road, Las Vegas, NV 89123
808161001	67.99232187	3633 E Inland Empire Boulevard, Ontario, CA 91764
808162003	22.79942149	3133 7th Street, Riverside, CA 92501
808162004	25.89889261	3133 7th Street, Riverside, CA 92501
808181001	0.2284903	P.O. Box 413, Desert Center, CA 92239
808181002	0.235648122	3633 E Inland Empire 480, Ontario, CA 91764
808181003	0.270968573	3633 E Inland Empire 480, Ontario, CA 91764
808181004	0.263539506	44080 Crystal Way, Desert Center, CA 92239
808181005	0.250646496	3633 E Inland Empire 480, Ontario, CA 91764
808181006	0.226930262	P.O. Box 495, Desert Center, CA 92239
808181007	0.250162389	3633 E Inland Empire 480, Ontario, CA 91764
808181008	0.230267153	44160 Crystal Way, Desert Center, CA 92239
808181009	0.236547426	3633 E Inland Empire 480, Ontario, CA 91764
808181010	0.282307091	3633 E Inland Empire 480, Ontario, CA 91764
808181011	0.283827566	3633 E Inland Empire 480, Ontario, CA 91764
808181012	0.236284248	3633 E Inland Empire 480, Ontario, CA 91764
808181013	0.231129256	3939 Allen Street No. 118, Long Beach, CA 90803
808181014	0.253162745	P.O. Box 1061, La Quinta, CA 92253
808181015	0.231094057	44121 Crystal Way, Desert Hot Springs, CA 92239
808181016	0.263855934	P.O. Box 455, Desert Center, CA 92239
808181017	0.287594021	3633 E Inland Empire 480, Ontario, CA 91764
808182007	0.175891152	3633 E Inland Empire 480, Ontario, CA 91764
808182008	0.171217679	3633 E Inland Empire 480, Ontario, CA 91764

Table DR-ALT-35-2 Parcel Information Desert Center Alternative Site

APN	Acres	Landowner Address
808182009	0.199109381	77031 Shasta Drive, Desert Center, CA 92239
808182010	0.186235267	3633 E Inland Empire 480, Ontario, CA 91764
808182011	0.180274024	3633 E Inland Empire 480, Ontario, CA 91764
808182012	0.174831586	3633 E Inland Empire 480, Ontario, CA 91764
808182013	0.190755865	P.O. Box 7004, Desert Center, CA 92239
808182014	0.1761561	2900 Esperanza Crossing, Austin, TX 78758
808191001	0.333532167	P.O. Box 136, Desert Center, CA 92239
808191002	0.310729844	P.O. Box 485, Desert Center, CA 92239
808191003	0.304790544	3633 E Inland Empire 480, Ontario, CA 91764
808191004	0.273664311	23591 Gary Court, Moreno Valley, CA 92557
808191005	0.246384546	3633 E Inland Empire 480, Ontario, CA 91764
808191006	0.274746994	3633 E Inland Empire 480, Ontario, CA 91764
808191007	0.268899207	3633 E Inland Empire 480, Ontario, CA 91764
808191008	0.243048368	3633 E Inland Empire 480, Ontario, CA 91764
808191009	0.273791768	21979 Avenida de Arboles, Murrieta, CA 92562
808191010	0.254456138	41183 Rosedale Street, Indio, CA 92203
808191011	0.256221528	3633 E Inland Empire 480, Ontario, CA 91764
808191012	0.279261918	P.O. Box 184, Desert Center, CA 92239
808192001	0.215267577	4141 S Royal Links Circle, Antioch, CA 94509
808192002	0.179166364	1000 Central No 19, Riverside, CA 92507
808192003	0.232344856	44020 Shadow Way, Desert Center, CA 92239
808192012	0.231761171	3633 E Inland Empire 480, Ontario, CA 91764
808192013	0.181574114	3633 E Inland Empire 480, Ontario, CA 91764
808192014	0.217754622	375 Village Drive, Blythe, CA 92225
808201001	0.415406566	3633 E Inland Empire 480, Ontario, CA 91764
808201002	0.36857588	3633 E Inland Empire 480, Ontario, CA 91764
808201003	0.344547525	3633 E Inland Empire 480, Ontario, CA 91764
808201004	0.334079879	3633 E Inland Empire 480, Ontario, CA 91764
808201005	0.301441006	3633 E Inland Empire 480, Ontario, CA 91764
808201006	0.249297265	3633 E Inland Empire 480, Ontario, CA 91764

Table DR-ALT-35-2 Parcel Information Desert Center Alternative Site

APN	Acres	Landowner Address
808201007	0.285494446	26801 Fairway Drive, Desert Center, CA 92239
808201008	0.2850512	26800 Fairway Drive, Desert Center, CA 92239
808201009	0.248502508	12 Bollinger Road, Rancho Mirage, CA 92270
808201010	0.336312987	3633 E Inland Empire 480, Ontario, CA 91764
808201011	0.389251344	3633 E Inland Empire 480, Ontario, CA 91764
808201012	0.416615256	3633 E Inland Empire 480, Ontario, CA 91764
808201013	0.428392019	3633 E Inland Empire 480, Ontario, CA 91764
808201014	0.418758743	3633 E Inland Empire 480, Ontario, CA 91764
808202001	0.261228376	P.O. Box 503, Desert Center, CA 92239
808202002	0.259316686	3633 E Inland Empire 480, Ontario, CA 91764
808202003	0.272863389	P.O. Box 459, Desert Center, CA 92239
808202004	0.250394894	3633 E Inland Empire 480, Ontario, CA 91764
808202005	0.259407306	6709 La Tijera Boulevard, Los Angeles, CA 90045
808202006	0.252704458	3633 E Inland Empire 480, Ontario, CA 91764
808202007	0.261722138	3633 E Inland Empire 480, Ontario, CA 91764
808202008	0.244798759	P.O. Box 131, Desert Center, CA 92239
808202009	0.273873428	44290 Shasta Drive, Desert Center, CA 92239
808202010	0.282275916	44291 Shasta Drive, Desert Center, CA 92239
808202011	0.245964392	44281 Shasta Drive, Desert Center, CA 92239
808202012	0.264589587	3633 E Inland Empire 480, Ontario, CA 91764
808202013	0.261304751	3633 E Inland Empire 480, Ontario, CA 91764
808202014	0.272112287	3633 E Inland Empire 480, Ontario, CA 91764
808202015	0.265314822	3633 E Inland Empire 480, Ontario, CA 91764
808202016	0.265401962	3633 E Inland Empire 480, Ontario, CA 91764
808202017	0.238069827	3633 E Inland Empire 480, Ontario, CA 91764
808202018	0.237724214	Box 494, Desert Center, CA 92239
808270002	4.916852697	P.O. Box 287, Desert Center, CA 92239
808270003	4.95062937	P.O. Box 666, Mira Loma, CA 91752
808270006	4.646195772	P.O. Box 306, Desert Center, CA 92239
808270008	4.803426095	US Dept of Interior, Washington, DC 21401

Table DR-ALT-35-2 Parcel Information Desert Center Alternative Site

APN	Acres	Landowner Address
808270010	4.648992004	P.O. Box 81, Union, WA 98592
808270011	4.887414585	P.O. Box 81, Union, WA 98592
808022001	80.50953125	901 N Green Valley No 200, Henderson, NV 89074
808022002	80.60601467	901 N Green Valley No 200, Henderson, NV 89074
808022003	161.5014712	901 N Green Valley No 200, Henderson, NV 89074
808022006	114.3832675	3633 E Inland Empire Boulevard, Ontario, CA 91764
808022026	7.294912264	3133 7th Street, Riverside, CA 92501
808040001	10.10674887	P.O. Box 122910, San Diego, CA 92112
808040002	10.10057631	21502 E Nightingale Court, Queen Creek, AZ 85242
808040003	20.19696408	101 Holiday Drive, La Selva Beach, CA 95076
808040005	5.045138267	3700 Wilshire Boulevard No 990, Los Angeles, CA 90010
808040006	10.11488052	P.O. Box 998, San Juan Capistrano, CA 92693

The Palo Verde Mesa alternative site is situated on 11 separate parcels. The following table (Table DR-ALT-35-3) identifies the assessor's parcel number, acreage, and landowner address of each separate parcel. The publically available data from the Riverside County Assessor does not provide landowner names, only addresses. It is assumed that each separate address represents a separate landowner.

Table DR-ALT-35-3 Parcel Information Palo Verde Mesa Alternative site

APN	Acres	Landowner Address
879090001	79.33696173	164 Honeysuckle Lane, Brea, CA 92821
879090002	120.1910858	400 Somerset Corp Suite 501, Bridgewater, NJ 08807
879090037	38.28293952	16350 Driver Road, Bakersfield, CA 93308
879090038	38.27224392	16350 Driver Road, Bakersfield, CA 93308
879110001	160.0242692	21725 Marjorie Avenue, Torrance, CA 90503
879110003	40.59837403	1531 West Ninth Street, Los Angeles, CA 90015
879110004	40.12621101	P.O. Box 38, Spooner, WI 54801
879110005	80.46126063	11530 Victoria Avenue, Riverside, CA 92503
879110013	38.27799315	16350 Driver Road, Bakersfield, CA 93308
879110014	38.2713233	16350 Driver Road, Bakersfield, CA 93308
Unknown	30.07082036	Unknown

DR-ALT-36

Information Required:

For sites located on BLM-administered land, please indicate if the BLM has received a right-of-way application for use of any of the alternative site land and the status of the application, if available

Response:

On July 3, 2008, right-of-way (ROW) applications were submitted to BLM by Solar Millennium for the Palen Pass, Desert Center, and Palo Verde Mesa alternative sites. None of these applications is still active at this time. In August 2008, BLM indicated that the Desert Center site was largely in a DWMA. In August 2008, BLM indicated that the Palen Pass was in an area that might be subsumed in expansions of Joshua Tree National Park and/or the McCoy Wilderness; in the fall of 2008, BLM rejected the Palen Pass application on environmental grounds. In the fall of 2008, BLM rejected the Palo Verde Mesa site as the application was third in line (i.e., two other applicants already had submitted ROW applications).

DR-ALT-37

Information Required:

Please fill in Table 1 on the last page of this Data Request to compare the Cibola alternative site with the proposed project. Please also include any information previously gathered for the Palen Pass, Desert Center, and Palo Verde Mesa alternative sites.

Response

Table DR-ALT-37-1 provides the requested comparison of alternative sites.

Table DR-ALT-37-1 Palen Solar Power Project: Environmental Comparison of Alternative Sites

Environmental Criteria	Proposed Project Site	Cibola	Palen Pass	Desert Center	Palo Verde Mesa
Is site mechanically disturbed?	Unpaved roadway bisects site.	Along north border, a disturbed area. Unpaved roads throughout.	Paved roads, former unpaved roads. Formerly Used Defense Site (FUDS), former Camp Coxcomb (California-Arizona Maneuver Area [CAMA]).	Paved/unpaved roads. Former Camp Desert Rock (CAMA). Possible gunnery/shooting range.	Unpaved roads. Abandoned/recent agriculture land. Buildings/storage associated with agriculture land. One circular tank (unknown usage).
Is site located adjacent to degraded and impacted private lands?	None found	None found	Department of Toxic Substances Control Cleanup site – FUDS, Military Evaluation Site (Camp Coxcomb).	Land Disposal Site - Desert Center Sanitary 01-139, landfill, 17991 Kaiser Road. Closed LUST adjacent to site in Desert Center – Caltrans Desert Center, 129476 Highway 60.	None found
Is site a Brownfield?	No	No	No	No	No
Is site located adjacent to urbanized areas (indicate distance)?	~30 miles west of Blythe and 55 miles southwest of Twentynine Palms	~11.5 miles southwest of Blythe and 1.25 miles northwest of unincorporated Palo Verde	~40 miles southeast of Twentynine Palms and northwest of Blythe	Adjacent to unincorporated Desert Center; ~45 miles west of Blythe, southwest of Twentynine Palms, and east of Coachella	~7 miles south-southwest of Blythe
Does site require the building of new roads (indicate length)?	No. State Highway 10 is adjacent to the southern border of the site.	Yes. Highway 78 is ~1.8 miles east of site.	No. Highway 177 runs through site.	No. Highway 177 runs through southeast corner. State Highway 10 is located ~25 miles south of site.	Yes. State Highway 10 is ~0.4 miles north of site.
Could site be served by existing substations (indicate name and distance)?	In general area of possible location of future Southern California Edison (SCE) Red Bluff substation. ~ 9 miles east of Desert Center	~10 miles from possible site planned SCE Colorado River substation.	Adjacent to double circuit 230-kilovolt (kV) transmission line. Approximately 10 miles north of Desert Center site.	Immediately adjacent to possible site planned SCE Red Bluff substation.	~3 miles from possible site planned SCE Colorado River substation.
Is site located proximate to sources of municipal wastewater (indicate name and distance)?	~33 miles (west-northwest from the Blythe Wastewater Treatment Plant; Lake Tamarisk Resort (<100 acre-feet per year (AF/yr) of tertiary water ~10 miles west of site)	~11.8 miles (southwest) from Blythe Wastewater Treatment Plant; Lake Tamarisk Resort (<100 AF/yr of tertiary water ~40 miles west of site)	~ 40 miles (northwest) from Blythe Wastewater Treatment Plant; Lake Tamarisk Resort (<100 AF/yr of tertiary water ~20 miles northeast of site)	~~50 miles (west-northwest) of Blythe Wastewater Treatment Plant; Lake Tamarisk Resort (<100 AF/yr of tertiary water < 1 mile from site)	~8.5 miles (west) from Blythe Wastewater Treatment Plant; Lake Tamarisk Resort (<100 AF/yr of tertiary water ~40 miles west of site)
Is site located proximate to load centers (indicate name and distance?)	San Diego ~130 miles southwest of site; Las Vegas ~160 miles north of site.	San Diego ~40 miles southwest of site; Las Vegas, 180 miles north-northwest of site.	San Diego ~130 miles southwest of site; Las Vegas, 145 miles north of site.	San Diego ~115 miles southwest of site; Las Vegas, 160 miles north of site.	San Diego ~145 miles southwest of site; Las Vegas, 175 miles north-northwest of site.
Is site located adjacent to federally designated corridors with existing transmission lines?	Yes	Yes	Yes	Yes	Yes
Does site support sensitive biological resources, including federally designated and proposed critical habitat; significant populations of federal or state threatened and endangered species, significant populations of sensitive, rare and special status species and rare or unique plant communities?	Yes, small portion of site in designated desert tortoise critical habitat.	Yes, American badger, Wiggins' cholla, Townsend's big-eared bat, black-tailed gnatcatcher, pallid bat and Colorado River cotton rat identified by CNDDB.	Yes, desert tortoise identified by California Natural Diversity Database (CNDDB).	Yes, desert tortoise and Las Animas colubrine identified by CNDDB. Majority of site is designated desert tortoise critical habitat.	Yes, Harwood's milk-vetch identified in several on site locations by CNDDB.

Table DR-ALT-37-1 Palen Solar Power Project: Environmental Comparison of Alternative Sites

Environmental Criteria	Proposed Project Site	Cibola	Palen Pass	Desert Center	Palo Verde Mesa
Is site within an Area of Critical Environmental Concern, Wildlife Habitat Management Area, proposed HCP and NCCP Conservation Reserves?	None identified	None identified	None identified	Yes, majority of site is located within Chuckwalla Desert Wildlife Management Area (DWMA).	None identified
Does site contain land purchased for conservation including those conveyed to BLM?	None identified	None identified	None identified	None identified	None identified
Does site contain landscape-level biological linkage areas required for the continued functioning of biological and ecological processes?	Site contains desert washes that facilitate animal movement in the desert. Project has potential for impact on wildlife movement corridors, but would not be considered by itself as required for the continued functioning of biological and ecological processes.	Site is in a large area of relatively undisturbed desert because it is bounded by mountains on the east and agricultural lands to the east, the site may function as a relatively topographically flat linkage between lands to the north and south. A number of desert washes, which are known to facilitate animal movement in the desert, traverse the site. However, because the site is in a relatively undisturbed area, it is unlikely that the site, in and of itself, is required for the continued functioning of biological and ecological processes.	Site is in a large area of relatively undisturbed desert habitat. While the site does not appear to function as a critical linkage between disparate areas of habitat, mountainous areas to the east and west contain habitat for desert tortoise and bighorn sheep. There are also a number of desert washes that traverse the site; such washes are known to facilitate animal movement in the desert. Both desert tortoise and bighorn sheep may inhabit or move through the site. However, it is unlikely that this site, in and of itself, is required for the continued functioning of biological and ecological processes.	The site lies within a large area of relatively undisturbed desert habitat. While the site does not appear to function as a critical linkage between disparate areas of habitat, the site lies almost entirely within desert tortoise critical habitat and the Chuckwalla DWMA. There are also a number of desert washes that traverse the site from east to west. While it is possible that wildlife may move through or inhabit portions of the site, it is unlikely that the site, in and of itself, is required for the continued functioning of biological and ecological processes. However, the designation of the area as desert tortoise critical habitat and a DWMA would indicate that its preservation is important to the ecology of Mojave desert wildlife.	The lies within a large area of relatively undisturbed desert habitat Based on topography and surrounding land use (mountains on two sides and agricultural lands on a third), the site may function as a linkage between surrounding areas. Because the site is at the edge of relatively undisturbed habitat, it is unlikely that the site, in and of itself, is required for the continued functioning of biological and ecological processes.
Is the site within Proposed Wilderness Area, proposed National Monuments, and Citizens' Wilderness Inventory Areas	None identified	None identified	Yes, portion of site is within Palen/McCoy Wilderness	None identified	None identified
Does the site contain wetlands and riparian areas, including the upland habitat and groundwater resources required to protect the integrity of seeps, springs, streams or wetlands?	Site contains no wetlands or riparian areas but does contain jurisdictional waters of the state (ephemeral washes).	Site contains no wetlands or riparian areas but does contain jurisdictional waters of the state (ephemeral washes).	Site contains no wetlands or riparian areas but does contain jurisdictional waters of the state (ephemeral washes).	Site contains no wetlands or riparian areas but does contain jurisdictional waters of the state (ephemeral washes).	Site contains no wetlands or riparian areas but does contain jurisdictional waters of the state (ephemeral washes).
Is the site a National Historic Register eligible site and does it contain other known cultural resources?	Site contains a number of sites requiring evaluation (NHPA Sec 106) for potential eligibility for National Register.	Class I archival survey in progress; results will be available by January 20, 2010.	Class I archival survey in progress; results will be available by January 8, 2010.	Class I archival survey in progress; results will be available by January 20, 2010.	Class I archival survey in progress; results will be available by January 20, 2010.
Is the site located directly adjacent to National or State Park units?	None identified	None identified	None identified	None identified	None identified

DR-ALT-38

Information Required:

One of the site selection criteria for the proposed Palen SPP site was environmental sensitivity. Please provide the results of a CNDDB search for the Cibola alternative site.

Response:

Figure DR-ALT-38-1 shows the results of the CNDDB search for the Cibola alternative site. The data provided below are for the site itself plus a five-mile radius. Special-status species identified include the following:

Species	Status
Crucifixion thorn	CNPS 2.3
Fairyduster	CNPS 2.3
Harwood's milk-vetch	CNPS 2.2
Saguaro	CNPS 2.2
Wiggins' cholla	CNPS 3.3
Razorback sucker	Fed – Endangered; State – Endangered
Couch's spadefoot	State – Species of Special Concern
Gila woodpecker	State – Endangered
Western yellow-billed cuckoo	Fed – Candidate; State Endangered
Yuma clapper rail	Fed – Endangered; State – Threatened
Desert tortoise	Fed – Threatened; State – Threatened
American badger	State – Species of Special Concern
Arizona myotis	State – Species of Special Concern
Colorado River cotton rat	State – Species of Special Concern
Pallid Bat	State – Species of Special Concern
Pallid San Diego pocket mouse	State – Species of Special Concern
Townsend's big-eared bat	State – Species of Special Concern

DR-ALT-39

Information Required:

Please provide an Information Center search (Class I) for recorded sites identified within the Cibola alternative site.

Response:

The Information Center that is the repository for cultural resources data for the area that includes the Cibola alternative site closes over the Christmas/New Year holiday season. Thus, we are unable to complete the full Class I data search until after the Information Center reopens on January 4, 2010. We expect to provide the Class I data for the Cibola site by January 20, 2010.

Because the repository data contains cultural resources site location information, the results of the Class I search will be submitted under confidential cover.

DR-ALT-40

Information Required:

One of the site selection criteria for the proposed Palen SPP site was environmental sensitivity. Please provide the results of a CNDDB search for the North of Desert Center alternative site.

Response:

Figure DR-ALT-40-1 shows the results of a CNDDB search for the North of Desert Center Alternative site suggested for consideration by the California Energy Commission (CEC). The data provided below encompass the site itself plus a 5-mile radius. Special-status species identified include the following:

Species	**Status**
California ditaxis	CNPS 3.2
Coachella Valley milk-vetch	Fed – Endangered; CNPS 1B.2
Coves' cassia	CNPS 2.2
Crucifixion thorn	CNPS 2.3
Las Animas colubrina	CNPS 2.3
Harwood's milk-vetch	CNPS 2.2
Jackass-clover	CNPS 2.2
Le Conte's thrasher	State – Species of Special Concern
Desert tortoise	Fed – Threatened; State – Threatened

DR-ALT-41

Information Required:

Please provide an Information Center search (Class I) for recorded sites identified within the North of Desert Center alternative site.

Response:

The Information Center that is the repository for cultural resources data for the area that includes the North of Desert Center alternative site closes over the Christmas/New Year holiday season. Thus, we were unable to complete the full Class I data search until after the Information Center reopened on January 4, 2010.

Specifically, we were unable to obtain historical maps for the North of Desert Center alternative site until after January 4, 2010. Appointments have been made with the Eastern Information Center (the repository for the North of Desert Center site) for the first week of January in order to complete the needed research. We anticipate being able to compile, tabulate, organize, and submit the full set of requested information for the North of Desert Center site by January 20, 2010.

Because the repository data contain cultural resources site location information, the results of the Class I search will be submitted under confidential cover.

DR-ALT-42

Information Required:

To determine the feasibility of obtaining site control, please explain how many separate owners would result in an unacceptable probability of obtaining site control. Consider the Renewable Energy Transmission Initiative (RETI) Phase 2A Report's statement that: "At the recommendation of solar generators and other stakeholders, proxy solar projects in areas having more than 20 different owners per two-square mile area were deemed unlikely to be developed."

Response:

As stated in Section 4.2.2, Alternative Site Selection Criteria of the AFC, “site control” is one of the criteria used by the Applicant (Palen Solar I, LLC) during the site selection process. In the AFC description of the site control criterion, it notes “If private land, the site should not be subdivided between more than **three** landowners to avoid lengthy or unsuccessful negotiations.”

Solar thermal projects of the size of the proposed PSPP represent enormous investments, whoever the proponent(s) might be. Obviously, these are major, complex business decisions not taken lightly by any applicant. The ease/difficulty and cost of obtaining site control is one of the components of such business decisions. Different applicants legitimately may have different views of how many landowners with whom successful negotiations would be required is “too many”. The Applicant has decided that the appropriate maximum number of landowners they would be willing to deal with is three.

DR-ALT-43

Information Required:

In order to facilitate preparation of the PSA/DEIS and allow further analysis of the transmission and linear facilities please provide a detailed map illustrating the routes of all of the transmission line alternatives and potential substation locations that were considered.

Response:

Figure DR-ALT-43-1 shows the two alternative transmission line routes and substation locations that have been considered by the PSPP Applicant. One of these is the route that was shown in the July 2009 AFC and the other is the route that was shown in the October 2009 AFC Volume 3 Data Adequacy Supplement.

DR-ALT-44

Information Required:

As stated above, the linear routes, as shown on Figure 5.3-9 would be located in MFTL habitat. Please provide an alternative route for the transmission line and an alternative switchyard location that would avoid MFTL habitat.

Response:

The selection of the switchyard location for PSPP is based on the transmission line route. The screening methodology used in selecting of the PSPP transmission line route was described in AFC Section 4.0, Project Alternatives, but with criteria appropriate for a linear transmission facility rather than a generating facility.

The Applicant evaluated two alternatives. During the initial development stages, the Applicant selected an alternative as the preferred route because at that time it was our best estimate of where the Red Bluff substation would be located, which is where the Project will interconnect with the SCE system. The current Project transmission line route and the alternative route are shown in Figure 2-16 in the Transmission System Engineering portion of AFC Volume 3, Data Adequacy Supplement submitted on October 26, 2009.

As shown in Figure 2-1 in the Project Overview section of the October 2009 Data Adequacy Supplement, the current Project transmission line is routed south of the Project site to the Red Bluff substation location south of U.S. Interstate 10 (I-10). The Project central switchyard location is south of the solar fields, while the Mojave Fringe-toed Lizard (MFTL) habitat extends to the southern portion of the site only in the easternmost area, which is away from the switchyard location. Thus, the Project configuration now avoids MFTL habitat.

DR-ALT-45

Information Required:

Please describe in detail the engineering constraints, if any, to the development of a revised configuration of each 250 MW unit. A revised configuration may result in the rows of troughs not being as long and not configured in a solid rectangular area. As an example, it may be desirable to allow existing washes to pass through an undeveloped portion of the site and to allow troughs to be installed on either side of the wash.

a. Please define whether there is a specific minimum or maximum length that each individual solar collector loop assembly must be, and if it is necessary that the solar collector loops be identical in length. Please define both engineering and economic constraints to having variable collector loop lengths.
b. Please describe in detail whether there is flexibility in the lengths of the supply and return header piping or if these are specific to the solar collector assemblies, and if so, what is the flexibility.
c. Please describe whether there is a distance between components of the solar field and the power block that would result in a loss of heat in the heat transfer fluid such that extending it would reduce the economic or engineering feasibility of the project.
d. Please describe if there is a minimum number of rows of solar collector loops that would make up a unit or if there is flexibility in the number of units that could be arranged to create a 500 MW power plant.
e. Please describe if it is possible to have multiple and smaller power blocks (e.g., 50 or 100 MW) and describe how this would increase the flexibility of the solar field arrangement.
f. Please explain the difference between the crossover pipe, HTF loops, and Heat

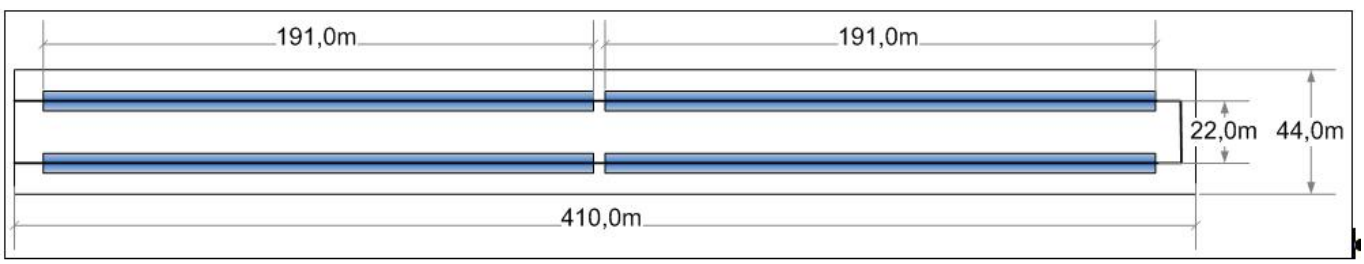
Collection Elements. If a reconfigured solar array were developed, discuss whether these components would traverse undeveloped desert washes to reach the power block.

Response:

Solar Field Design Criteria

The basic building block of a parabolic trough solar field is the so-called "loop". Each loop is made up of 40 solar collector assemblies with an aperture area of 5,025 square meters. A loop is carefully engineered with the specified collector area and a range of flow rates to raise the temperature of the heat transfer fluid (HTF) circulating in the solar field from the "cold " temperature that exists at the first preheater in the steam generation train to the maximum, design point temperature of the system. In the case of the proposed Project (and all other solar trough plants that use Therminol® VP1 or equivalent synthetic oil as the heat transfer fluid,[1]) the cold return HTF temperature is approximately 300 degrees Celsius (°C) and the hot design point temperature is approximately 400°C.

Each Heliotrough loop is made up of 4 collectors 191 meters in length with an aperture width of 6.77 meters. To ensure optimal annual energy capture, it is critical that loops be oriented in a precise north-south alignment. The "U" shaped loop illustrated below is optimal from a pressure drop standpoint. This allows the hot and cold headers to be routed in the same header pipe corridors, with the delivery and return points of the HTF at roughly the same location. While it is possible to double each collector section back on itself, in a "W" shape, this results in large additional pressure drop in each loop. Furthermore, an optimal layout will have opposing loops on the north and south side of an east-west header. An optimal solar field will therefore be laid out in 820 meter (approximately ½ mile) north-south increments.



Ideal HelioTrough Loop Geometry and Layout

Multiple studies have been done in the history of solar trough technology development that have shown that the north-south orientation is optimal. Comparisons to an east-west orientation have shown extreme deviations between summer and winter performance due to the sun angles. An east-west orientation would require that solar field be much larger or overdesigned to reach the same annual energy as a north-south oriented field. Setting the collectors to any angle deviating between perfect north-south reduces annual energy production and causes operational and control problems. Difficulties will be encountered in

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1 Steam cycles have improved efficiency with higher peak operating temperature. So system designers strive to achieve peak operating temperatures of up to 550°C (1,000 degrees Fahrenheit [°F]). However, synthetic oils such as Therminol start to break down at temperatures above 400°C. As this happens, hydrogen evolves from the oil and slowly destroys the vacuum in the annulus of the solar receiver tubes that carry the HTF oil in the solar field. In the extreme, lost vacuum across an entire solar field renders it useless.

controlling temperature due to a complex shading of collectors during mornings and evenings specific to each day of the year (and also differing year-to-year). This often can lead to an inefficient use of land and additional heat and pressure losses, since interconnecting piping will be lengthened to provide necessary clearance for maintenance and movement of the collectors themselves.

While it is possible to mix and match loops of different sizes, a large solar field for utility scale electric generating facility is best designed with loops of identical size. The solar radiation incident on each loop varies between approximately 300 watts/meter^2 to over 1000 watt/meter^2 during plant operations. To maintain a constant temperature increase across each loop of 100°C (300°C up to 400°C), the flow rate is varied up or down to accommodate the precise level of solar power incident on the loop[2]. For this reason it is critical that the fluid flow in each loop throughout the entire solar field be identical.

Loops of shorter or longer length are possible, but would require a unique HTF flow to achieve the design-point temperature rise. Each loop would then have limited maximum and minimum power performance with respect to one another and also a unique pressure drop. This would reduce overall performance and lead to extreme flow control difficulties.

In order to achieve identical flow in every one of the approximately 290 loops in a 250-megawatt (MW) solar plant it is critical that the solar field is "balanced". Adjusting flow at the entrance of each loop with automated flow control valves is not practical. A balanced solar field requires that the pressure drop from the central pumping station to each subfield be the same. A key criteria to achieve such balance is that that the main headers that carry HTF to and from the central pumping station to the outer reaches of the solar field be identical (or close to it) in length and include equal number of loops.

The length of the header pipes and the number of loops determine the volume of HTF necessary for the operation of the solar plant. Any additional length of large header piping needed to accommodate suboptimal field layouts, unbalanced solar fields, or odd loop configurations creates a "dead volume" of HTF. This extra mass of HTF needs to be heated up each morning, expands the size of the overflow and ullage system, burdens the freeze protection system, and creates additional capacity requirements in the pumping system. Additionally, when loops are set opposing one another, a single cold or hot header can be shared between a north and south field reducing the need for additional pipe, as well as for additional pipe supports, insulation, foundations and all the labor involved in welding and constructing the headers. Thus, each deviation from the optimal configuration can have compounding negative effects of increasing capital cost and decreasing plant performance.

There is a hierarchy of design features for a solar field ranging from "desirable" features to those that are considered "critical":

Desirable Solar Field Design Features

- Loops assembled in "opposing pairs" along east-west headers
- Solar Field is a perfect rectangle, preferably close to square
- Power Block is located in the center of the solar field

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2 The central pumping station utilizes variable speed drives for HTF pumping, making a wide range of flowrates possible to accommodate a wide range of incident solar radiation.

Important Solar Field Design Features

- Pumping station is at the hydraulic center of peripheral loops
- Loops are laid out in a "U" configuration

Critical Solar Field Design Features

- Perfect north-south alignment of collector rows
- All loops are the same size

Design and Capital Cost Impacts

In summary, deviations from optimal collector configurations and solar field layouts cause the following negative impacts on cost and performance:

Additional capital cost

- Longer main headers, with expansion loops, insulation and foundations
- Additional HTF volume
- Additional expansion vessel capacity
- Additional pumps – split pumping station with loss of system redundancy
- Additional instrumentation and controls
- Additional grading and storm water management costs

Performance Impacts

- Decrease in annual energy capture
- Pressure loss in additional piping
- Heat loss in additional piping
- Delayed startup each day – while additional HTF volume is brought to operating temperature,

Overall Impacts:

Depending on the specific deviation from optimal designs, capital costs can rise by approximately 3 to 5 percent. Plant output will decrease by an additional 2 to 6 percent. The overall impact is an increase in electricity cost of approximately 5 to 10 percent.

a: Collector Loop Length

Solar collector loops have been carefully designed to maintain the optimal heat transfer flow ranges that can heat the HTF by approximately 100°C for the typical range of solar radiation that occurs throughout the day. The loop unit is made up of four collector assemblies. It is possible to decrease the number of solar collector elements within loop assemblies to create loops of slightly different total length. But this will require a different design HTF flow rate to achieve the design point temperature rise. For this reason, it is critical that all subfields be designed with loops of equal length.

In plants where each subfield is made up of loops of different lengths, separate pumping stations are required to serve each subfield. While this is physically possible, it creates the following problems:

- Since the entire solar field is no longer a single, pressurized system, the individual subfields have to be operated independently and in parallel from a hydraulic perspective.
- In order to use a common steam generation system, the hot HTF return pressure has to be identical for all subfields. This would likely require use of additional automated throttle/control valves.
- Alternatively, parallel, independent steam generation trains would be required, increasing cost and complexity.

In summary, subfields made up of distinct loop geometries are technically feasible. However, such a design increases capital cost and decreases operational flexibility.

An additional flexibility that exists within the Applicant-proposed standard collector loop design is the ability to set the loop in a double-U layout, where four single collectors are set side-by-side instead of two series sets of collectors in a single-U design. This would result in additional pressure loss and heat loss in the loop as well as twice the amount of installed header piping per loop (see header impacts discussion in "b" below).

b: Header Piping Flexibility

The length of supply and return (cold and hot) headers is dictated by the number of loops in the plant. It is very desirable to maintain equal header length from the power block to the farthest most loop. PSPP Units 1 and 2 use a so-called "H" header design, where the number of loops in each subfield is equal and thus each header is of equal length. When a single header is increased or decreased in length, with a corresponding change in the number of connected loops, the hydraulic system becomes imbalanced. This requires additional pumping power to overcome the additional pressure loss in the longest header. This comes in conjunction with an increase in total HTF volume and associated heat loss. Auxiliary power consumption increases dramatically as header length increases, which can quickly lead to an infeasible performance-to-investment ratio. Very small changes in the header length will have significant impact on project economics.

c: Potential for impact on Project feasibility of distance between Project components

As described in the introduction and in the response to item "b", increasing the length of the header between components, the loops or solar field and the power block as systems will lead to a compounded negative effect of additional heat loss, auxiliary pumping power and increased investment. While it is possible to design engineering solutions for this, the increased cost in custom engineering of a unique and non-optimal solar field design will increase Project cost. The critical point at which such changes may render a Project infeasible depends on the specifics of the header layout.

d: Flexibility in number of collector loops or number of units to comprise a 500-MW power plant

The number of loop/units in a single 250-MW solar plant is optimized with respect to typical annual solar radiation. The fewer loops there are in the plant with a fixed turbine size, the less annual energy the plant will produce, thus directly impacting the cost of electricity.

For the solar radiation profile at the PSPP site, a range of 250 to 300 loops could power a nominal 250-MW power block. In current electricity markets and current collector technology, the minimum number of

loops to power a nominal 250-MW plant is approximately 290 loops. As currently configured, Units 1 and 2 at the PSPP are designed with 288 loops each.

e: Possibility of multiple, smaller power blocks and effects on solar field flexibility

Multiple power blocks for a large solar field can provide operational benefits (which depend on how the individual blocks are positioned with the field), but inevitably increase overall project costs. If individual small power blocks are positioned at or near the center of the sub-solar field that is providing the necessary solar power, HTF header piping, HTF volume, and HTF pumping requirement can be reduced somewhat. These factors will reduce capital cost, reduce daily startup times, and increase annual energy production. However, if all of the power blocks are located together in a central location, these benefits are largely eliminated.

Steam turbine generators have well known and significant economies of scale, meaning that the unit installed cost of small systems are significantly higher than large systems. This is clearly illustrated in today's power markets. Combined cycle plants are typically "2 on 1", meaning that although there are often two gas turbines, they are matched up to only one steam turbine. The power plants at Diablo Canyon and San Onofre have single 1,100-MW steam turbine-generators matched up with each nuclear steam supply system.

Three steam turbines vs. one large turbine requires three sets of feedwater heaters, three sets of boiler feed pumps, three turbine pedestals, and three step up transformers. If the small turbines are distributed throughout the solar field, there is also a need for three individual air-cooled condensers, three water treatment systems, three HTF pumping stations, three HTF expansion systems and three ullage systems. In short, when the installed cost of all of this additional equipment is considered, the cost increase in the power island dwarfs the cost savings in the HTF header system.

Typically, large steam turbines also have cycle efficiencies that are superior to small ones (this also is a key driver in steam turbine size selection with combined cycle, coal and nuclear plants). The steam cycle efficiency is leveraged against the entire solar field. A decrease in cycle efficiency by one percentage point (typical of the difference between a 100-MW and 270-MW turbine), requires that the solar field be 35,000 square meters (aperture area) larger to produce the same annual energy.

There are alleged operational benefits with multiple small turbines. We believe that these benefits are small, and potentially negative. Even on winter days, solar field power ramps up quickly such that all three turbines in a three-turbine plant would need to start up in rapid succession. On summer mornings, the turbines would need to be brought up simultaneously. While a large turbine has a longer startup time than a small turbine, the complexities of starting up three small turbines simultaneously are significant. This is illustrated with new combined cycle plants that are designed for daily startup – they employ one large turbine, not two.

In summary, multiple small turbines versus one large turbine can have small cost and operational benefits for the HTF system, but they also have cost and performance penalties for the power island that are much more significant than the benefits.

f: Difference between the crossover pipe, HTF loops, and Heat Collection Elements? and could these components traverse desert washes

The crossover pipe is simply the pipe that flows partially heated heat transfer fluid from the first leg of the collector loop to the second leg (the bottom of the "U" shape). The Collector Loop is described in detail in

the introduction. The Heat Collecting Elements (HCE) are part of the solar collector assemblies. They are mounted in front of the mirrors at the focal line of the parabola. HCEs are the same length as the collector itself.

A loop, which contains both the HCE and is linked together by the crossover pipe, is the precisely laid out building block of the overall solar collection system. The precision required for the loop layout and construction requires that it be sited on a flat, compacted plain of earth surface. As such, loops cannot be constructed with washes flowing through them.

It is, however possible to lay out groupings of loops (subfields) on opposite sides of washes and to connect subfields together and back to the central pumping station with header pipes that traverse washes. However, there are losses associated with such a configuration.

DR-ALT-46

Information Required:

> Please provide detailed information regarding any alternative configurations/engineering considered but rejected by the applicant. Please include details regarding the engineering constraints to each alternative configuration.

Response:

The PSPP was originally proposed as a 500-MW (nominal) wet cooled power plant. In 2009, the Applicant decided to drastically reduce water use by utilizing air-cooled condensers, an alternative cooling method commonly referred to as “dry cooling”. A dry cooling system is more expensive for the Project as this cooling system is less efficient, most noticeably in the hot summer months when power demand is highest.

An earlier configuration of the Project, the solar fields were longer on the north south axis and narrower in width (see Figure DR-ALT-46-1). The Applicant changed the configuration to move the solar fields further away from the ancient lake shore, sand dunes and playa in the northern portions of the ROW, by widening and shortening the solar fields (see Figure DR-ALT-46-2). In addition, in June 2009, the Applicant decreased the ROW size for PSPP by relinquishing almost two full sections in the northern portion of the ROW. This area, which is closer to Palen Dry Lake, was relinquished for environmental stewardship reasons to minimize the Project’s impact on biological and cultural resources (see Figure DR-ALT-46-3). With regard to engineering constraints, the solar fields have minimum size requirements to generate adequate energy, the drainage channels have minimum size requirements to convey any surface water and the internal roads and fencing have clearance requirements. Within the existing ROW, each one of these factors pushes the Project components up the ROW boundary.

DR-ALT-47

Information Required:

> Please see Alternatives Data Request – Figure 2, which illustrates areas within the project boundaries that are occupied by the most sensitive biological resources – desert washes (shown in green) and Mojave Fringe Toed Lizard habitat (shown in yellow crosshatch). The areas outlined in blue dashes, and red or white lines identify potential

revised configurations that would reduce these effects. In addition, the yellow line illustrates the approximate boundary of the Chuckwalla DWMA. In order for the Energy Commission and BLM to evaluate a potential alternative that avoids effects on these sensitive areas without reducing generation output, surveys must be completed within the portions of these areas that are outside of the current project footprint. Please complete biological and cultural resources surveys (as defined in Title 20, Section 1704, and Division 2, Chapter 5, Appendix B of the CCR for the 12 month process) for the areas outlined in red and not included in the DWMA. Alternatively, complete biological and cultural resources surveys for other areas within the project ROW application boundaries (but outside of the current project footprint) that minimize effects on biological resources to the same degree as the areas identified on Figure 2.

Response:

CEC Staff Alternatives Data Request – Figure 2 illustrates areas within the Project boundaries that are occupied by the most sensitive biological resources. In Figure 2, the CEC has identified additional land (outlined in red) outside of the BLM ROW as a potential alternative configuration that would not reduce generation output.

The Applicant has analyzed the area within the red outline and has determined that it is not feasible for at least three reasons. First, as stated in the response to DR-ALT-48 (see below), the redesigned project geometry proposed in Staff's Figure 2 would provide highly suboptimal solar field shapes within subcritical total plant areas (i.e., areas too small to produce sufficient power). The proposed redesign is not physically or economically viable for a parabolic trough power project.

Second, within Staff's Figure 2, the reconfigured eastern unit would include two private parcels within the red outline, both of which are privately owned by a trust with five trustees. The Applicant's efforts to acquire other private land in the area have been challenging and cumbersome, and they reasonably expect that any effort to purchase the two private parcels at issue would be the same. Even if acquisition of the private parcel were possible, the unusable geometry of the reconfigured alternative would be fatal to the Project.

Third, the reconfigured western unit would include an area outlined in red that is on BLM land. This land is within Section 31, which the BLM indicates is under a ROW application by an agricultural user. At the time of inquiry, the Applicant would have been designated as second-in-line applicant, which would not provide sufficient (or any) site control. Again, even if a ROW could be secured, the unusable geometry of the reconfigured alternative would not work.

The Applicant conducted the initial extensive engineering and environmental analysis of the ROW using several factors to establish the proposed layout. Such factors included maintaining some setback from I-10, avoiding the man-made wash created during the construction of the I-10 freeway, and staying as far south as possible to avoid Palen Dry Lake, which is believed to be more biologically and culturally sensitive.

Based on the request in DR-ALT-47 to establish a revised configuration that would reduce effects on the most sensitive biological resources, the Applicant has conducted additional siting analysis. As stated above, the outlined red area is not feasible. In Figure 2, it appears that the CEC Staff uses criteria in establishing a revised configuration that allow the Project facilities outside of the BLM ROW application area. In the additional siting analysis, the Applicant used this flexibility as well as economic and engineering criteria such as described in the response to DR ALT-45, and environmental impact criteria

based on aerial photos and previous Project surveys (e.g., buffer zones surrounding the Project disturbance area), to produce a revised configuration (see Figure DR-ALT-47).

This additional siting analysis has produced a revised configuration (see Figure DR-ALT-47). The newly developed revised configuration would provide less economic output but would preserve the Project's engineering viability and minimize adverse impacts to the most sensitive biological resources. This revised configuration would move the eastern unit onto BLM land within the current ROW application, at the cost of reducing power output. The western solar field, meanwhile, would be revised such that a number of its collectors would be moved north of the existing BLM ROW boundary. As stated in DR-ALT-46, in June 2009, the Applicant relinquished this northern area from their ROW application to minimize the Project's impact on biological and cultural resources (specifically, the ancient Palen Dry Lake shore, sand dunes, and playa). Based on the CEC's criteria stated above and the desire to create a reconfigured alternative outside of the primary wash and northeastern portion of the ROW, the Applicant proposes that Figure DR-ALT-47 be used as the Applicant's reconfigured alternative in lieu of Staff's Figure 2.

From an environmental perspective, a preliminary review suggests that for most environmental resource areas, there likely would be relatively minor differences for the PSI Reconfiguration Alternative compared to the Applicant's proposed configuration. The PSI Reconfiguration Alternative avoids central wash on the site that is characterized by the most developed wash-dependent vegetation. This reconfiguration also avoids and minimizes potential impacts to the partially stabilized sand dunes, which constitute habitat for the Mojave Fringe-toed Lizard (MFTL). The Applicant will investigate the comparison of environmental impacts between the Reconfiguration Alternative and the Applicant's proposed configuration in future environmental reviews discussed below

In addition, both the proposed layout and the reconfigured alternative layout would maintain their economic viability only if the current AFC/Environmental Impact Statement schedule allows the Project to be licensed and approved by November 2010. Meeting this deadline is necessary to allow the Project to qualify for American Reinvestment & Recovery Act (ARRA) funding, which is crucial to its economic viability.

The Applicant will conduct resource assessments, including field reconnaissance, to identify sensitivities that might make the area(s) in question environmentally unsuitable. After these assessments, surveys, if warranted, within the alternative would follow appropriate protocols.

Due to the seasonality of biological resources, necessary surveys for biological resources within the proposed alternative described in Figure DR-ALT-47 would be conducted in 2010. Biological resources surveys would follow methods previously described in the AFC and Biological Resources Technical Report for vegetation mapping and special-status plant surveys, delineation of State waters, desert tortoise, burrowing owl, avian point count, and general wildlife use. Vegetation mapping would be conducted concurrently with surveys for special-status plants. Habitat suitability would be determined for special status plant species within the alternative footprint and any additional surveys for species that suitable habitat is identified for will be conducted at the appropriate time of year.

Necessary additional surveys for special status plants within the alternative would follow the same plan described in the response to DR-BIO-81. Necessary Desert Tortoise surveys would be conducted in the spring of 2010 following the survey protocol guidelines published in the U.S. Fish and Wildlife Services (USFWS) Field Survey Protocol for any Non-Federal Action That May Occur within the Range of the Desert Tortoise (protocol) (USFWS 1992) and CEC Draft Guidelines. Bird surveys (e.g. burrowing owls, avian point counts) would be completed during the spring breeding season when bird activity is at its peak, potentially beginning in March 2010. Burrowing owl surveys will be performed according to the protocol

established by California Burrowing Owl Consortium (CBOC) (CBOC 1993) and accepted by California Department of Fish and Game (CDFG). Avian point count surveys would follow the methodology outlined in the Handbook of Field Methods for Monitoring Landbirds (Ralph et al. 1993) and guidance from the BLM (LaPre 2009). The results of these surveys will be reported in July 2010.

As is the case for biological resources, any additional necessary cultural resources surveys of the proposed alternative configuration would be conducted by qualified professionals following the same professional methodologies, protocols, and procedures as were utilized for the earlier Project cultural resources work. We anticipate that the cultural resources survey work will begin in late January 2010 with results to be provided in June 2010.

DR-ALT-48

Information Required:

> Please provide detailed information regarding the economic and engineering feasibility of a reduced acreage alternative that would avoid the most sensitive biological resources. See Data Request - Figure 3 as example of a reduced acreage alternative based on avoiding desert washes (shown in green) and Mojave Fringe Toed Lizard habitat (shown in yellow crosshatch). The entire reduced acreage alternative would be located within the project footprint.

Response:

CEC Figure 3 provided as part of the Data Request shows a solar field for the eastern Unit at the PSPP site that is reduced in total area by nearly 50 percent. It would not be possible to have a solar trough power project that is economically viable in such a small size. As stated in the response to DR-ALT-41, to be economically viable, a parabolic trough solar field must have approximately 280 loops to power a 250-MW plant. The area left for the eastern power plant unit would be sufficient for only approximately 150 loops. Furthermore, the shape of the proposed reconfigured eastern field has very little sustained north-south length of ½ mile, the distance required for optimal loop design and layout. This would further limit the plant to fewer than 100 loops, far fewer than the 280 required.

The proposed reconfiguration for the western solar field does retain a total footprint size that is similar to the solar field size proposed by the Applicant. However, the shape of the eastern half of the proposed redesign is altered in the northeast and southeast corners in a manner that significantly reduces the quantity of loops that can be laid out in the required direction. The proposed geometry would be capable of supporting only 200 to 220 loops, significantly fewer than the 280 required to support a 250-MW plant. Furthermore, the full length of the western half of the redesigned unit does not have a dimension precisely suited to the required loop geometry. This would reduce the solar field size even further.

In summary, the redesigned Project geometry proposed in CEC Figure 3 would provide highly suboptimal solar field shapes within subcritical total plant areas. The proposed redesign is not physically or economically viable for a parabolic trough power project.

DR-ALT-49

Information Required:

In order to determine the feasibility of a natural gas pipeline as an alternative to the propane delivery and storage option, please define in detail where the nearest existing gas pipeline is located.

Response:

Figure DR-ALT-49 provides detailed information on the location of the existing gas pipeline that potentially could serve the Project.

DR-ALT-50

Information Required:

Please define the relative costs of the natural gas pipeline alternative and the propane alternative over the life of the project

Response:

The Applicant is no longer proposing to use propane-fired heaters for HTF freeze protection, and will instead use propane-fired auxiliary boilers to support both freeze protection and rapid start-up of each of the two PSPP Units each morning.

Based on the Project's estimated annual propane consumption of ~103,900 million British thermal units, the annual anticipated costs for natural gas would be ~ $850,000 and for propane annual cost (including delivery) would be ~$900,000. The anticipated Project infrastructure cost of the propane system is estimated at about $6,000,000 and the cost of the natural gas system would be about $6,500,000. A natural gas pipeline would be constructed by Southern California Gas Company (SoCal Gas). SoCal Gas provided a preliminary estimate (+/- 30%) of $2,500,000 as the cost of construction for the gas line.

The existing gas pipeline is south of I-10 and there is an existing 4-inch gas line that serves an agricultural property north of I-10. However, the existing 4-inch line would need to be upgraded to an 8-inch line in order to be able to also serve the PSPP. The combination of the higher overall cost of the natural gas option, the uncertainty in pipeline construction costs (the estimate provided is described as preliminary), and the permitting and construction complexities associated with the gas pipeline option led the Applicant to choose the propane alternative.

Alternatives Figures

Figure DR-ALT-38-1
CNDDB Search Results for Alternative Sites: Cibola

Figure DR-ALT-40-1
CNDDB Search Results for Alternative Sites: North of Desert Center

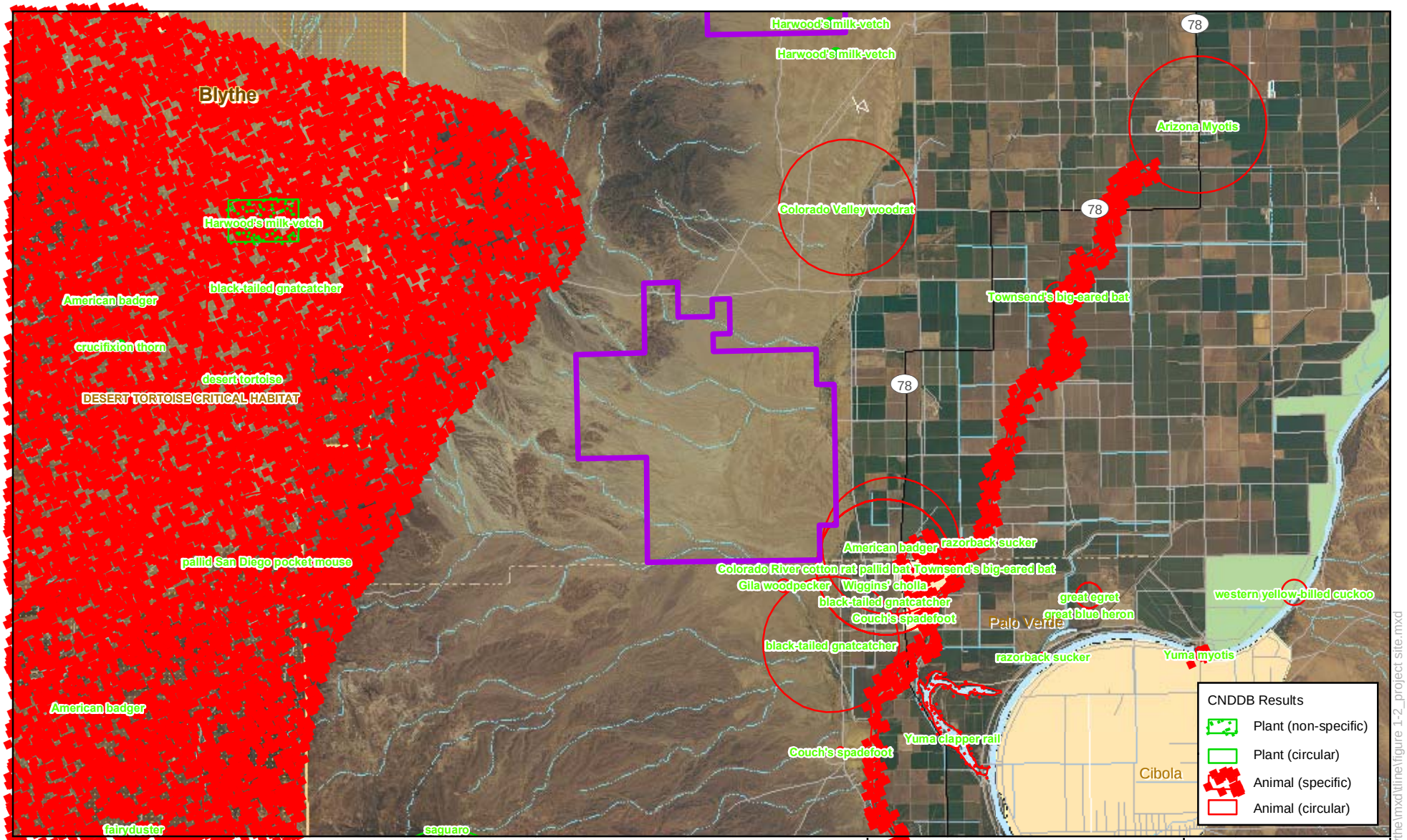
Figure DR-ALT-43-1
Transmission Line Alternatives with Parcel Map

Figure DR-ALT-46-1
Earlier Project Configuration with Solar Fields Extending Further North

Figure DR-ATL-46-2
Earlier Project Configuration with Solar Fields Moved South

Figure DR-ALT-46-3
2009 Project Configuration with Reduced Right-of-Way

Figure DR-ALT-47-1
Alternative Reconfigured by Applicant



Map Location

Legend

Cibola Alternative Site

1 in = 2 miles

0 2 4 Miles

Data Sources:
Air Photo, California Spatial Information Library, NAIP, 2005 Riverside County

CNDDB: California Natural Diversity Database, California Department of Fish and Game

Palen Solar Power Project

Figure DR-ALT-38-1
CNDDB Search Results for Alternative Site: Cibola

Solar Millennium

AECOM

Project: 60139694-5230
Date: January 2010

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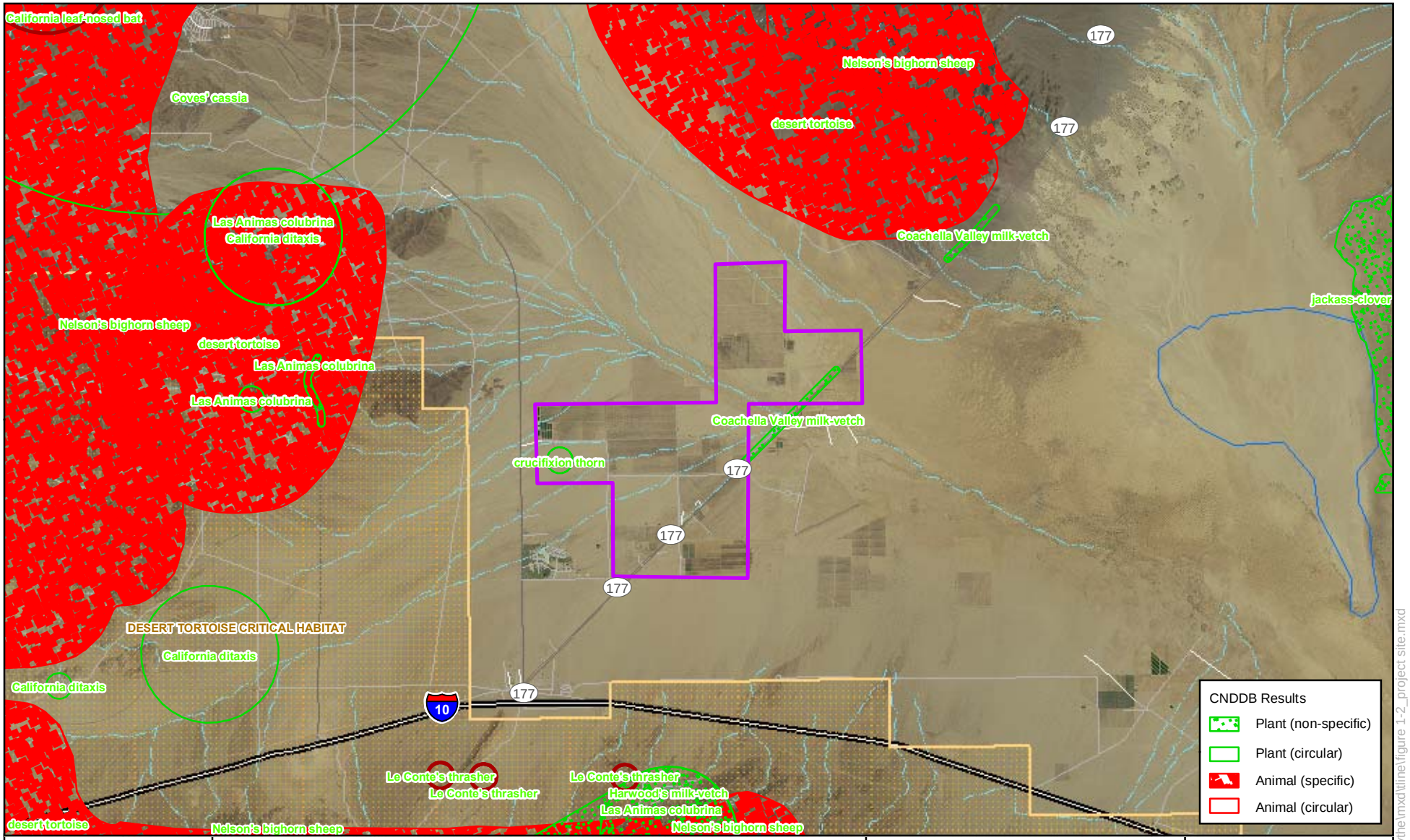

Map Location

Legend

North of Desert Center Alternative Site

1 in = 2 miles

0 2 4 Miles

Data Sources:
Air Photo, California Spatial Information Library, NAIP, 2005 Riverside County

CNDDB: California Natural Diversity Database, California Department of Fish and Game

Palen Solar Power Project

Figure DR-ALT-40 -1
CNDDB Search Results for Alternative Site: North of Desert Center

Solar Millennium

AECOM

Project: 60139694-5230
Date: January 2010

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Alternative Transmission Line

Proposed Transmission LIne

5S 17E

6S 17E

Map Location

Legend

- Project Right-of-Way
- Parcel Boundary
- Project Transmission Line
- Alternative Transmission Line Route
- Section/Township/Range
- Substation

1 inch = 4,000 feet

0 2,000 4,000 8,000 Feet

Palen Solar Power Project
Figure DR-ALT-43 -1
Transmission Line Alternatives with Parcel Map

Solar Millennium

AECOM

Date: December 2009

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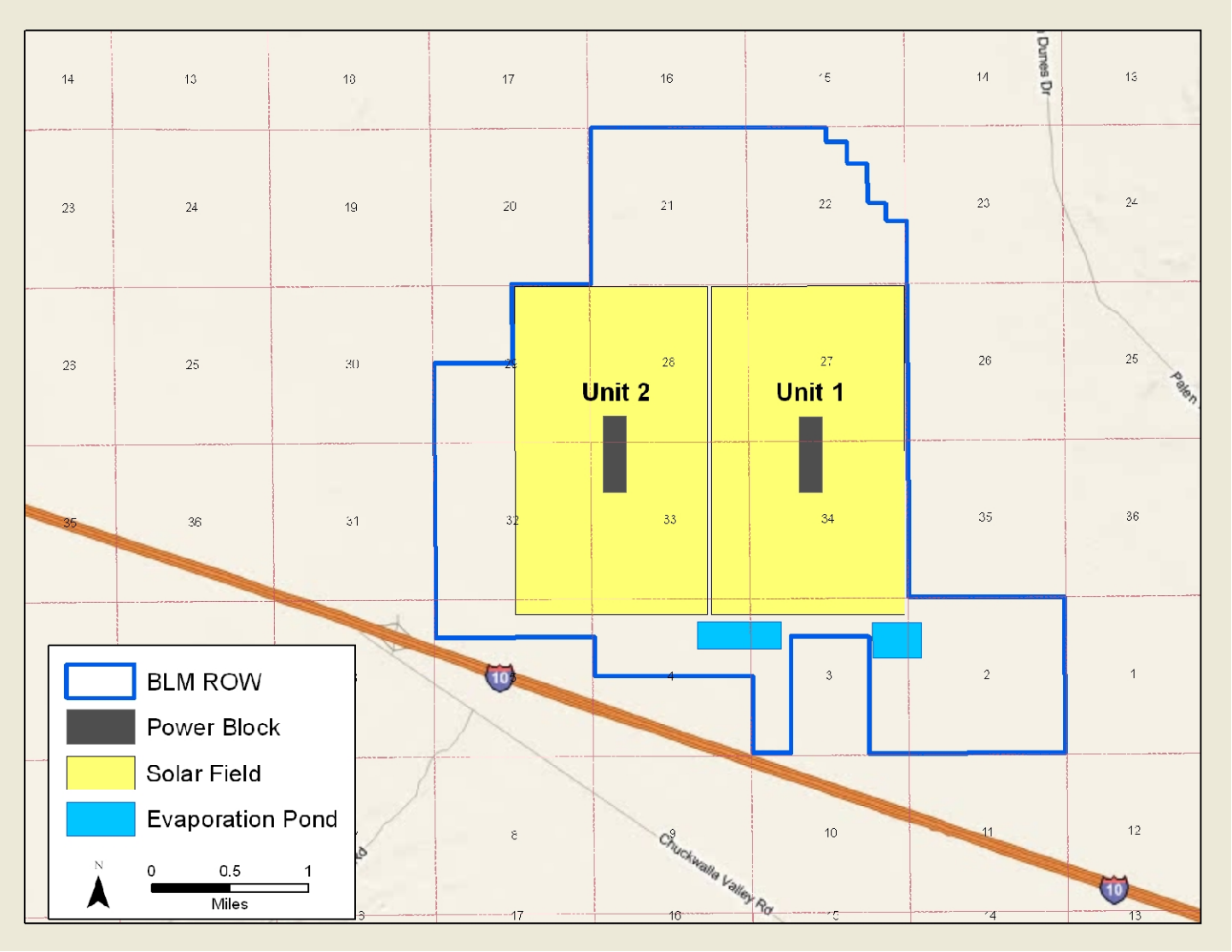

Map Location

Palen Solar Power Project

Figure DR-ALT-46-1
Earlier Project Configuration with Solar Fields Extending Further North

Solar Millennium

AECOM

Project: 60139694
Date: January 2010

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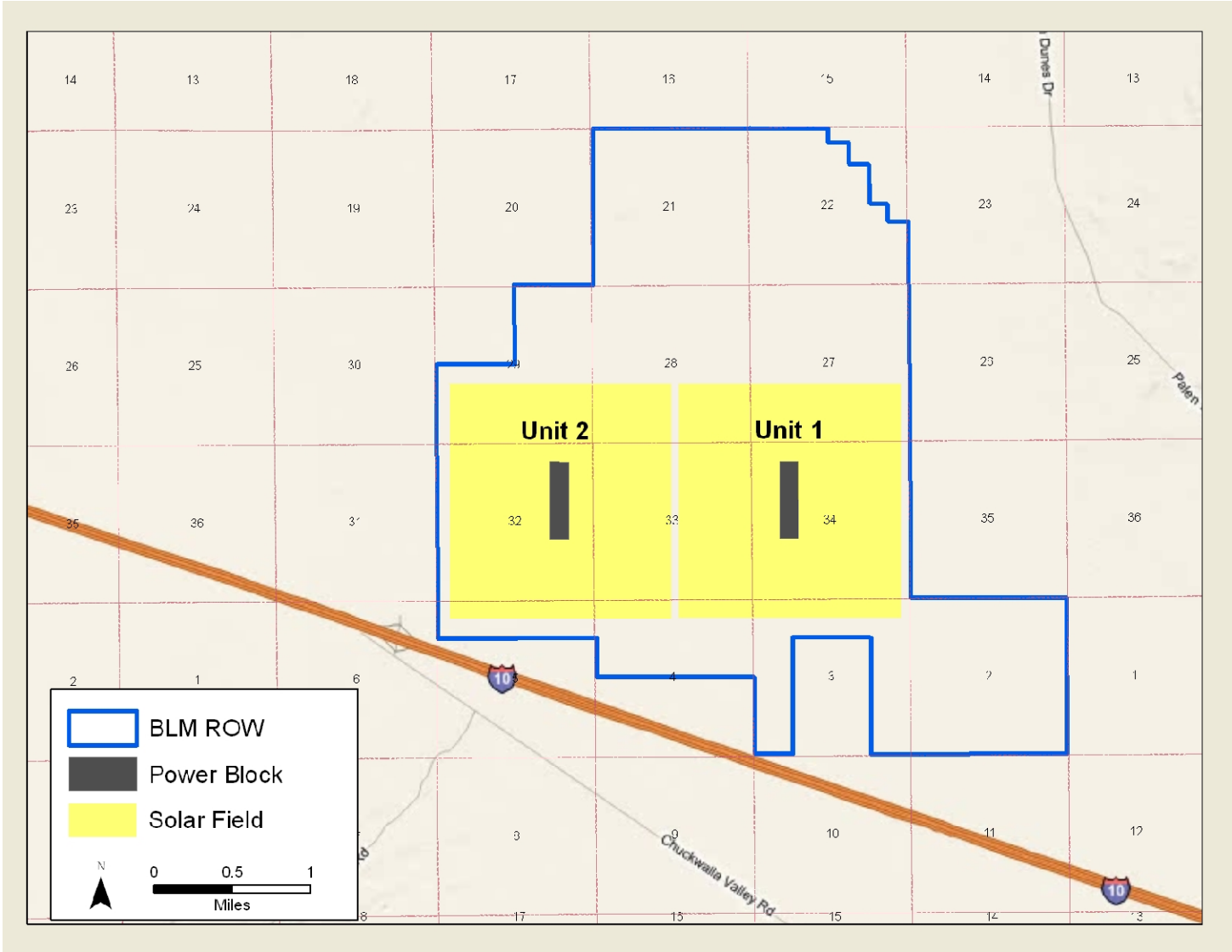

Map Location

Palen Solar Power Project

Figure DR-ALT-46-2
Earlier Project Configuration
with Solar Fields Moved South

Solar Millennium

AECOM

Project: 60139694
Date: January 2010

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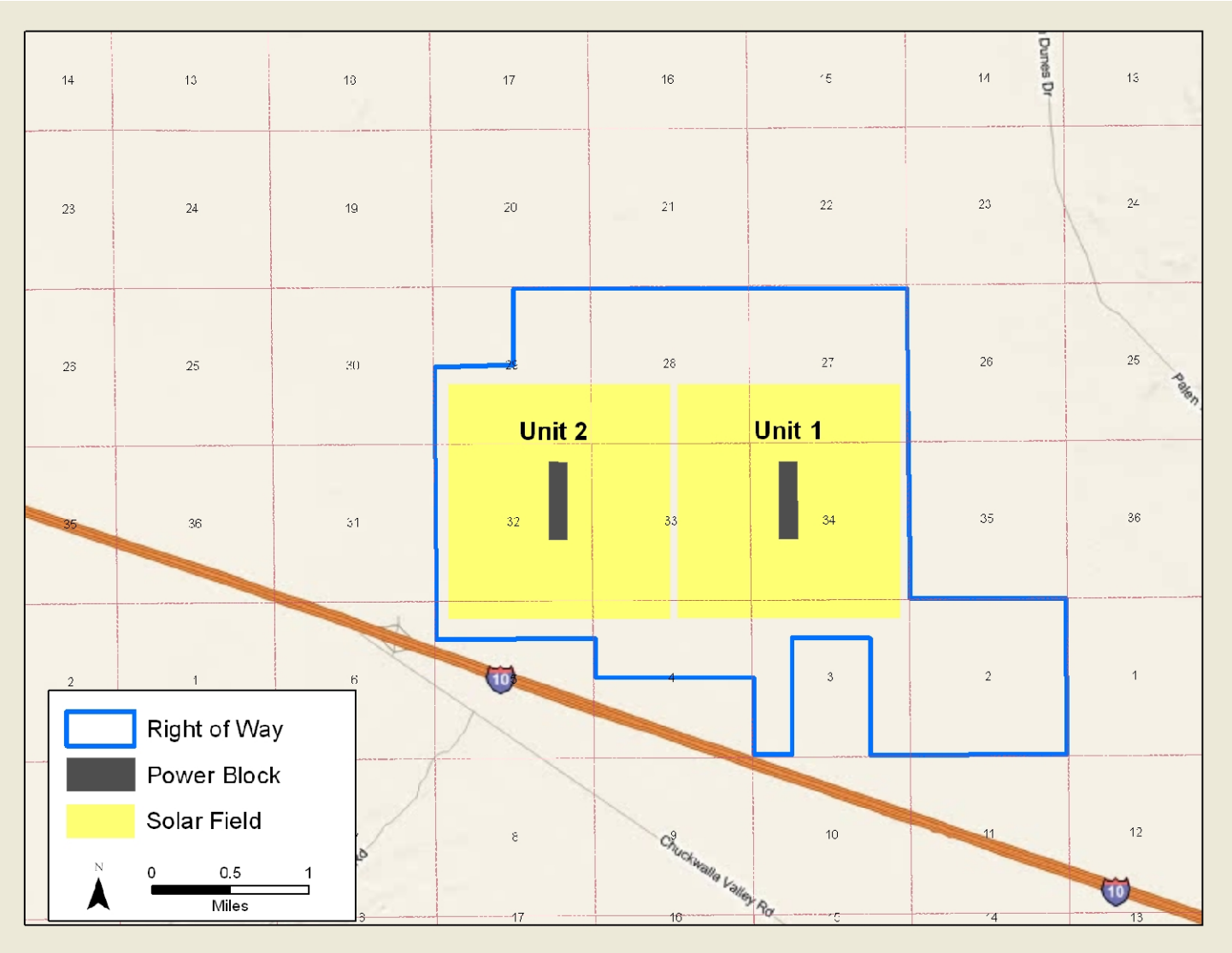

Map Location

Palen Solar Power Project

Figure DR-ALT-46-3
2009 Project Configuration
with Reduced Right-of-Way

Solar Millennium

AECOM

Project: 60139694
Date: January 2010

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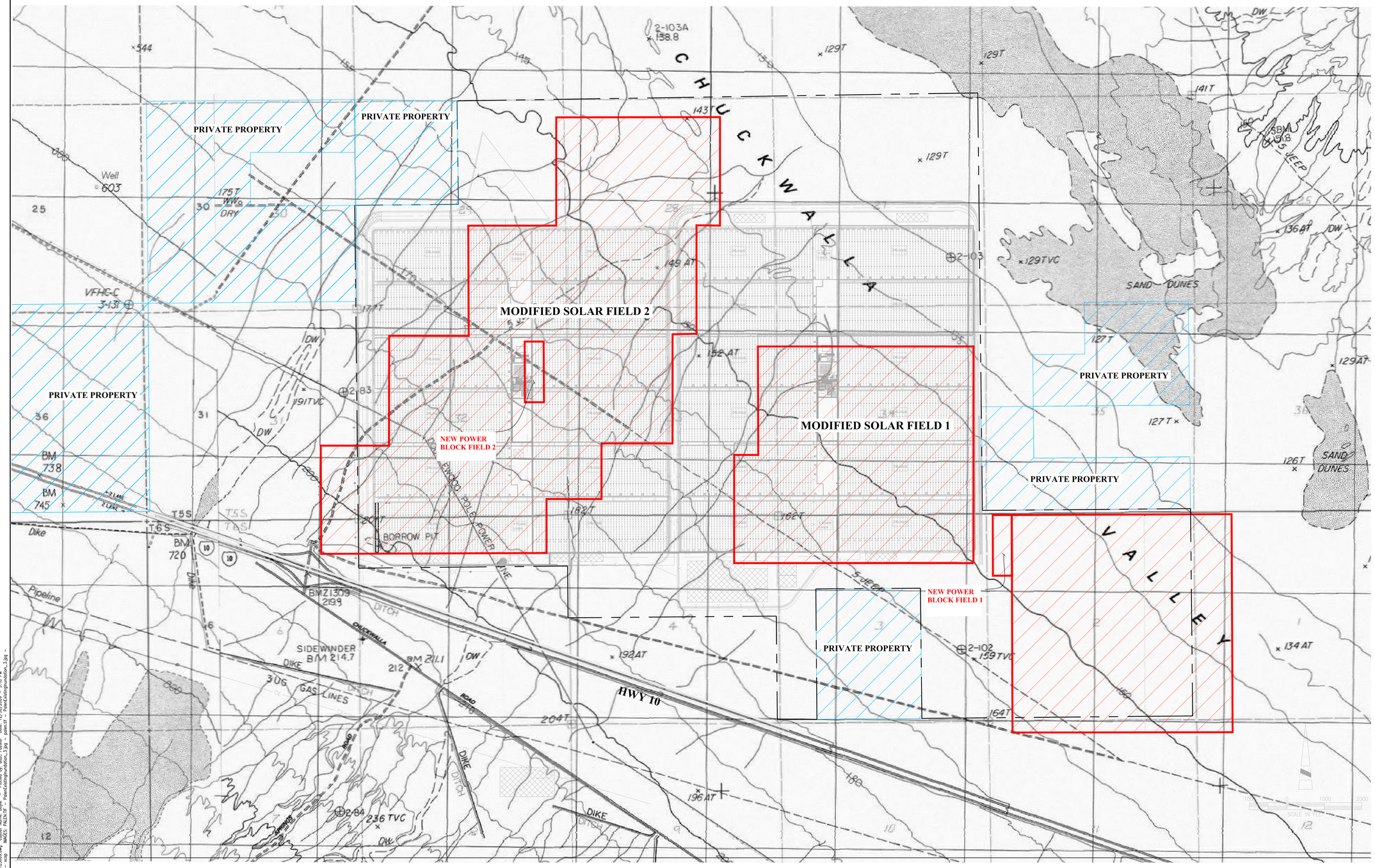

30% Conceptual Engineering Plans
NOT FOR CONSTRUCTION
DATED: January 2010

AECOM

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Orange, CA 92868
Phone 714.567.2618

www.aecom.com

Designed: Tomas Gonzales

Checked: Dennis Lucas

Drawn: Tomas Gonzales

Record Drawing by/date: November,2009

Revisions:

#	DATE	DESCRIPTION
1	JULY,2009	REV SITE PLAN AND POWER BLOCK PER: FLAGSOL DWG PD1 GEN ARR 00103-2007
2	JULY,2009	REV SITE PLAN AND POWER BLOCK PER: FLAGSOL DWG BL1 HTF GEN ARR 001 rev4
3	JULY,2009	REV INCREASED BIOMEMIDITION AREA TO 1-4 ACRES SITES.
4	Oct,2009	Terrill Survey data & Topo, Fagnst powerblock dated 7-22-09.

Prepared for:

Chevron

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Solar Millennium LLC

Palen Solar Power Project

Riverside County, California

Figure DR-ALT-47-1 PSPP Alternative Reconfigured by Applicant

Date: 1/--/2010

Sheet: [redacted]