APPENDIX D

AIR QUALITY AND PUBLIC HEALTH CONSTRUCTION EMISSIONS AND IMPACT ANALYSIS

Construction Emissions and Impact Analysis

Construction Phases

Construction of the Project is expected to last approximately 75 months (6.25 years). The construction will occur in the following main phases:

- Transmission line construction – 12 months (Months 1-12)
- Access road construction – 3 months (Months 6-8)
- Phase 1 civil (site preparation) – 5 months (Months 9-13)
- Phase 1 PV field erection – 7 months (Months 14-20)
- Each successive Phase 2 through 8 (same period as Phase 1) but stepped over the period from Months 17-75), see Table 7 for construction line schedule.

The estimated Project ROW, as leased from BLM is 9,400 acres. The final development portion of the site is approximately 6946 acres in size and is located in fairly flat desert terrain. Each Phase (1-8) will consist of approximately 868 acres. All of the phase acres will actually be disturbed during the construction phase, with only 30 acres subject to construction activities on any given day during the civil-site preparation sub-phase, and approximately 15 acres subject to activity during the erection sub-phase. The site is currently vacant. As such, the site will require moderate grading and leveling prior to construction of the power blocks, support systems, and site buildings. Site preparation (civil work) includes initial and finish grading, cut and fill activities, excavation of footings and foundations, and backfilling operations. After site preparation is finished, the construction-erection sub-phase of the PV fields and structures is expected to begin. It should be noted that the site access road, which is approximately 1.5 miles in length, will be constructed and paved prior to the start of construction on Phase 1. This road has already experienced a preliminary level of construction activity, i.e., initial grading and compaction, and clearing of ROWs.

Fugitive dust emissions from the construction of the Project will result from:

- Dust entrained during site preparation and finish grading/excavation at the construction site;
- Dust entrained during onsite travel on paved and unpaved surfaces;
- Dust entrained during aggregate and soil loading and unloading operations; and
- Wind erosion of areas disturbed during construction activities.

Combustion emissions during construction will result from:

- Exhaust from the gasoline and diesel construction equipment used for site preparation, grading, excavation, and construction of onsite structures;
- Exhaust from water trucks used to control construction dust emissions;
- Exhaust from gasoline or diesel-powered welding machines, electric generators, air compressors, and water pumps;

- Exhaust from gasoline pickup trucks and diesel trucks used to transport workers and materials around the construction site;
- Exhaust from diesel trucks used to deliver concrete, fuel, and construction supplies to the construction site; and,
- Exhaust from automobiles used by workers to commute to the construction site.

To determine the potential worst-case daily construction impacts, exhaust and dust emission rates have been evaluated for each source of emissions. Worst-case daily onsite exhaust and dust emissions are expected to occur during the overlap of the civil phase of Unit 8, as this phase has the largest amount of cut and fill activity due to its proximity to the alluvial foothills on the western edge of the site, and the end of the erection phase of Unit 7.

Worst-case daily offsite dust and exhaust emissions are expected to occur during the overlap period of the gentie and access road construction phases, i.e., 3 months.

Construction related fugitive dust emissions are based on a modified version of the EPA AP-42, Section 13.2.3 procedure, as implemented in the MRI Level II analysis. This procedure essentially uses an emissions factor in terms of tons/acre/month of construction activity. The MRI Level II analysis also includes an estimation procedure for quantifying fugitive dust emissions from construction related cut and fill activities. This procedure is widely used (and approved for use) per the following documents and programs:

- MRI Report No. 95040, SCAQMD Project, March 1996.
- URBEMIS Model, Version 9.2.4, Users Manual, Appendix A, Page A-6.
- CARB Area Source Methodology Manual, Section 7.7, 9/02.
- Western Regional Air Partnership, Fugitive Dust Handbook, 9/06.
- USEPA, AP-42, Section 13.2.3, 2/10.
- Estimating PM Emissions from Construction Operations, USEPA, MRI, 9/99.

This estimation procedure has been used in numerous AFC construction related analyses, as well as a wide range of CEQA and NEPA analyses for projects ranging in size from less than 5 acres to large power (thermal, solar, and wind) and transmission line construction projects involving site or project acreages from 300 to over 6000 acres.

In addition to the above, the equipment use rates for the various project phases were derived in part from the following reference, and reviewed by the Applicant: *Plan of Development*, *Amargosa North Solar PV Project (ANSP)*, *NVN 084465*, *Nye County, Nevada*, *Pacific Solar Investments, Inc.*, *Sept 2009*

The ANSP is a 150 MW PV solar facility subject to NEPA, reviewed by the BLM (Las Vegas Field Office). The equipment use rates for phases applicable to the BSPP were adjusted based on the following parameters:

1. Ratio of project MW rating.
2. Construction schedule and phase differences.
3. Acreage differences.
4. Applicant review of final equipment list for each phase.

The following basic manpower estimates are applicable to the various project construction components:

- The transmission (gentie) line construction crew will consist of 40 workers (maximum) per day.
- The road construction crew will consist of 30 workers (maximum) per day.
- The civil-land preparation sub-phase for each power block area will have approximately 30 workers (maximum) on site per day.
- The erection-installation sub-phase for each power block will have 200 workers (maximum) on site per day.

Other data for construction, by area, is as follows:

- The transmission line (gentie line) will consist of a maximum of 90 monopole structures (sites). This is based on the maximum gentie route length of 6.5 miles, and a span distance between monopoles of 400 ft. Each monopole site will have a disturbance area of 400 sq.ft., and a spur road (unpaved) of 100 ft. in length and 15 ft. in width. Monopoles require a single foundation bore-hole for installation.
- The plant access road off of Black Rock Rd. to the site entrance will be approximately 1.5 miles long, and 24 ft. wide. This road will be built to County specifications with an asphalt concrete cover. This road will be paved prior to the start of the power block construction phases (1-8).
- Each power block (Phases 1-8) will have approximately 10% of its total area paved by asphalt concrete, with an additional 10% covered by a coarse gravel surface, and the remaining 80%(primarily the PV fields) will be unpaved native soil.

Cautionary note: Reviewers should not compare the construction emissions estimates for the proposed PV facility to the previous solar/thermal at the same site, due to the following:

- Differences in site arrangement, solar field equipment, and deletion of the thermal power block processes.
- Differences in the construction schedules and phasing.
- Differences in the construction manpower requirements for the new facility.
- Differences in the construction equipment types and use rates.
- Differences in the processes proposed, i.e. PV vs. solar/thermal.
- Differences in the proposed offsite linears, i.e., no need for a utility corridor for natural gas pipeline.

Available Mitigation Measures

The following mitigation measures are proposed to control exhaust emissions from the gasoline and diesel construction equipment used during construction of BSPP:

- Operational measures, such as limiting time spent with the engine idling by shutting down equipment when not in use;
- Regular preventive maintenance to prevent emission increases due to engine problems;

- Use of low sulfur and low aromatic fuel meeting California standards for motor vehicle diesel fuel; and
- Use of low-emitting gas and diesel engines meeting state and federal emissions standards (Tier I, II, or III based on HP rating and mfg year) for construction equipment, including, but not limited to catalytic converter systems and particulate filter systems.

The following mitigation measures are proposed to control fugitive dust emissions during construction of the project:

- Use either water application or chemical dust suppressant application to control dust emissions from on-site unpaved road travel and unpaved parking areas;
- Use vacuum sweeping and/or water flushing of paved road surface to remove buildup of loose material to control dust emissions from travel on the paved access road (including adjacent public streets impacted by construction activities) and paved parking areas;
- Cover all trucks hauling soil, sand, and other loose materials or require all trucks to maintain at least two feet of freeboard;
- Limit traffic speeds on all unpaved site road areas to 5 mph;
- Install sandbags or other erosion control measures to prevent silt runoff to roadways;
- Replant vegetation in disturbed areas as quickly as possible;
- Use wheel washers or wash off tires of all trucks exiting construction site; and
- Mitigate fugitive dust emissions from wind erosion of areas disturbed from construction activities (including storage piles) by application of either water or chemical dust suppressant.

Estimation of Emissions with Mitigation Measures

Tables 1 and 2 show the estimated daily, period, and annualized heavy equipment exhaust and fugitive dust emissions. Detailed emission calculations are included in Table 9.

Table 1 presents the summary of off-site daily, period and annual emissions (normalized) for the construction phases of the project.

Table 1 Offsite Emissions Summary (lbs/day)

Category	NOx	CO	VOC	SOx	PM10	PM2.5
T-Line Equipment Exhaust	24.3	31.2	3.8	.038	1.48	1.47
Access Road Construction Exhaust	37.2	58.7	5.6	.056	2.32	2.3
T-Line Construction Fugitive Dust	-	-	-	-	.52	.11
Access Road Construction Fugitive Dust	-	-	-	-	.65	.14
Paved Road Dust-Civil Period (each phase 1-8)	-	-	-	-	.41	.07
Paved Road Dust-Erection Period (each phase 1-8)	-	-	-	-	10.59	1.79
Unpaved Road Dust-Civil Period (each phase 1-8)	-	-	-	-	4.44	.44
Unpaved Road Dust-Erection Period (each phase 1-8)	-	-	-	-	31.85	3.13
Truck Delivery/Site Support Exhaust (each phase)	44.1	17.6	3.3	.009	2.1	2.06
Truck Delivery/Site Support Exhaust (T-line)	.96	1.06	.1	.0015	.05	.05
Truck Delivery/Site Support Exhaust (access road)	4.5	2.3	.35	.0022	.22	.21
Worker Travel Exhaust (each civil phase 1-8)	.36	3.95	.15	.01	.06	.06
Worker Travel Exhaust (each erection phase 1-8)	2.61	28.94	1.11	.05	.44	.43

Worker Travel Exhaust (T-line const)	.48	5.26	.2	.01	.08	.08
Worker Travel Exhaust (access road const)	.36	3.95	.15	.01	.06	.06
Track-out Fugitive Dust (each phase)	-	-	-	-	.48	.08
Tons/period						
T-Line Equipment Exhaust	3.8	4.9	.6	.006	.23	.23
Access Road Construction Exhaust	1.5	2.3	.2	.002	.09	.09
T-Line Construction Fugitive Dust	-	-	-	-	.077	.016
Access Road Construction Fugitive Dust	-	-	-	-	.024	.005
Paved Road Dust-Civil Period (each phase 1-8)	-	-	-	-	.03	0
Paved Road Dust-Erection Period (each phase 1-8)	-	-	-	-	.91	.15
Unpaved Road Dust-Civil Period (each phase 1-8)	-	-	-	-	.27	.03
Unpaved Road Dust-Erection Period (each phase 1-8)	-	-	-	-	2.74	.27
Truck Delivery/Site Support Exhaust (each phase)	4.6	1.8	.34	.002	.22	.22
Truck Delivery/Site Support Exhaust (T-line)	.15	.16	.015	.0003	.008	.008
Truck Delivery/Site Support Exhaust (access road)	.18	.09	.014	.0001	.008	.008
Worker Travel Exhaust (each civil phase 1-8)	.023	.257	.01	.0001	.004	.004
Worker Travel Exhaust (each erection phase 1-8)	.239	2.65	.10	.004	.04	.04
Worker Travel Exhaust (T-line const)	.074	.82	.032	.001	.01	.01
Worker Travel Exhaust (access road const)	.014	.15	.006	0	.002	.002
Track-out Fugitive Dust (each phase)	-	-	-	-	.07	.012
Tons/Year (normalized)						
All Offsite Categories	7.2	7.6	.71	.01	5.5	1
Normalized emissions data: Each PV phase (1-8) = 12 months (civil portion=5 months, erection portion=7 months) T-line = 12 months Access road = 3 months Total project = 6.25 years						

Table 2 presents the summary of on-site daily, period and annual emissions (normalized) for the construction phases of the project.

Table 2 On-site Emissions Summary (lbs/day)						
Category	NOx	CO	VOC	SOx	PM10	PM2.5
Phases 1-5 Exhaust-Civil Subphase	103.2	106.5	14.5	.14	6.06	6.01
Phase 6 Exhaust-Civil Subphase	138	119	18.6	.178	7.67	7.6
Phase 7 Exhaust-Civil Subphase	174.4	132.7	22.7	.22	9.19	9.11
Phase 8 Exhaust-Civil Subphase*	189.2	137.3	24.4	.237	9.76	9.68
Phases 1-8 Exhaust-Erection Subphase (Avg)*	98.5	126.8	16.6	.166	6.26	6.2
Phases 1-8 Exhaust-Erection Subphase (Max)	198.4	254.8	33.4	.335	12.57	12.46
Phases 1-5 Fugitive Dust-Civil Subphase	-	-	-	-	9.54	2
Phase 6 Fugitive Dust-Civil Subphase	-	-	-	-	12.1	2.54
Phase 7 Fugitive Dust-Civil Subphase	-	-	-	-	14.9	3.13
Phase 8 Fugitive Dust-Civil Subphase*	-	-	-	-	17.26	3.62
Phases 1-8 Fugitive Dust-Erection Subphase*	-	-	-	-	3.92	.82
Onsite Paved Road Fugitive Dust*	-	-	-	-	.16	.03

Onsite Unpaved Road Fugitive Dust*	-	-	-	-	3.61	.36
Soil Storage Piles-Fugitive Dust*	-	-	-	-	.52	.21
Maximum Onsite Daily Emissions, lbs/day						
*Total of * categories above*	*287.7*	*264.1*	*41*	*.4*	*41.5*	*20.9*
Explanatory notes for maximum onsite daily emissions: *1. The maximum daily emissions would occur at the overlap of the end of the Phase 7 erection phase and the beginning of the Phase 8 civil phase (4 month period).* *2. Average erection Phase 7 exhaust emissions were used, as the probability that the maximum daily exhaust emissions would occur during the overlap period is very low.* *3. These emissions would be spread over two distinct project phases and areas, i.e., approximately 1736 acres.*						
Tons/period						
Phases 1-5 Exhaust-Civil Subphase	6.7	6.9	.9	.009	.39	.39
Phase 6 Exhaust-Civil Subphase	9	7.7	1.2	.012	.5	.49
Phase 7 Exhaust-Civil Subphase	11.3	8.6	1.5	.014	.6	.59
Phase 8 Exhaust-Civil Subphase	12.3	8.9	1.6	.015	.63	.63
Phases 1-8 Exhaust-Erection Subphase (Avg)	9	11.5	1.5	.015	.57	.56
Phases 1-8 Exhaust-Erection Subphase (Max)	18.1	23.2	3	.03	1.14	1.13
Phases 1-5 Fugitive Dust-Civil Subphase	-	-	-	-	.59	.123
Phase 6 Fugitive Dust-Civil Subphase	-	-	-	-	.74	.16
Phase 7 Fugitive Dust-Civil Subphase	-	-	-	-	.92	.2
Phase 8 Fugitive Dust-Civil Subphase	-	-	-	-	1.1	.22
Phases 1-8 Fugitive Dust-Erection Subphase	-	-	-	-	.34	.1
Onsite Paved Road Fugitive Dust (1-8)	-	-	-	-	.01	.001
Onsite Unpaved Road Fugitive Dust (1-8)	-	-	-	-	.56	.06
Soil Storage Piles-Fugitive Dust (1-8)	-	-	-	-	.034	.014
Tons/year (normalized)						
All Onsite Categories (avg year)	22.1	24.3	3.32	.033	3.44	1.72
All Onsite Categories (max year)	33.7	39.2	5.25	.052	4.2	2.45
Notes: Each PV phase (1-8) = 12 months (civil portion=5 months, erection portion=7 months)						

Table 3 presents the estimates of GHGs for the construction phase (total of on- and offsite emissions).

Table 3 GHG Construction Emissions Estimates	
Total CO_2e, short tons/period	9578
Total CO_2e, metric tons/period	8707
Total CO_2e, normalized short tons/yr	1532.5
Total CO_2e, normalized metric tons/yr	1393

The project regional area is currently classified "unclassified/attainment" for all federal air quality standards, therefore a federal conformity determination for construction emissions is not required.

Analysis of Ambient Impacts from Facility Construction

Ambient air quality impacts from emissions during the construction of the Project were estimated using an air quality dispersion modeling analysis. The modeling analysis considers the construction site location, the surrounding topography, and the sources of emissions during construction, including vehicle and equipment exhaust emissions and fugitive dust.

Existing Ambient Levels

Table 4 presents the ambient monitoring data used to establish the background air quality values for the construction impact modeling analysis.

Table 4 Background Air Quality Data for Most Recent 3 Years							
Pollutant	Site	Averaging Time	2009	2010	2011	Background Value, ug/m3	Comments
Ozone, ppm	Blythe-Murphy	1 Hr State	.072	.072	.066	141 ug/m3	high value most recent 3 years
		8 Hr Fed	.064	.064	.062	124 ug/m3	4th highest averaged over 3 years
		8 Hr State	.066	.068	.062	133.5 ug/m3	high value most recent 3 years
PM10, ug/m3	Indio-Jackson	24 Hr State	131	108	324	324 ug/m3	high value most recent 3 years
		24 Hr Fed	79	60	96	96 ug/m3	high 2nd high most recent 3 years
		Annual AM State	31.8	29.7	35.4	35.4 ug/m3	high value most recent 3 years
PM2.5, ug/m3	Indio-Jackson	24 Hr Fed	17	14	13	14.7 ug/m3	98th percentiles averaged over 3 years
		Annual AM State	nd	6.6	6.7	6.7 ug/m3	high value most recent 3 years
		Annual AM Fed	7.8	6.9	6.8	7.8 ug/m3	high value most recent 3 years
CO, ppm	Palm Springs FS	8 Hr State	.67	.56	.64	768 ug/m3	high value most recent 3 years
		1 Hr State	1.7	1.6	3.0	3437 ug/m3	high value most recent 3 years
		8 Hr Fed	.6	.5	.4	687 ug/m3	high 2nd high most recent 3 years
		1 Hr Fed	2.3	1.6	1.1	2635 ug/m3	high 2nd high most recent 3 years
NO2, ppm	Palm Springs FS	1 Hr State	.048	.046	.045	90.2 ug/m3	high value most recent 3 years
		1 Hr Fed	.039	.039	.039	73.3 ug/m3	98th percentiles averaged over 3 years
		Annual AM	.008	.009	.008	16.9 ug/m3	high value most recent 3 years
SO2, ppm	Victorville	Annual AM Fed	.000	.000	.001	2.6 ug/m3	high value most recent 3 years
		24 Hr State	.005	.007	.007	18.4 ug/m3	high value most recent 3 years
		24 Hr Fed	.005	.007	.007	18.4 ug/m3	high 2nd high most recent 3 years
		1 Hr State	.008	.052	.013	136.3 ug/m3	high value most recent 3 years
		1 Hr Fed	.006	.011	.007	28.8 ug/m3	99th percentiles averaged over 3 years

AERMOD Model

The USEPA-approved AERMOD model was used to estimate ambient impacts from construction activities. A detailed discussion of the AERMOD dispersion model is included below.

The AERMOD dispersion model was used to quantify pollutant impacts on the surrounding environment based on the emission sources operating parameters and their locations. AERMOD is part of the USEPA AERMOD modeling system (version 12060). Receptors and meteorological data from the previous Blythe Solar Power Project (Blythe) construction analyses were used, so executions of the AERMOD associated programs (AERMAP, AERSURFACE, and AERMET) were not necessary. The construction impacts modeling analysis used the same receptors as used for previous construction modeling analyses of the Blythe project as the project fenceline will remain the same. Similarly, meteorological data from previous Blythe construction modeling analyses were used. Specifically, the Blythe Airport surface data were combined with upper air data from Desert Rock, Nevada, for the years of 2002-2004. The regulatory default option was used which includes calm and missing meteorological data processing as well as the use of elevated receptor heights (complex terrain) processing.

The emission sources for the construction site were grouped into two categories: exhaust emissions and dust emissions. Both exhaust and fugitive dust emissions were modeled as area sources with initial release heights of 3.7 and 2.0 meters, respectively, and initial sigma-z's of 6.88 and 2.13 meters, respectively, similar to previous construction modeling analyses of the Blythe project. The use of initial sigma-z's is to account for moving sources which can generate mechanical turbulence which initially disperses the plume. .

The modeled area sources covered the expected area of the worst-case construction phases for the applicable average time, namely 868 acres for annual impacts and 45 acres for short-term impacts (representing a single day of construction activities). The area sources were placed in Phase 8 area (i.e., 45 acres in the SW corner of Unit 8 closest to the property boundary for short-term impacts and 868 acres of Unit 8 and contiguous areas in Unit 6 (to make up the necessary acreage). In addition, average daily emissions were used for impact analysis, since the probability of maximum daily exhaust emissions from an erection phase overlapping a civil phase day was considered low.

To determine the construction impacts on short-term ambient standards (24 hours and less), the worst-case daily onsite construction emission levels shown in Table 2 were used, i.e., Phase 8. For pollutants with annual average ambient standards, the annual onsite emission levels shown in Table 2 were used based on the worst-case 12-month period (Phase 8).

Modeling Results

Based on the emission rates of NO_x, SO_2, CO, PM10, and PM2.5 and the meteorological data, the AERMOD model calculates hourly and annual ambient impacts for each pollutant. As mentioned above, the modeled 1-hour, 3-hour 8-hour, and 24-hour ambient impacts are based on the worst-case daily emission rates of NO_x, SO_2, CO, PM10, and PM2.5. The annual impacts of NO_x, PM10, and PM2.5 are based on the annual emission rates of these pollutants.

The one-hour and annual average concentrations of NO_2 were computed following USEPA and SDAPCD guidance for computing these concentrations. The annual average was calculated using the ambient ratio method (ARM) with the national default value of 0.75 for the annual average NO_2/NO_x ratio. The 1-hour NO_2 impacts for comparison to the CAAQS were calculated based on the maximum 1-hour impact using the ozone limiting method (OLM) with ozone data from the Blythe Murphy Street monitoring site for the same time period as the modeled meteorological data. The 1-hour NO2 impacts for comparison to the NAAQS were calculated based on the 3-year average of the eighth highest 1-hour daily maximum NO2 impact using OLM with the same Blythe ozone data.

The modeling analysis results are shown in Table 5. Also included in the table are the maximum background levels that have occurred in the last three years and the resulting total ambient impacts. As shown in Table 4, modeled construction impacts are expected to be below the most stringent state and national standards. Total (i.e., modeled plus background) impacts are greater than the state's PM10 standards because these standards are already exceeded by background ambient concentrations even in the absence of the construction emissions from the Project. Total (modeled+background) concentrations all also greater than the new 1-hour federal NO_2 standard.

Table 5 Modeled Maximum Impacts

Pollutant	Averaging Time	Maximum Impacts (ug/m^3)	Background (ug/m^3)	Total Impacts (ug/m^3)	State Standard (ug/m^3)	Federal Standard (ug/m^3)
NO_2	1 hour CAAQS	185.9	90.2	276.1	339	-
	1-hour NAAQS	173.3	73.3	246.6	-	188
	Annual	0.44	16.9	17.35	57	100
CO	1 hour	949	3437	4386	23000	40000
	8 hour	158	768	926	10000	10000
PM_{10}	24 hour CAAQS	16.5	324	340.1	50	-
	24-hour NAAQS	16.5	96	112.5		150
	Annual	0.08	35.4	35.5	20	-
$PM_{2.5}$	24 hour	7.4	14.7	22.1	-	35
	Annual	0.04	7.8	7.84	12	15.0
SO_2	1 hour	1.44	136.3	137.7	655	196
	3 hour	0.59	N/A	<136.9		1300
	24 hour*	0.13	18.42.6	18.53	105	365
	Annual*	0.001		2.6		80
Ozone	1 hour	Modeling not required.			180	-
	8 hour				137	147

Notes:

1. Background values are the limiting values, i.e., when used for both state (CAAQS) and federal (NAAQS) standards, the value that is the highest for each applicable averaging time from Table 4 is used.
2. CARB Ambient Air Quality Standards Table, 2-7-12.
3. *Federal SO_2 standards for 24 hour and annual apply only to certain areas (not applicable to this project).
4. Annual values are arithmetic means.
5. ARM applied for annual NO_2 average, using national default ratio of 0.75. Ozone Limiting Method (OLM) applied for 1-hour NO_2 average, calculated by AERMOD as described above.

The AERMOD model is expected over predict construction emission impacts due to the cold plume (i.e., ambient temperature) effect of dust emissions. Most of the plume dispersion characteristics in the AERMOD model are derived from observations of hot plumes associated with typical smoke stacks. The AERMOD model does compensate for plume temperature; however, for ambient temperature plumes the model assumes negligible

buoyancy and dispersion. Consequently, the ambient concentrations in cold plumes remain high even at significant distances from a source. Project construction site impacts are not unusual in comparison to most construction sites; construction sites that use good dust suppression techniques and low-emitting vehicles typically do not cause violations of air quality standards. The input and output modeling files are being provided electronically.

Construction Screening HRA

The screening risk calculation for construction impacts, i.e., diesel equipment particulate matter emissions and the inhalation pathway assumption is presented in Table 6. Consistent with the previous project analysis, no sensitive receptors were noted within a 3-mile radius of the plant site. The resulting impacts to public health are less than the applicable significance level of 1 in a million. Thus, during the construction phase of the project, no impacts to public health are expected to occur.

Table 6 Construction Risk Summary

Parameter	MIR Receptor #1	MIR Receptor #2
Receptor Location	Fence line	Nearest Residential
MIR Receptor Coordinates (UTM meters-NAD83)	705922, 3727306	710535, 3721040
Cancer Risk (per million-6.25 years)	0.69	0.01
Chronic HI	0.007	0.000

The maximum onsite diesel exhaust period emissions (normalized tons/year) were used for risk evaluation purposes.
Maximum annual PM10 combustion source impacts are 0.03605 ug/m^3 for the fenceline receptor, and 0.00070 ug/m^3 for the nearest residential receptor.

Tables and Figures included in this section are as follows:

Table 7 Blythe PV Development Schedule

Table 8 SCAQMD Construction Equipment Types and Emissions Factors for 2013

Table 9 Construction Emissions Calculations (64 pages)

Table 10 EMFAC Composite Factors for 2013

Table 11 EMFAC Burden Output for 2013

Table 12 Construction Modeling Impact Summary

Table 13 Construction Diesel PM Screening Risk Calculations

Blythe PV Development Schedule

Table 7   Estimated Blythe PV Development Schedule

	Year 1												Year 2											
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
Gentie Construction	x	x	x	x	x	x	x	x	x	x	x	x												
Main Road Construction						x	x	x																
Unit 1 Construction									x	x	x	x	x	x	x	x	x	x	x	x				
Unit 2 Construction																	x	x	x	x	x	x	x	x
Unit 3 Construction																								
Unit 4 Construction																								
Unit 5 Construction																								
Unit 6 Construction																								
Unit 7 Construction																								
Unit 8 Construction																								
Civil Work																								
Erection Work																								

	Year 3												Year 4											
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
Gentie Construction																								
Main Road Construction																								
Unit 1 Construction																								
Unit 2 Construction	x	x	x	x																				
Unit 3 Construction	x	x	x	x	x	x	x	x	x	x	x	x												
Unit 4 Construction									x	x	x	x	x	x	x	x	x	x	x	x				
Unit 5 Construction																x	x	x	x	x	x	x	x	x
Unit 6 Construction																								x
Unit 7 Construction																								
Unit 8 Construction																								
Civil Work																								
Erection Work																								

	Year 5												Year 6												Year 7		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
Gentie Construction																											
Main Road Construction																											
Unit 1 Construction																											
Unit 2 Construction																											
Unit 3 Construction																											
Unit 4 Construction																											
Unit 5 Construction	x	x	x																								
Unit 6 Construction	x	x	x	x	x	x	x	x	x	x	x																
Unit 7 Construction								x	x	x	x	x	x	x	x	x	x	x	x								
Unit 8 Construction																x	x	x	x	x	x	x	x	x	x	x	x
Civil Work																											
Erection Work																											

Total const period = 75 months, 6.25 years
Each PV Unit phase = 12 months, 1 year, 5 months civil, 7 months construction/erection
Total civil months = 55 months
Total PV unit const months = 56 months

Worst Case Periods:
1. offsite - 3 month overlap of gentie and road construction
2. onsite - 4 month overlap of next civil subphase with previous erection subphase
(Phase 8 civil and Phase 7 erection overlap = worst case phase period)

Table 8 Fleet Average Emission Factors (Diesel)

2013

Air Basin	SC

		(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	LBS/HP-HR						
Equipment	MaxHP	ROG	CO	NOX	SOX	PM	CO2	CH4	ROG	CO	NOX	SOX	PM	CO2	CH4
Aerial Lifts	15	0.0101	0.0528	0.0637	0.0001	0.0027	8.7	0.0009	0.0007	0.0035	0.0042	0.000009	0.0002	0.5768	0.000061
	25	0.0166	0.0503	0.0937	0.0001	0.0051	11.0	0.0015	0.0007	0.0020	0.0037	0.000006	0.0002	0.4384	0.000060
	50	0.0592	0.1757	0.1840	0.0003	0.0156	19.6	0.0053	0.0012	0.0035	0.0037	0.000005	0.0003	0.3923	0.000107
	120	0.0558	0.2425	0.3758	0.0004	0.0299	38.1	0.0050	0.0005	0.0020	0.0031	0.000004	0.0002	0.3173	0.000042
	500	0.1191	0.4671	1.5310	0.0021	0.0448	213	0.0107	0.0002	0.0009	0.0031	0.000004	0.0001	0.4257	0.000021
	750	0.2221	0.8443	2.8534	0.0039	0.0825	385	0.0200	0.0003	0.0011	0.0038	0.000005	0.0001	0.5130	0.000027
Aerial Lifts Total		0.0529	0.1925	0.3059	0.0004	0.0202	34.7	0.0048							
Air Compressors	15	0.0122	0.0484	0.0732	0.0001	0.0048	7.2	0.0011	0.0008	0.0032	0.0049	0.000007	0.0003	0.4815	0.000073
	25	0.0266	0.0744	0.1306	0.0002	0.0081	14.4	0.0024	0.0011	0.0030	0.0052	0.000007	0.0003	0.5778	0.000096
	50	0.0921	0.2546	0.2221	0.0003	0.0220	22.3	0.0083	0.0018	0.0051	0.0044	0.000006	0.0004	0.4454	0.000166
	120	0.0825	0.3251	0.4991	0.0006	0.0456	47.0	0.0074	0.0007	0.0027	0.0042	0.000005	0.0004	0.3913	0.000062
	175	0.1059	0.5054	0.8385	0.0010	0.0472	88.5	0.0096	0.0006	0.0029	0.0048	0.000006	0.0003	0.5056	0.000055
	250	0.1007	0.2955	1.1320	0.0015	0.0347	131	0.0091	0.0004	0.0012	0.0045	0.000006	0.0001	0.5249	0.000036
	500	0.1626	0.5399	1.7639	0.0023	0.0570	232	0.0147	0.0003	0.0011	0.0035	0.000005	0.0001	0.4635	0.000029
	750	0.2547	0.8344	2.8139	0.0036	0.0898	358	0.0230	0.0003	0.0011	0.0038	0.000005	0.0001	0.4775	0.000031
	1000	0.4190	1.4213	5.0841	0.0049	0.1474	486	0.0378	0.0004	0.0014	0.0051	0.000005	0.0001	0.4864	0.000038
Air Compressors Total		0.0913	0.3376	0.6065	0.0007	0.0434	63.6	0.0082							
Bore/Drill Rigs	15	0.0120	0.0632	0.0754	0.0002	0.0029	10.3	0.0011	0.0008	0.0042	0.0050	0.000011	0.0002	0.6897	0.000072
	25	0.0193	0.0658	0.1226	0.0002	0.0049	16.0	0.0017	0.0008	0.0026	0.0049	0.000008	0.0002	0.6395	0.000070
	50	0.0289	0.2282	0.2568	0.0004	0.0120	31.0	0.0026	0.0006	0.0046	0.0051	0.000008	0.0002	0.6207	0.000052
	120	0.0447	0.4698	0.4583	0.0009	0.0257	77.1	0.0040	0.0004	0.0039	0.0038	0.000008	0.0002	0.6427	0.000034
	175	0.0704	0.7538	0.6931	0.0016	0.0302	141	0.0063	0.0004	0.0043	0.0040	0.000009	0.0002	0.8062	0.000036
	250	0.0795	0.3429	0.7632	0.0021	0.0221	188	0.0072	0.0003	0.0014	0.0031	0.000008	0.0001	0.7524	0.000029
	500	0.1295	0.5517	1.1717	0.0031	0.0361	311	0.0117	0.0003	0.0011	0.0023	0.000006	0.0001	0.6226	0.000023
	750	0.2565	1.0899	2.3376	0.0062	0.0715	615	0.0231	0.0003	0.0015	0.0031	0.000008	0.0001	0.8201	0.000031
	1000	0.4163	1.6675	5.9553	0.0093	0.1544	928	0.0376	0.0004	0.0017	0.0060	0.000009	0.0002	0.9283	0.000038
Bore/Drill Rigs Total		0.0786	0.5044	0.8125	0.0017	0.0302	165	0.0071							
Cement and Mortar	15	0.0074	0.0386	0.0470	0.0001	0.0021	6.3	0.0007	0.0005	0.0026	0.0031	0.000007	0.0001	0.4213	0.000045
	25	0.0270	0.0813	0.1510	0.0002	0.0083	17.6	0.0024	0.0011	0.0033	0.0060	0.000009	0.0003	0.7022	0.000098
Cement and Mortar Mixers Total		0.0091	0.0421	0.0556	0.0001	0.0026	7.2	0.0008							
Concrete/Industrial	25	0.0199	0.0678	0.1257	0.0002	0.0049	16.5	0.0018	0.0008	0.0027	0.0050	0.000008	0.0002	0.6591	0.000072
	50	0.0955	0.2918	0.2858	0.0004	0.0247	30.2	0.0086	0.0019	0.0058	0.0057	0.000008	0.0005	0.6042	0.000172
	120	0.1065	0.4836	0.7154	0.0009	0.0589	74.1	0.0096	0.0009	0.0040	0.0060	0.000007	0.0005	0.6179	0.000080
	175	0.1569	0.8701	1.3612	0.0018	0.0706	160	0.0142	0.0009	0.0050	0.0078	0.000010	0.0004	0.9154	0.000081
Concrete/Industrial Saws Total		0.1002	0.4088	0.5572	0.0007	0.0452	58.5	0.0090							
Cranes	50	0.1015	0.2892	0.2394	0.0003	0.0239	23.2	0.0092	0.0020	0.0058	0.0048	0.000006	0.0005	0.4637	0.000183
	120	0.0919	0.3618	0.5508	0.0006	0.0493	50.1	0.0083	0.0008	0.0030	0.0046	0.000005	0.0004	0.4179	0.000069
	175	0.1031	0.4821	0.7769	0.0009	0.0445	80.3	0.0093	0.0006	0.0028	0.0044	0.000005	0.0003	0.4591	0.000053
	250	0.1040	0.2948	0.9948	0.0013	0.0351	112	0.0094	0.0004	0.0012	0.0040	0.000005	0.0001	0.4486	0.000038
	500	0.1551	0.5292	1.4230	0.0018	0.0518	180	0.0140	0.0003	0.0011	0.0028	0.000004	0.0001	0.3602	0.000028
	750	0.2625	0.8887	2.4614	0.0030	0.0885	303	0.0237	0.0003	0.0012	0.0033	0.000004	0.0001	0.4041	0.000032
	9999	0.9491	3.3249	10.3665	0.0098	0.3189	971	0.0856							
Cranes Total		0.1348	0.4737	1.1934	0.0014	0.0508	129	0.0122							

Crawler Tractors	50	0.1176	0.3246	0.2627	0.0003	0.0270	24.9	0.0106	0.0024	0.0065	0.0053	0.000006	0.0005	0.4976	0.000212
	120	0.1293	0.4858	0.7686	0.0008	0.0677	65.8	0.0117	0.0011	0.0040	0.0064	0.000006	0.0006	0.5484	0.000097
	175	0.1674	0.7448	1.2529	0.0014	0.0713	121	0.0151	0.0010	0.0043	0.0072	0.000008	0.0004	0.6925	0.000086
	250	0.1764	0.5000	1.5945	0.0019	0.0613	166	0.0159	0.0007	0.0020	0.0064	0.000007	0.0002	0.6645	0.000064
	500	0.2542	0.9504	2.2389	0.0025	0.0868	259	0.0229	0.0005	0.0019	0.0045	0.000005	0.0002	0.5185	0.000046
	750	0.4574	1.6983	4.1042	0.0047	0.1573	465	0.0413	0.0006	0.0023	0.0055	0.000006	0.0002	0.6196	0.000055
	1000	0.6901	2.6950	7.3731	0.0066	0.2361	658	0.0623	0.0007	0.0027	0.0074	0.000007	0.0002	0.6581	0.000062
Crawler Tractors Total		0.1584	0.5900	1.1593	0.0013	0.0697	114	0.0143							
Crushing/Proc. Equ	50	0.1741	0.5009	0.4359	0.0006	0.0422	44.0	0.0157	0.0035	0.0100	0.0087	0.000011	0.0008	0.8803	0.000314
	120	0.1402	0.5764	0.8552	0.0010	0.0779	83.1	0.0127	0.0012	0.0048	0.0071	0.000008	0.0006	0.6928	0.000105
	175	0.1942	0.9615	1.5237	0.0019	0.0864	167	0.0175	0.0011	0.0055	0.0087	0.000011	0.0005	0.9558	0.000100
	250	0.1848	0.5425	2.0202	0.0028	0.0620	245	0.0167	0.0007	0.0022	0.0081	0.000011	0.0002	0.9781	0.000067
	500	0.2608	0.8480	2.7097	0.0037	0.0884	374	0.0235	0.0005	0.0017	0.0054	0.000007	0.0002	0.7473	0.000047
	750	0.4147	1.3191	4.4498	0.0059	0.1418	589	0.0374	0.0006	0.0018	0.0059	0.000008	0.0002	0.7851	0.000050
	9999	1.1270	3.6752	13.3218	0.0131	0.3880	1,308	0.1017							
Crushing/Proc. Equipment Total		0.1733	0.6773	1.1752	0.0015	0.0748	132	0.0156							
Dumpers/Tenders	25	0.0097	0.0320	0.0601	0.0001	0.0029	7.6	0.0009	0.0004	0.0013	0.0024	0.000004	0.0001	0.3050	0.000035
Dumpers/Tenders Total		0.0097	0.0320	0.0601	0.0001	0.0029	7.6	0.0009							
Excavators	25	0.0198	0.0677	0.1253	0.0002	0.0047	16.4	0.0018	0.0008	0.0027	0.0050	0.000008	0.0002	0.6576	0.000072
	50	0.0816	0.2841	0.2458	0.0003	0.0212	25.0	0.0074	0.0016	0.0057	0.0049	0.000006	0.0004	0.5004	0.000147
	120	0.1086	0.5177	0.6791	0.0009	0.0586	73.6	0.0098	0.0009	0.0043	0.0057	0.000007	0.0005	0.6135	0.000082
	175	0.1208	0.6668	0.8932	0.0013	0.0512	112	0.0109	0.0007	0.0038	0.0051	0.000007	0.0003	0.6413	0.000062
	250	0.1242	0.3541	1.1360	0.0018	0.0372	159	0.0112	0.0005	0.0014	0.0045	0.000007	0.0001	0.6347	0.000045
	500	0.1735	0.5271	1.4763	0.0023	0.0516	234	0.0157	0.0003	0.0011	0.0030	0.000005	0.0001	0.4675	0.000031
	750	0.2895	0.8731	2.5290	0.0039	0.0871	387	0.0261	0.0004	0.0012	0.0034	0.000005	0.0001	0.5166	0.000035
Excavators Total		0.1220	0.5338	0.9071	0.0013	0.0481	120	0.0110							
Forklifts	50	0.0445	0.1623	0.1431	0.0002	0.0121	14.7	0.0040	0.0009	0.0032	0.0029	0.000004	0.0002	0.2934	0.000080
	120	0.0438	0.2176	0.2788	0.0004	0.0241	31.2	0.0040	0.0004	0.0018	0.0023	0.000003	0.0002	0.2602	0.000033
	175	0.0572	0.3307	0.4261	0.0006	0.0246	56.1	0.0052	0.0003	0.0019	0.0024	0.000004	0.0001	0.3203	0.000030
	250	0.0570	0.1614	0.5281	0.0009	0.0168	77.1	0.0051	0.0002	0.0006	0.0021	0.000003	0.0001	0.3085	0.000021
	500	0.0781	0.2208	0.6592	0.0011	0.0228	111	0.0070	0.0002	0.0004	0.0013	0.000002	0.0000	0.2220	0.000014
Forklifts Total		0.0541	0.2235	0.3950	0.0006	0.0204	54.4	0.0049							
Generator Sets	15	0.0149	0.0684	0.1016	0.0002	0.0058	10.2	0.0013	0.0010	0.0046	0.0068	0.000011	0.0004	0.6805	0.000090
	25	0.0266	0.0908	0.1594	0.0002	0.0091	17.6	0.0024	0.0011	0.0036	0.0064	0.000009	0.0004	0.7053	0.000096
	50	0.0872	0.2639	0.2847	0.0004	0.0234	30.6	0.0079	0.0017	0.0053	0.0057	0.000008	0.0005	0.6125	0.000157
	120	0.1106	0.4905	0.7587	0.0009	0.0590	77.9	0.0100	0.0009	0.0041	0.0063	0.000008	0.0005	0.6496	0.000083
	175	0.1347	0.7388	1.2314	0.0016	0.0592	142	0.0122	0.0008	0.0042	0.0070	0.000009	0.0003	0.8113	0.000069
	250	0.1277	0.4365	1.6763	0.0024	0.0464	213	0.0115	0.0005	0.0017	0.0067	0.000010	0.0002	0.8500	0.000046
	500	0.1818	0.7230	2.3955	0.0033	0.0690	337	0.0164	0.0004	0.0014	0.0048	0.000007	0.0001	0.6737	0.000033
	750	0.3035	1.1671	3.9863	0.0055	0.1134	544	0.0274	0.0004	0.0016	0.0053	0.000007	0.0002	0.7251	0.000037
Generator Sets Total		0.0767	0.3045	0.5430	0.0007	0.0324	61.0	0.0069							
Graders	50	0.1080	0.3263	0.2772	0.0004	0.0262	27.5	0.0097	0.0022	0.0065	0.0055	0.000007	0.0005	0.5508	0.000195
	120	0.1254	0.5310	0.7729	0.0009	0.0676	75.0	0.0113	0.0010	0.0044	0.0064	0.000007	0.0006	0.6247	0.000094
	175	0.1467	0.7345	1.1193	0.0014	0.0631	124	0.0132	0.0008	0.0042	0.0064	0.000008	0.0004	0.7081	0.000076
	250	0.1492	0.4331	1.4184	0.0019	0.0494	172	0.0135	0.0006	0.0017	0.0057	0.000008	0.0002	0.6885	0.000054
	500	0.1855	0.6289	1.6842	0.0023	0.0608	229	0.0167	0.0004	0.0013	0.0034	0.000005	0.0001	0.4590	0.000033
	750	0.3952	1.3289	3.6674	0.0049	0.1306	486	0.0357	0.0005	0.0018	0.0049	0.000007	0.0002	0.6477	0.000048
Graders Total		0.1446	0.6053	1.1663	0.0015	0.0593	133	0.0130							
Off-Highway Tractc	120	0.2113	0.7191	1.2368	0.0011	0.1078	93.7	0.0191	0.0018	0.0060	0.0103	0.000009	0.0009	0.7811	0.000159
	175	0.2045	0.8335	1.5337	0.0015	0.0871	130	0.0185	0.0012	0.0048	0.0088	0.000008	0.0005	0.7452	0.000105
	250	0.1641	0.4691	1.4453	0.0015	0.0601	130	0.0148	0.0007	0.0019	0.0058	0.000006	0.0002	0.5217	0.000059
	750	0.6538	2.8815	5.8130	0.0057	0.2353	568	0.0590	0.0009	0.0038	0.0078	0.000008	0.0003	0.7575	0.000079

	1000	0.9818	4.4978	10.0554	0.0082	0.3436	814	0.0886	0.0010	0.0045	0.0101	0.000008	0.0003	0.8143	0.000089
Off-Highway Tractors Total		0.2077	0.7649	1.7062	0.0017	0.0818	151	0.0187							
Off-Highway Trucks	175	0.1441	0.7580	1.0305	0.0014	0.0602	125	0.0130	0.0008	0.0043	0.0059	0.000008	0.0003	0.7148	0.000074
	250	0.1400	0.3837	1.2373	0.0019	0.0412	167	0.0126	0.0006	0.0015	0.0049	0.000007	0.0002	0.6662	0.000051
	500	0.2170	0.6362	1.7865	0.0027	0.0634	272	0.0196	0.0004	0.0013	0.0036	0.000005	0.0001	0.5447	0.000039
	750	0.3542	1.0311	2.9938	0.0044	0.1046	442	0.0320	0.0005	0.0014	0.0040	0.000006	0.0001	0.5890	0.000043
	1000	0.5484	1.6691	5.9808	0.0063	0.1796	625	0.0495	0.0005	0.0017	0.0060	0.000006	0.0002	0.6247	0.000049
Off-Highway Trucks Total		0.2141	0.6361	1.8543	0.0027	0.0644	260	0.0193							
Other Construction	15	0.0118	0.0617	0.0737	0.0002	0.0029	10.1	0.0011	0.0008	0.0041	0.0049	0.000010	0.0002	0.6738	0.000071
	25	0.0160	0.0544	0.1013	0.0002	0.0041	13.2	0.0014	0.0006	0.0022	0.0041	0.000007	0.0002	0.5287	0.000058
	50	0.0753	0.2653	0.2585	0.0004	0.0205	28.0	0.0068	0.0015	0.0053	0.0052	0.000007	0.0004	0.5598	0.000136
	120	0.1006	0.5277	0.7025	0.0009	0.0567	80.9	0.0091	0.0008	0.0044	0.0059	0.000008	0.0005	0.6738	0.000076
	175	0.0935	0.5873	0.8011	0.0012	0.0420	107	0.0084	0.0005	0.0034	0.0046	0.000007	0.0002	0.6087	0.000048
	500	0.1452	0.5234	1.5187	0.0025	0.0491	254	0.0131	0.0003	0.0010	0.0030	0.000005	0.0001	0.5085	0.000026
Other Construction Equipment To		0.0872	0.3765	0.7938	0.0013	0.0330	123	0.0079							
Other General Indu	15	0.0066	0.0391	0.0466	0.0001	0.0018	6.4	0.0006	0.0004	0.0026	0.0031	0.000007	0.0001	0.4264	0.000040
	25	0.0185	0.0632	0.1170	0.0002	0.0044	15.3	0.0017	0.0007	0.0025	0.0047	0.000008	0.0002	0.6140	0.000067
	50	0.0980	0.2738	0.2243	0.0003	0.0232	21.7	0.0088	0.0020	0.0055	0.0045	0.000006	0.0005	0.4349	0.000177
	120	0.1177	0.4487	0.6789	0.0007	0.0644	62.0	0.0106	0.0010	0.0037	0.0057	0.000006	0.0005	0.5170	0.000089
	175	0.1261	0.5728	0.9333	0.0011	0.0549	95.9	0.0114	0.0007	0.0033	0.0053	0.000006	0.0003	0.5482	0.000065
	250	0.1174	0.3177	1.2013	0.0015	0.0380	136	0.0106	0.0005	0.0013	0.0048	0.000006	0.0002	0.5423	0.000042
	500	0.2135	0.6384	2.0642	0.0026	0.0693	265	0.0193	0.0004	0.0013	0.0041	0.000005	0.0001	0.5308	0.000039
	750	0.3546	1.0522	3.5146	0.0044	0.1165	437	0.0320	0.0005	0.0014	0.0047	0.000006	0.0002	0.5833	0.000043
	1000	0.5246	1.6793	6.0067	0.0056	0.1805	560	0.0473	0.0005	0.0017	0.0060	0.000006	0.0002	0.5596	0.000047
Other General Industrial Equipme		0.1542	0.5159	1.3484	0.0016	0.0580	152	0.0139							
Other Material Han	50	0.1361	0.3789	0.3119	0.0004	0.0323	30.3	0.0123	0.0027	0.0076	0.0062	0.000008	0.0006	0.6067	0.000246
	120	0.1144	0.4370	0.6628	0.0007	0.0628	60.7	0.0103	0.0010	0.0036	0.0055	0.000006	0.0005	0.5056	0.000086
	175	0.1591	0.7257	1.1860	0.0014	0.0696	122	0.0144	0.0009	0.0041	0.0068	0.000008	0.0004	0.6976	0.000082
	250	0.1241	0.3385	1.2829	0.0016	0.0405	145	0.0112	0.0005	0.0014	0.0051	0.000007	0.0002	0.5801	0.000045
	500	0.1521	0.4596	1.4883	0.0019	0.0498	192	0.0137	0.0003	0.0009	0.0030	0.000004	0.0001	0.3833	0.000027
Other Material Handling Equipme		0.1473	0.4951	1.3132	0.0015	0.0562	141	0.0133							
Pavers	25	0.0247	0.0799	0.1500	0.0002	0.0075	18.7	0.0022	0.0010	0.0032	0.0060	0.000009	0.0003	0.7464	0.000089
	50	0.1366	0.3592	0.2948	0.0004	0.0308	28.0	0.0123	0.0027	0.0072	0.0059	0.000007	0.0006	0.5598	0.000246
	120	0.1387	0.5057	0.8357	0.0008	0.0729	69.2	0.0125	0.0012	0.0042	0.0070	0.000007	0.0006	0.5766	0.000104
	175	0.1777	0.7784	1.3769	0.0014	0.0769	128	0.0160	0.0010	0.0044	0.0079	0.000008	0.0004	0.7331	0.000092
	250	0.2072	0.6081	1.9469	0.0022	0.0756	194	0.0187	0.0008	0.0024	0.0078	0.000009	0.0003	0.7775	0.000075
	500	0.2275	0.9254	2.1080	0.0023	0.0818	233	0.0205	0.0005	0.0019	0.0042	0.000005	0.0002	0.4665	0.000041
Pavers Total		0.1511	0.5357	0.8542	0.0009	0.0603	77.9	0.0136							
Paving Equipment	25	0.0153	0.0520	0.0968	0.0002	0.0039	12.6	0.0014	0.0006	0.0021	0.0039	0.000006	0.0002	0.5051	0.000055
	50	0.1166	0.3049	0.2514	0.0003	0.0263	23.9	0.0105	0.0023	0.0061	0.0050	0.000006	0.0005	0.4785	0.000210
	120	0.1087	0.3958	0.6561	0.0006	0.0574	54.5	0.0098	0.0009	0.0033	0.0055	0.000005	0.0005	0.4542	0.000082
	175	0.1387	0.6079	1.0816	0.0011	0.0602	101	0.0125	0.0008	0.0035	0.0062	0.000006	0.0003	0.5773	0.000072
	250	0.1277	0.3763	1.2206	0.0014	0.0467	122	0.0115	0.0005	0.0015	0.0049	0.000006	0.0002	0.4892	0.000046
Paving Equipment Total		0.1142	0.4316	0.7709	0.0008	0.0536	68.9	0.0103							
Plate Compactors	15	0.0050	0.0263	0.0314	0.0001	0.0012	4.3	0.0005	0.0003	0.0018	0.0021	0.000004	0.0001	0.2876	0.000030
Plate Compactors Total		0.0050	0.0263	0.0314	0.0001	0.0012	4.3	0.0005							
Pressure Washers	15	0.0071	0.0328	0.0487	0.0001	0.0028	4.9	0.0006	0.0005	0.0022	0.0032	0.000005	0.0002	0.3260	0.000043
	25	0.0108	0.0368	0.0646	0.0001	0.0037	7.1	0.0010	0.0004	0.0015	0.0026	0.000004	0.0001	0.2859	0.000039
	50	0.0315	0.1037	0.1284	0.0002	0.0094	14.3	0.0028	0.0006	0.0021	0.0026	0.000004	0.0002	0.2859	0.000057
	120	0.0302	0.1443	0.2235	0.0003	0.0157	24.1	0.0027	0.0003	0.0012	0.0019	0.000002	0.0001	0.2006	0.000023

Pressure Washers Total		0.0159	0.0619	0.0878	0.0001	0.0058	9.4	0.0014							
Pumps	15	0.0125	0.0497	0.0752	0.0001	0.0049	7.4	0.0011	0.0008	0.0033	0.0050	0.000008	0.0003	0.4949	0.000075
	25	0.0359	0.1004	0.1761	0.0002	0.0109	19.5	0.0032	0.0014	0.0040	0.0070	0.000010	0.0004	0.7795	0.000129
	50	0.1052	0.3116	0.3228	0.0004	0.0275	34.3	0.0095	0.0021	0.0062	0.0065	0.000009	0.0005	0.6867	0.000190
	120	0.1149	0.4984	0.7706	0.0009	0.0617	77.9	0.0104	0.0010	0.0042	0.0064	0.000008	0.0005	0.6496	0.000086
	175	0.1385	0.7405	1.2344	0.0016	0.0611	140	0.0125	0.0008	0.0042	0.0071	0.000009	0.0003	0.8007	0.000071
	250	0.1266	0.4210	1.6140	0.0023	0.0457	201	0.0114	0.0005	0.0017	0.0065	0.000009	0.0002	0.8055	0.000046
	500	0.1952	0.7595	2.4849	0.0034	0.0734	345	0.0176	0.0004	0.0015	0.0050	0.000007	0.0001	0.6904	0.000035
	750	0.3326	1.2556	4.2353	0.0057	0.1235	571	0.0300	0.0004	0.0017	0.0056	0.000008	0.0002	0.7609	0.000040
Pumps Total		0.0748	0.2926	0.4705	0.0006	0.0323	49.6	0.0067							
Rollers	15	0.0074	0.0386	0.0461	0.0001	0.0018	6.3	0.0007	0.0005	0.0026	0.0031	0.000007	0.0001	0.4213	0.000044
	25	0.0161	0.0549	0.1023	0.0002	0.0041	13.3	0.0015	0.0006	0.0022	0.0041	0.000007	0.0002	0.5337	0.000058
	50	0.1025	0.2911	0.2583	0.0003	0.0245	26.0	0.0092	0.0020	0.0058	0.0052	0.000007	0.0005	0.5197	0.000185
	120	0.0986	0.4063	0.6253	0.0007	0.0534	59.0	0.0089	0.0008	0.0034	0.0052	0.000006	0.0004	0.4916	0.000074
	175	0.1247	0.6199	1.0114	0.0012	0.0550	108	0.0113	0.0007	0.0035	0.0058	0.000007	0.0003	0.6180	0.000064
	250	0.1262	0.3887	1.3124	0.0017	0.0451	153	0.0114	0.0005	0.0016	0.0052	0.000007	0.0002	0.6124	0.000046
	500	0.1654	0.6313	1.6820	0.0022	0.0593	219	0.0149	0.0003	0.0013	0.0034	0.000004	0.0001	0.4382	0.000030
Rollers Total		0.0973	0.4060	0.6546	0.0008	0.0453	67.1	0.0088							
Rough Terrain Fork	50	0.1181	0.3778	0.3316	0.0004	0.0300	33.9	0.0107	0.0024	0.0076	0.0066	0.000009	0.0006	0.6772	0.000213
	120	0.0955	0.4327	0.5995	0.0007	0.0529	62.4	0.0086	0.0008	0.0036	0.0050	0.000006	0.0004	0.5204	0.000072
	175	0.1352	0.7256	1.0448	0.0014	0.0592	125	0.0122	0.0008	0.0041	0.0060	0.000008	0.0003	0.7137	0.000070
	250	0.1294	0.3798	1.2955	0.0019	0.0416	171	0.0117	0.0005	0.0015	0.0052	0.000008	0.0002	0.6832	0.000047
	500	0.1824	0.5717	1.7096	0.0025	0.0584	257	0.0165	0.0004	0.0011	0.0034	0.000005	0.0001	0.5131	0.000033
Rough Terrain Forklifts Total		0.1009	0.4642	0.6526	0.0008	0.0532	70.3	0.0091							
Rubber Tired Doze	175	0.2119	0.8457	1.5561	0.0015	0.0893	129	0.0191	0.0012	0.0048	0.0089	0.000008	0.0005	0.7399	0.000109
	250	0.2435	0.6833	2.0817	0.0021	0.0881	183	0.0220	0.0010	0.0027	0.0083	0.000008	0.0004	0.7339	0.000088
	500	0.3211	1.4228	2.7305	0.0026	0.1133	265	0.0290	0.0006	0.0028	0.0055	0.000005	0.0002	0.5297	0.000058
	750	0.4843	2.1329	4.1797	0.0040	0.1716	399	0.0437	0.0006	0.0028	0.0056	0.000005	0.0002	0.5317	0.000058
	1000	0.7496	3.4322	7.4509	0.0060	0.2591	592	0.0676	0.0007	0.0034	0.0075	0.000006	0.0003	0.5919	0.000068
Rubber Tired Dozers Total		0.2986	1.1749	2.5452	0.0025	0.1064	239	0.0269							
Rubber Tired Load	25	0.0204	0.0697	0.1292	0.0002	0.0050	16.9	0.0018	0.0008	0.0028	0.0052	0.000009	0.0002	0.6772	0.000074
	50	0.1200	0.3641	0.3118	0.0004	0.0292	31.1	0.0108	0.0024	0.0073	0.0062	0.000008	0.0006	0.6230	0.000216
	120	0.0971	0.4152	0.6015	0.0007	0.0525	58.9	0.0088	0.0008	0.0035	0.0050	0.000006	0.0004	0.4909	0.000073
	175	0.1238	0.6274	0.9501	0.0012	0.0535	106	0.0112	0.0007	0.0036	0.0054	0.000007	0.0003	0.6075	0.000064
	250	0.1259	0.3685	1.2125	0.0017	0.0417	149	0.0114	0.0005	0.0015	0.0048	0.000007	0.0002	0.5959	0.000045
	500	0.1867	0.6397	1.7158	0.0023	0.0613	237	0.0168	0.0004	0.0013	0.0034	0.000005	0.0001	0.4740	0.000034
	750	0.3850	1.3084	3.6184	0.0049	0.1276	486	0.0347	0.0005	0.0017	0.0048	0.000007	0.0002	0.6474	0.000046
	1000	0.5190	1.8389	5.9660	0.0060	0.1795	594	0.0468	0.0005	0.0018	0.0060	0.000006	0.0002	0.5939	0.000047
Rubber Tired Loaders Total		0.1195	0.4763	0.9346	0.0012	0.0508	109	0.0108							
Scrapers	120	0.1877	0.6943	1.1141	0.0011	0.0983	93.9	0.0169	0.0016	0.0058	0.0093	0.000009	0.0008	0.7825	0.000141
	175	0.2070	0.9107	1.5564	0.0017	0.0884	148	0.0187	0.0012	0.0052	0.0089	0.000010	0.0005	0.8461	0.000107
	250	0.2252	0.6408	2.0481	0.0024	0.0791	209	0.0203	0.0009	0.0026	0.0082	0.000009	0.0003	0.8379	0.000081
	500	0.3186	1.2113	2.8288	0.0032	0.1099	321	0.0287	0.0006	0.0024	0.0057	0.000006	0.0002	0.6429	0.000057
	750	0.5525	2.0861	4.9949	0.0056	0.1918	555	0.0499	0.0007	0.0028	0.0067	0.000007	0.0003	0.7404	0.000066
Scrapers Total		0.2783	1.0395	2.4118	0.0027	0.1005	262	0.0251							
Signal Boards	15	0.0072	0.0377	0.0450	0.0001	0.0018	6.2	0.0006	0.0005	0.0025	0.0030	0.000006	0.0001	0.4113	0.000043
	50	0.1151	0.3456	0.3415	0.0005	0.0296	36.2	0.0104	0.0023	0.0069	0.0068	0.000009	0.0006	0.7238	0.000208
	120	0.1176	0.5214	0.7807	0.0009	0.0644	80.2	0.0106	0.0010	0.0043	0.0065	0.000008	0.0005	0.6684	0.000088
	175	0.1535	0.8341	1.3333	0.0017	0.0685	155	0.0139	0.0009	0.0048	0.0076	0.000010	0.0004	0.8831	0.000079
	250	0.1632	0.5350	1.9963	0.0029	0.0580	255	0.0147	0.0007	0.0021	0.0080	0.000011	0.0002	1.0212	0.000059
Signal Boards Total		0.0192	0.0934	0.1399	0.0002	0.0077	16.7	0.0017							

Skid Steer Loaders	25	0.0202	0.0620	0.1166	0.0002	0.0063	13.8	0.0018	0.0008	0.0025	0.0047	0.000007	0.0003	0.5518	0.000073
	50	0.0517	0.2263	0.2279	0.0003	0.0157	25.5	0.0047	0.0010	0.0045	0.0046	0.000007	0.0003	0.5104	0.000093
	120	0.0429	0.2748	0.3267	0.0005	0.0245	42.8	0.0039	0.0004	0.0023	0.0027	0.000004	0.0002	0.3563	0.000032
Skid Steer Loaders Total		0.0468	0.2309	0.2522	0.0004	0.0179	30.3	0.0042							
Surfacing Equipme	50	0.0477	0.1403	0.1359	0.0002	0.0119	14.1	0.0043	0.0010	0.0028	0.0027	0.000004	0.0002	0.2822	0.000086
	120	0.0970	0.4215	0.6523	0.0007	0.0517	63.8	0.0088	0.0008	0.0035	0.0054	0.000006	0.0004	0.5314	0.000073
	175	0.0894	0.4730	0.7742	0.0010	0.0392	85.8	0.0081	0.0005	0.0027	0.0044	0.000006	0.0002	0.4901	0.000046
	250	0.1025	0.3374	1.1177	0.0015	0.0376	135	0.0092	0.0004	0.0013	0.0045	0.000006	0.0002	0.5395	0.000037
	500	0.1532	0.6418	1.6597	0.0022	0.0567	221	0.0138	0.0003	0.0013	0.0033	0.000004	0.0001	0.4424	0.000028
	750	0.2443	1.0046	2.6697	0.0035	0.0900	347	0.0220	0.0003	0.0013	0.0036	0.000005	0.0001	0.4627	0.000029
Surfacing Equipment Total		0.1277	0.5182	1.2760	0.0017	0.0468	166	0.0115							
Sweepers/Scrubbe	15	0.0124	0.0729	0.0870	0.0002	0.0034	11.9	0.0011	0.0008	0.0049	0.0058	0.000012	0.0002	0.7959	0.000074
	25	0.0237	0.0808	0.1496	0.0002	0.0058	19.6	0.0021	0.0009	0.0032	0.0060	0.000010	0.0002	0.7845	0.000085
	50	0.1048	0.3425	0.3055	0.0004	0.0271	31.6	0.0095	0.0021	0.0068	0.0061	0.000008	0.0005	0.6310	0.000189
	120	0.1107	0.5147	0.6989	0.0009	0.0622	75.0	0.0100	0.0009	0.0043	0.0058	0.000007	0.0005	0.6253	0.000083
	175	0.1439	0.7997	1.1204	0.0016	0.0637	139	0.0130	0.0008	0.0046	0.0064	0.000009	0.0004	0.7943	0.000074
	250	0.1146	0.3382	1.1784	0.0018	0.0362	162	0.0103	0.0005	0.0014	0.0047	0.000007	0.0001	0.6481	0.000041
Sweepers/Scrubbers Total		0.1148	0.5145	0.6862	0.0009	0.0510	78.5	0.0104							
Tractors/Loaders/B	25	0.0195	0.0657	0.1237	0.0002	0.0056	15.9	0.0018	0.0008	0.0026	0.0049	0.000008	0.0002	0.6345	0.000070
	50	0.0893	0.3199	0.2893	0.0004	0.0238	30.3	0.0081	0.0018	0.0064	0.0058	0.000008	0.0005	0.6069	0.000161
	120	0.0694	0.3529	0.4565	0.0006	0.0383	51.7	0.0063	0.0006	0.0029	0.0038	0.000005	0.0003	0.4311	0.000052
	175	0.0988	0.5861	0.7696	0.0011	0.0428	101	0.0089	0.0006	0.0033	0.0044	0.000007	0.0002	0.5794	0.000051
	250	0.1204	0.3666	1.1658	0.0019	0.0370	172	0.0109	0.0005	0.0015	0.0047	0.000008	0.0001	0.6869	0.000043
	500	0.2290	0.7443	2.0659	0.0039	0.0701	345	0.0207	0.0005	0.0015	0.0041	0.000008	0.0001	0.6897	0.000041
	750	0.3462	1.1159	3.2041	0.0058	0.1072	517	0.0312	0.0005	0.0015	0.0043	0.000008	0.0001	0.6897	0.000042
Tractors/Loaders/Backhoes Total		0.0792	0.3782	0.5392	0.0008	0.0387	66.8	0.0071							
Trenchers	15	0.0099	0.0517	0.0617	0.0001	0.0024	8.5	0.0009	0.0007	0.0034	0.0041	0.000009	0.0002	0.5643	0.000059
	25	0.0397	0.1355	0.2511	0.0004	0.0097	32.9	0.0036	0.0016	0.0054	0.0100	0.000017	0.0004	1.3167	0.000143
	50	0.1566	0.4082	0.3432	0.0004	0.0353	32.9	0.0141	0.0031	0.0082	0.0069	0.000009	0.0007	0.6584	0.000283
	120	0.1281	0.4684	0.7862	0.0008	0.0669	64.9	0.0116	0.0011	0.0039	0.0066	0.000006	0.0006	0.5408	0.000096
	175	0.1955	0.8632	1.5520	0.0016	0.0849	144	0.0176	0.0011	0.0049	0.0089	0.000009	0.0005	0.8223	0.000101
	250	0.2354	0.7089	2.2485	0.0025	0.0880	223	0.0212	0.0009	0.0028	0.0090	0.000010	0.0004	0.8916	0.000085
	500	0.2985	1.3011	2.8470	0.0031	0.1105	311	0.0269	0.0006	0.0026	0.0057	0.000006	0.0002	0.6226	0.000054
	750	0.5663	2.4440	5.4715	0.0059	0.2099	587	0.0511	0.0008	0.0033	0.0073	0.000008	0.0003	0.7825	0.000068
Trenchers Total		0.1427	0.4675	0.6684	0.0007	0.0549	58.7	0.0129							
Welders	15	0.0104	0.0416	0.0629	0.0001	0.0041	6.2	0.0009	0.0007	0.0028	0.0042	0.000006	0.0003	0.4138	0.000063
	25	0.0208	0.0581	0.1020	0.0001	0.0063	11.3	0.0019	0.0008	0.0023	0.0041	0.000006	0.0003	0.4514	0.000075
	50	0.0979	0.2753	0.2535	0.0003	0.0240	26.0	0.0088	0.0020	0.0055	0.0051	0.000007	0.0005	0.5192	0.000177
	120	0.0654	0.2659	0.4099	0.0005	0.0358	39.5	0.0059	0.0005	0.0022	0.0034	0.000004	0.0003	0.3292	0.000049
	175	0.1101	0.5455	0.9083	0.0011	0.0490	98.2	0.0099	0.0006	0.0031	0.0052	0.000006	0.0003	0.5611	0.000057
	250	0.0855	0.2618	1.0026	0.0013	0.0301	119	0.0077	0.0003	0.0010	0.0040	0.000005	0.0001	0.4763	0.000031
	500	0.1092	0.3838	1.2526	0.0016	0.0394	168	0.0098	0.0002	0.0008	0.0025	0.000003	0.0001	0.3352	0.000020
Welders Total		0.0646	0.2096	0.2564	0.0003	0.0225	25.6	0.0058							

Average Emissions Factors, lb/hr:	0.1105	0.4296	0.8339	0.0010	0.0441	94.4934	0.0100
All Equip, HP Categories	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)
	ROG	CO	NOX	SOX	PM	CO2	CH4

CONSTRUCTION EQUIPMENT EXHAUST EMISSIONS

TABLE 9 (64 pages)

Project: Blythe Solar Power **GenTie Line (Offsite Linear)**

Assumptions:

1. The average engines employed in construction equipment use consumes fuel at a rate of:

diesel	0.06	gal/hp-hr
gasoline	0.11	gal/hp-hr

Ref: EPA, NR-009b Publication, November 2002.
Ref: Sacramento County APCD Const. Program Data, V. 6.0.3, 3/2007.
Ref: EPA, NR-009c Publication, EPA 420-P-04-009, April 2004.
Ref: Niland Energy Project, IID, AFC Vol 2, App A.
Ref: South Coast AQMD PR XXI, Draft Staff Report, 3-15-95, and SCAQMD CEQA Manual, 11/03.
The above noted references present fuel consumption values which range from 0.050 to 0.064 gal/hp-hr for diesel engines used in construction related equipment. The value of 0.060 gal/hp-hr was chosen as a reasonable upper mid-range value for construction diesel emissions calculations.
For gasoline the mid-range value from SCAQMD of 0.11 gal/hp-hr was used.

2. Construction equipment exhaust emissions will be calculated on a period basis using the site specific equipment list, HP ratings, hours of use, days of use, etc. Period emissions will be apportioned to daily values based on the estimated construction period time on site.

3. The equipment list derived from the South Coast AQMD (12/2006) will be used to establish the various equipment categories. Data produced by the Sacramento APCD was used to establish the average HP ratings for each equipment category. HP rating data was supplemented by data from SCAQMD CEQA Handbook (Table A9-8-C) if not available from Sacramento APCD.

4. Construction Schedule:	10	hrs/day	Construction Totals:	260	hrs/month
	6	days/week		3120	hrs/const period
	26	days/month		312	days/const period
	12	months			

5. Anticipated Construction Start Year: 2013

6. Maximum anticipated equipment use month is: n/a

Equipment types and use rates supplied by the Applicant.

Equipment Category**	Avg HP	# of Units Used for Project	Max Use Rate Hrs/day	# of Days On Site (each)	Total Hrs/Day	Total Hp-Hrs per Day	Total Hrs per Const Period	Total Hp-Hrs per Const Period
Bore/Drill Rigs/Pile Drivers	209	2	8	60	16	3344	960	200640
Cement Mixers	25	0	0	0	0	0	0	0
Industrial/Concrete Saws	56	0	0	0	0	0	0	0
Cranes	194	1	8	120	8	1552	960	186240
Crawler Tractors/Dozers	120	0	0	0	0	0	0	0
Crushing/Processing Eq.	127	0	0	0	0	0	0	0
Dump and Tender Trucks	25	1	6	200	6	150	1200	30000
Excavators	152	0	0	0	0	0	0	0
Forklifts/Aerial Lifts/Booms	120	2	6	260	12	1440	3120	374400
Generators/Compressors	50	0	0	0	0	0	0	0
Graders	157	1	6	120	6	942	720	113040
Off Hwy Tractors	120	0	0	0	0	0	0	0
Off Hwy Trucks (All Uses)	250	1	6	200	6	1500	1200	300000
Other Diesel-Cable/Pull Trucks	175	3	8	30	24	4200	720	126000
Pavers	99	0	0	0	0	0	0	0
Paving Eq./Surfacing Eq.	91	0	0	0	0	0	0	0
Plate Compactors	15	0	0	0	0	0	0	0
Rollers/Compactors	99	1	6	90	6	594	540	53460
Rough Terrain Forklifts	120	1	6	120	6	720	720	86400
Rubber Tired Dozers	356	0	0	0	0	0	0	0
Rubber Tired Loaders	175	0	0	0	0	0	0	0
Scrapers	267	0	0	0	0	0	0	0
Signal Boards/Light Sets	15	0	0	0	0	0	0	0
Skid Steer Loaders	50	0	0	0	0	0	0	0
Tractors/Loaders/Backhoes	120	1	6	150	6	720	900	108000
Trenchers	120	0	0	0	0	0	0	0
Welders	50	3	8	100	24	1200	2400	120000
Other Const. Eq.- GASOLINE	175	2	6	120	12	2100	1440	252000

* the gentie line is an offsite linear project

** diesel equipment unless otherwise specified.

Const Period Diesel Hp-Hrs =	1698180	
Const Period Gasoline Hp-Hrs =	252000	
Const Period Diesel Fuel Use =	101891	gals
Const Period Gasoline Fuel Use =	27720	gals

Emissions factors from SCAQMD Offroad database for 2013.
EFs are for the anticipated construction start year of 2013.

Emissions factors for each category of equipment were either HP class specific, or they represent the highest of the two bounding factors for the HP listing.

2013 Equipment Emissions Factors

Equip. Type	HP	lbs/hp-hr CO	lbs/hp-hr VOC as ROG	lbs/hp-hr NOx	lbs/hp-hr SOx	lbs/hp-hr PM10	lbs/hp-hr CO2	lbs/hp-hr CH4	lbs/hp-hr N2O
Bore/Drill Rigs/Pile Drivers	209	0.004300	0.000402	0.003960	0.000009	0.000172	0.805000	0.000036	0.000000
Cement Mixers	25	0.003250	0.001080	0.006040	0.000009	0.000332	0.702000	0.000098	0.000000
Industrial/Concrete Saws	56	0.005840	0.001910	0.005710	0.000008	0.000494	0.604000	0.000173	0.000000
Cranes	194	0.002750	0.000590	0.004440	0.000005	0.000255	0.459000	0.000053	0.000000
Crawler Tractors/Dozers	120	0.004050	0.001080	0.006400	0.000006	0.000565	0.548000	0.000097	0.000000
Crushing/Processing Eq.	127	0.004800	0.001170	0.007130	0.000008	0.000651	0.692000	0.000106	0.000000
Dump and Tender Trucks	25	0.001280	0.000386	0.002400	0.000004	0.000116	0.305000	0.000035	0.000000
Excavators	152	0.004310	0.000907	0.005660	0.000007	0.000490	0.613000	0.000082	0.000000
Forklifts/Aerial Lifts/Booms	120	0.002010	0.000453	0.003090	0.000004	0.000244	0.317000	0.000041	0.000000
Generators/Compressors	50	0.005210	0.001690	0.005660	0.000008	0.000460	0.612000	0.000153	0.000000
Graders	157	0.004190	0.000840	0.006400	0.000008	0.000362	0.707000	0.000076	0.000000
Off Highway Tractors	120	0.005990	0.001760	0.010300	0.000009	0.000899	0.780000	0.000159	0.000000
Off Highway Trucks	250	0.001530	0.000560	0.004950	0.000007	0.000165	0.666000	0.000051	0.000000
Other Const. Eq.-Diesel	175	0.003350	0.000536	0.004580	0.000007	0.000240	0.608000	0.000048	0.000000
Pavers	99	0.004210	0.001160	0.006960	0.000007	0.000608	0.576000	0.000104	0.000000
Paving Eq./Surfacing Eq.	91	0.003510	0.000809	0.005440	0.000006	0.000431	0.531000	0.000073	0.000000
Plate Compactors	15	0.001750	0.000334	0.002090	0.000004	0.000082	0.287000	0.000030	0.000000
Rollers/Compactors	99	0.003380	0.000823	0.005210	0.000006	0.000445	0.491000	0.000074	0.000000
Rough Terrain Forklifts	120	0.003600	0.000797	0.005000	0.000006	0.000442	0.520000	0.000072	0.000000
Rubber Tired Dozers	356	0.002730	0.000972	0.008320	0.000008	0.000351	0.733000	0.000088	0.000000
Rubber Tired Loaders	175	0.003580	0.000708	0.005430	0.000007	0.000306	0.607000	0.000064	0.000000
Scrapers	267	0.002560	0.000900	0.008190	0.000009	0.000316	0.873000	0.000081	0.000000
Signal Boards/Light Sets	15	0.002510	0.000478	0.003000	0.000006	0.000117	0.411000	0.000043	0.000000
Skid Steer Loaders	50	0.004530	0.001040	0.004550	0.000007	0.000314	0.510000	0.000094	0.000000
Tractors/Loaders/Backhoes	120	0.002940	0.000580	0.003810	0.000005	0.000320	0.431000	0.000052	0.000000
Trenchers	120	0.003900	0.001070	0.006550	0.000006	0.000558	0.540000	0.000096	0.000000
Welders	50	0.005430	0.001900	0.005040	0.000007	0.000471	0.519000	0.000172	0.000000
Other Const. Eq.-Gasoline	175	0.018900	0.000256	0.000899	0.000006	0.000046	0.574000	0.000015	0.000051
Avg Offroad Diesel EFs		*0.0036*	*0.0009*	*0.0054*	*0.000007*	*0.0004*	*0.5721*	*0.0001*	*0.0000*

Construction Period Emissions, lbs

Equip. Type	CO	VOC	NOx	SOx	PM10	CO2	CH4	N2O
Bore/Drill Rigs/Pile Drivers	863	81	795	2	35	161515	7	0
Cement Mixers	0	0	0	0	0	0	0	0
Industrial/Concrete Saws	0	0	0	0	0	0	0	0
Cranes	512	110	827	1	47	85484	10	0
Crawler Tractors/Dozers	0	0	0	0	0	0	0	0
Crushing/Processing Eq.	0	0	0	0	0	0	0	0
Dump and Tender Trucks	38	12	72	0	3	9150	1	0
Excavators	0	0	0	0	0	0	0	0
Forklifts/Aerial Lifts/Booms	753	170	1157	1	91	118685	15	0
Generators/Compressors	0	0	0	0	0	0	0	0
Graders	474	95	723	1	41	79919	9	0
Off Highway Tractors	0	0	0	0	0	0	0	0
Off Highway Trucks	459	168	1485	2	50	199800	15	0
Other Const. Eq.-Diesel	422	68	577	1	30	76608	6	0
Pavers	0	0	0	0	0	0	0	0
Paving Eq./Surfacing Eq.	0	0	0	0	0	0	0	0
Plate Compactors	0	0	0	0	0	0	0	0
Rollers/Compactors	181	44	279	0	24	26249	4	0
Rough Terrain Forklifts	311	69	432	1	38	44928	6	0
Rubber Tired Dozers	0	0	0	0	0	0	0	0
Rubber Tired Loaders	0	0	0	0	0	0	0	0
Scrapers	0	0	0	0	0	0	0	0
Signal Boards/Light Sets	0	0	0	0	0	0	0	0
Skid Steer Loaders	0	0	0	0	0	0	0	0
Tractors/Loaders/Backhoes	318	63	411	1	35	46548	6	0
Trenchers	0	0	0	0	0	0	0	0
Welders	652	228	605	1	57	62280	21	0
Other Const. Eq.-Gasoline	4763	65	227	1	12	144648	4	13

Totals	**CO**	**VOC**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**CH4**	**N2O**
lbs per const. period	9744	1170	7589	12	462	457.91	1055814	103	13
tons per const. period	4.9	0.6	3.8	0.006	0.23	0.23	527.91	0.05	0.01
Estimated Maximum lbs/day =	31.2	3.8	24.3	0.038	1.48	1.47	3384.02	0.33	0.04
Average lbs/day =	*25.0*	*3.0*	*19.5*	*0.031*	*1.18*	*1.17*	*2707.2*	*0.3*	*0.0*
Average lbs/month =	812.0	97.5	632.4	0.99	38.51	38.16	87984.53	8.62	1.06

CARB-CEIDARS, Updated Size Fractions for PM Profiles: PM2.5 = 0.991 of PM10 : Diesel Vehicle Exhaust
ROG reported as VOC.

Other Assumptions and References:

1. Trench construction times per: Southern Regional Water Pipeline Alliance, 3/08.
   Optimum trench construction progress rate is 80m (260ft) per day.
   Non-optimum trench construction progress rate is 30m (100 ft) per day.
   An average progress of 180 ft/day is used where applicable.
2. Paving speeds can range from 3 to 15 m/min depending on asphalt delivery rates and required compaction thickness.
   A minium paving speed of 3 m/min (10 ft/min or 600 ft/hr) was used where applicable.
   The minimum speed is based upon a 3" compacted layer, 12 ft lane width, with an asphalt delivery rate of ~ 140 tons/hr.
   Ref: Asphalt Paving Speed, Pavement Worktip No. 31, AAPA, 11/2001.
3. Estimation of maximum daily emissions is extremely variable. Some projects provide estimated manpower and equipment use schedules, but even this data usually leads to a wide range of assumptions being made in order to estimate equipment exhaust emissions for a maximum work day.
   Estimated maximum daily emissions assumes all listed equipment is on site and operating for the maximum stated hours.
   Average dialy emissions, per the Applicant, are expected to be approx. 80% of the max daily values.
4. Construction schedule note: most equipment use and emissions are based on 8 hrs of activity in a 10 hr workday.
   a. 1 hour for lunch break, plus two 15 minute periods of labor inactivity (one in morning and one in afternoon)
   b. a 30 minute period each day for each piece of equipment for re-fueling, maintenance, and normal downtime

CONSTRUCTION EQUIPMENT EXHAUST EMISSIONS

Project: Blythe Solar Power **Plant Access Road (Offsite Linear)**

Assumptions:

1. The average engines employed in construction equipment use consumes fuel at a rate of: diesel 0.06 gal/hp-hr
Ref: EPA, NR-009b Publication, November 2002. gasoline 0.11 gal/hp-hr
Ref: Sacramento County APCD Const. Program Data, V. 6.0.3, 3/2007.
Ref: EPA, NR-009c Publication, EPA 420-P-04-009, April 2004.
Ref: Niland Energy Project, IID, AFC Vol 2, App A.
Ref: South Coast AQMD PR XXI, Draft Staff Report, 3-15-95, and SCAQMD CEQA Manual, 11/03.
The above noted references present fuel consumption values which range from 0.050 to 0.064 gal/hp-hr for diesel engines used in construction related equipment. The value of 0.060 gal/hp-hr was chosen as a reasonable upper mid-range value for construction diesel emissions calculations.
For gasoline the mid-range value from SCAQMD of 0.11 gal/hp-hr was used.

2. Construction equipment exhaust emissions will be calculated on a period basis using the site specific equipment list, HP ratings, hours of use, days of use, etc. Period emissions will be apportioned to daily values based on the estimated construction period time on site.

3. The equipment list derived from the South Coast AQMD (12/2006) will be used to establish the various equipment categories. Data produced by the Sacramento APCD was used to establish the average HP ratings for each equipment category. HP rating data was supplemented by data from SCAQMD CEQA Handbook (Table A9-8-C) if not available from Sacramento APCD.

4. Construction Schedule:	10	hrs/day	Construction Totals:	260	hrs/month
	6	days/week		780	hrs/const period
	26	days/month		78	days/const period
	3	months			

5. Anticipated Construction Start Year: 2013

6. Maximum anticipated equipment use month is: n/a

Equipment types and use rates supplied by the Applicant.

Equipment Category**	Avg HP	# of Units Used for Project	Max Use Rate Hrs/day	# of Days On Site (each)	Total Hrs/Day	Total Hp-Hrs per Day	Total Hrs per Const Period	Total Hp-Hrs per Const Period
Bore/Drill Rigs/Pile Drivers	209	0	0	0	0	0	0	0
Cement Mixers	25	0	0	0	0	0	0	0
Industrial/Concrete Saws	56	0	0	0	0	0	0	0
Cranes	194	0	0	0	0	0	0	0
Crawler Tractors/Dozers	120	1	8	60	8	960	480	57600
Crushing/Processing Eq.	127	0	0	0	0	0	0	0
Dump,Tender, Water Trucks	25	2	8	70	16	400	1120	28000
Excavators	152	0	0	0	0	0	0	0
Forklifts/Aerial Lifts/Booms	120	0	0	0	0	0	0	0
Generators/Compressors	50	0	0	0	0	0	0	0
Graders	157	2	8	60	16	2512	960	150720
Off Highway Tractors	120	0	0	0	0	0	0	0
Off Highway Trucks	250	1	8	60	8	2000	480	120000
Other Const. Eq.-DIESEL	175	0	0	0	0	0	0	0
Pavers	99	1	8	20	8	792	160	15840
Paving Eq./Surfacing Eq.	91	1	8	20	8	728	160	14560
Plate Compactors	15	0	0	0	0	0	0	0
Rollers/Compactors	99	2	8	60	16	1584	960	95040
Rough Terrain Forklifts	120	0	0	0	0	0	0	0
Rubber Tired Dozers	356	0	0	0	0	0	0	0
Rubber Tired Loaders	175	0	0	0	0	0	0	0
Scrapers	267	0	0	0	0	0	0	0
Signal Boards/Light Sets	15	0	0	0	0	0	0	0
Skid Steer Loaders	50	1	8	45	8	400	360	18000
Tractors/Loaders/Backhoes	120	0	0	0	0	0	0	0
Trenchers	120	0	0	0	0	0	0	0
Welders	50	0	0	0	0	0	0	0
Other Const. Eq.- GASOLINE	175	2	6	75	12	2100	900	157500

*includes equipment and use rates for proposed offsite linears.
** diesel equipment unless otherwise specified.

Const Period Diesel Hp-Hrs =	499760	
Const Period Gasoline Hp-Hrs =	157500	
Const Period Diesel Fuel Use =	29986	gals
Const Period Gasoline Fuel Use =	17325	gals

Emissions factors from SCAQMD Offroad database for 2013.
EFs are for the anticipated construction start year of 2013.

Emissions factors for each category of equipment were either HP class specific, or they represent the highest of the two bounding factors for the HP listing.

				2013 Equipment Emissions Factors					
Equip. Type	**HP**	**lbs/hp-hr CO**	**lbs/hp-hr VOC** as ROG	**lbs/hp-hr NOx**	**lbs/hp-hr SOx**	**lbs/hp-hr PM10**	**lbs/hp-hr CO2**	**lbs/hp-hr CH4**	**lbs/hp-hr N2O**
Bore/Drill Rigs/Pile Drivers	209	0.004300	0.000402	0.003960	0.000009	0.000172	0.805000	0.000036	0.000000
Cement Mixers	25	0.003250	0.001080	0.006040	0.000009	0.000332	0.702000	0.000098	0.000000
Industrial/Concrete Saws	56	0.005840	0.001910	0.005710	0.000008	0.000494	0.604000	0.000173	0.000000
Cranes	194	0.002750	0.000590	0.004440	0.000005	0.000255	0.459000	0.000053	0.000000
Crawler Tractors/Dozers	120	0.004050	0.001080	0.006400	0.000006	0.000565	0.548000	0.000097	0.000000
Crushing/Processing Eq.	127	0.004800	0.001170	0.007130	0.000008	0.000651	0.692000	0.000106	0.000000
Dump and Tender Trucks	25	0.001280	0.000386	0.002400	0.000004	0.000116	0.305000	0.000035	0.000000
Excavators	152	0.004310	0.000907	0.005660	0.000007	0.000490	0.613000	0.000082	0.000000
Forklifts/Aerial Lifts/Booms	120	0.002010	0.000453	0.003090	0.000004	0.000244	0.317000	0.000041	0.000000
Generators/Compressors	50	0.005210	0.001690	0.005660	0.000008	0.000460	0.612000	0.000153	0.000000
Graders	157	0.004190	0.000840	0.006400	0.000008	0.000362	0.707000	0.000076	0.000000
Off Highway Tractors	120	0.005990	0.001760	0.010300	0.000009	0.000899	0.780000	0.000159	0.000000
Off Highway Trucks	250	0.001530	0.000560	0.004950	0.000007	0.000165	0.666000	0.000051	0.000000
Other Const. Eq.-Diesel	175	0.003350	0.000536	0.004580	0.000007	0.000240	0.608000	0.000048	0.000000
Pavers	99	0.004210	0.001160	0.006960	0.000007	0.000608	0.576000	0.000104	0.000000
Paving Eq./Surfacing Eq.	91	0.003510	0.000809	0.005440	0.000006	0.000431	0.531000	0.000073	0.000000
Plate Compactors	15	0.001750	0.000334	0.002090	0.000004	0.000082	0.287000	0.000030	0.000000
Rollers/Compactors	99	0.003380	0.000823	0.005210	0.000006	0.000445	0.491000	0.000074	0.000000
Rough Terrain Forklifts	120	0.003600	0.000797	0.005000	0.000006	0.000442	0.520000	0.000072	0.000000
Rubber Tired Dozers	356	0.002730	0.000972	0.008320	0.000008	0.000351	0.733000	0.000088	0.000000
Rubber Tired Loaders	175	0.003580	0.000708	0.005430	0.000007	0.000306	0.607000	0.000064	0.000000
Scrapers	267	0.002560	0.000900	0.008190	0.000009	0.000316	0.873000	0.000081	0.000000
Signal Boards/Light Sets	15	0.002510	0.000478	0.003000	0.000006	0.000117	0.411000	0.000043	0.000000
Skid Steer Loaders	50	0.004530	0.001040	0.004550	0.000007	0.000314	0.510000	0.000094	0.000000
Tractors/Loaders/Backhoes	120	0.002940	0.000580	0.003810	0.000005	0.000320	0.431000	0.000052	0.000000
Trenchers	120	0.003900	0.001070	0.006550	0.000006	0.000558	0.540000	0.000096	0.000000
Welders	50	0.005430	0.001900	0.005040	0.000007	0.000471	0.519000	0.000172	0.000000
Other Const. Eq.-Gasoline	175	0.018900	0.000256	0.000899	0.000006	0.000046	0.574000	0.000015	0.000051
Avg Offroad Diesel EFs		*0.0036*	*0.0009*	*0.0054*	*0.000007*	*0.0004*	*0.5721*	*0.0001*	*0.0000*

Construction Period Emissions, lbs

Equip. Type	CO	VOC	NOx	SOx	PM10	CO2	CH4	N2O
Bore/Drill Rigs/Pile Drivers	0	0	0	0	0	0	0	0
Cement Mixers	0	0	0	0	0	0	0	0
Industrial/Concrete Saws	0	0	0	0	0	0	0	0
Cranes	0	0	0	0	0	0	0	0
Crawler Tractors/Dozers	233	62	369	0	33	31565	6	0
Crushing/Processing Eq.	0	0	0	0	0	0	0	0
Dump and Tender Trucks	36	11	67	0	3	8540	1	0
Excavators	0	0	0	0	0	0	0	0
Forklifts/Aerial Lifts/Booms	0	0	0	0	0	0	0	0
Generators/Compressors	0	0	0	0	0	0	0	0
Graders	632	127	965	1	55	106559	11	0
Off Highway Tractors	0	0	0	0	0	0	0	0
Off Highway Trucks	184	67	594	1	20	79920	6	0
Other Const. Eq.-Diesel	0	0	0	0	0	0	0	0
Pavers	67	18	110	0	10	9124	2	0
Paving Eq./Surfacing Eq.	51	12	79	0	6	7731	1	0
Plate Compactors	0	0	0	0	0	0	0	0
Rollers/Compactors	321	78	495	1	42	46665	7	0
Rough Terrain Forklifts	0	0	0	0	0	0	0	0
Rubber Tired Dozers	0	0	0	0	0	0	0	0
Rubber Tired Loaders	0	0	0	0	0	0	0	0
Scrapers	0	0	0	0	0	0	0	0
Signal Boards/Light Sets	0	0	0	0	0	0	0	0
Skid Steer Loaders	82	19	82	0	6	9180	2	0
Tractors/Loaders/Backhoes	0	0	0	0	0	0	0	0
Trenchers	0	0	0	0	0	0	0	0
Welders	0	0	0	0	0	0	0	0
Other Const. Eq.-Gasoline	2977	40	142	1	7	90405	2	8

Totals	**CO**	**VOC**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**CH4**	**N2O**
lbs per const. period	4582	434	2903	4	181	179.57	389689	38	8
tons per const. period	2.3	0.2	1.5	0.002	0.09	0.09	194.84	0.02	0.00
Estimated Maximum lbs/day =	58.7	5.6	37.2	0.056	2.32	2.30	4996.01	0.48	0.10
Average lbs/day =	*47.0*	*4.5*	*29.8*	*0.045*	*1.86*	*1.84*	*3996.8*	*0.4*	*0.1*
Average lbs/month =	1527.2	144.7	967.5	1.4	60.40	59.86	129896.23	12.60	2.66

CARB-CEIDARS, Updated Size Fractions for PM Profiles: PM2.5 = 0.991 of PM10 : Diesel Vehicle Exhaust
ROG reported as VOC.

Other Assumptions and References:

1. Trench construction times per: Southern Regional Water Pipeline Alliance, 3/08.
   Optimum trench construction progress rate is 80m (260ft) per day.
   Non-optimum trench construction progress rate is 30m (100 ft) per day.
   An average progress of 180 ft/day is used where applicable.
2. Paving speeds can range from 3 to 15 m/min depending on asphalt delivery rates and required compaction thickness.
   A minium paving speed of 3 m/min (10 ft/min or 600 ft/hr) was used where applicable.
   The minimum speed is based upon a 3" compacted layer, 12 ft lane width, with an asphalt delivery rate of ~ 140 tons/hr.
   Ref: Asphalt Paving Speed, Pavement Worktip No. 31, AAPA, 11/2001.
3. Estimation of maximum daily emissions is extremely variable. Some projects provide estimated manpower and equipment use schedules, but even this data usually leads to a wide range of assumptions being made in order to estimate equipment exhaust emissions for a maximum work day.
   Estimated maximum daily emissions assumes all listed equipment is on site and operating for the maximum stated hours.
   Average dialy emissions, per the Applicant, are expected to be approx. 80% of the max daily values.
4. Construction schedule note: most equipment use and emissions are based on 8 hrs of activity in a 10 hr workday.
   a. 1 hour for lunch break, plus two 15 minute periods of labor inactivity (one in morning and one in afternoon)
   b. a 30 minute period each day for each piece of equipment for re-fueling, maintenance, and normal downtime

CONSTRUCTION EQUIPMENT EXHAUST EMISSIONS

Project: Blythe Solar Power **Each 125 MW Block, Phases 1-5**

Assumptions:

1. The average engines employed in construction equipment use consumes fuel at a rate of: diesel 0.06 gal/hp-hr
Ref: EPA, NR-009b Publication, November 2002. gasoline 0.11 gal/hp-hr
Ref: Sacramento County APCD Const. Program Data, V. 6.0.3, 3/2007.
Ref: EPA, NR-009c Publication, EPA 420-P-04-009, April 2004.
Ref: Niland Energy Project, IID, AFC Vol 2, App A.
Ref: South Coast AQMD PR XXI, Draft Staff Report, 3-15-95, and SCAQMD CEQA Manual, 11/03.
The above noted references present fuel consumption values which range from 0.050 to 0.064 gal/hp-hr for diesel engines used in construction related equipment. The value of 0.060 gal/hp-hr was chosen as a reasonable upper mid-range value for construction diesel emissions calculations.
For gasoline the mid-range value from SCAQMD of 0.11 gal/hp-hr was used.

2. Construction equipment exhaust emissions will be calculated on a period basis using the site specific equipment list, HP ratings, hours of use, days of use, etc. Period emissions will be apportioned to daily values based on the estimated construction period time on site.

3. The equipment list derived from the South Coast AQMD (12/2006) will be used to establish the various equipment categories. Data produced by the Sacramento APCD was used to establish the average HP ratings for each equipment category. HP rating data was supplemented by data from SCAQMD CEQA Handbook (Table A9-8-C) if not available from Sacramento APCD.

4. Construction Schedule:	10	hrs/day	Construction Totals:	260	hrs/month
	6	days/week		1300	hrs/const period
	26	days/month		130	days/const period
	5	months			

5. Anticipated Construction Start Year: 2013

6. Maximum anticipated equipment use month is: n/a

Equipment types and use rates supplied by the Applicant.

Equipment Category**	Avg HP	# of Units Used for Project	Max Use Rate Hrs/day	# of Days On Site (each)	Total Hrs/Day	Total Hp-Hrs per Day	Total Hrs per Const Period	Total Hp-Hrs per Const Period
Bore/Drill Rigs/Pile Drivers	209	0	0	0	0	0	0	0
Cement Mixers	25	0	0	0	0	0	0	0
Industrial/Concrete Saws	56	0	0	0	0	0	0	0
Cranes	194	0	0	0	0	0	0	0
Crawler Tractors/Dozers	120	1	8	110	8	960	880	105600
Crushing/Processing Eq.	127	0	0	0	0	0	0	0
Dump and Tender Trucks	25	5	8	100	40	1000	4000	100000
Excavators	152	1	8	100	8	1216	800	121600
Forklifts/Aerial Lifts/Booms	120	0	0	0	0	0	0	0
Generators/Compressors	50	0	0	0	0	0	0	0
Graders	157	4	8	110	32	5024	3520	552640
Off Highway Tractors	120	0	0	0	0	0	0	0
Off Highway Trucks	250	1	6	125	6	1500	750	187500
Other Const. Eq.-DIESEL	175	0	0	0	0	0	0	0
Pavers	99	0	0	0	0	0	0	0
Paving Eq./Surfacing Eq.	91	0	0	0	0	0	0	0
Plate Compactors	15	0	0	0	0	0	0	0
Rollers/Compactors	99	1	8	60	8	792	480	47520
Rough Terrain Forklifts	120	0	0	0	0	0	0	0
Rubber Tired Dozers	356	0	0	0	0	0	0	0
Rubber Tired Loaders	175	0	0	0	0	0	0	0
Scrapers	267	2	8	110	16	4272	1760	469920
Signal Boards/Light Sets	15	0	0	0	0	0	0	0
Skid Steer Loaders	50	3	8	90	24	1200	2160	108000
Tractors/Loaders/Backhoes	120	4	8	90	32	3840	2880	345600
Trenchers	120	2	8	90	16	1920	1440	172800
Welders	50	0	0	0	0	0	0	0
Other Const. Eq.- GASOLINE	175	2	8	125	16	2800	2000	350000

*includes equipment and use rates for proposed offsite linears.
** diesel equipment unless otherwise specified.

Const Period Diesel Hp-Hrs =	2211180	
Const Period Gasoline Hp-Hrs =	350000	
Const Period Diesel Fuel Use =	132671	gals
Const Period Gasoline Fuel Use =	38500	gals

Emissions factors from SCAQMD Offroad database for 2013.
EFs are for the anticipated construction start year of 2013.

Emissions factors for each category of equipment were either HP class specific, or they represent the highest of the two bounding factors for the HP listing.

				2013 Equipment Emissions Factors					
Equip. Type	**HP**	**lbs/hp-hr CO**	**lbs/hp-hr VOC** as ROG	**lbs/hp-hr NOx**	**lbs/hp-hr SOx**	**lbs/hp-hr PM10**	**lbs/hp-hr CO2**	**lbs/hp-hr CH4**	**lbs/hp-hr N2O**
Bore/Drill Rigs/Pile Drivers	209	0.004300	0.000402	0.003960	0.000009	0.000172	0.805000	0.000036	0.000000
Cement Mixers	25	0.003250	0.001080	0.006040	0.000009	0.000332	0.702000	0.000098	0.000000
Industrial/Concrete Saws	56	0.005840	0.001910	0.005710	0.000008	0.000494	0.604000	0.000173	0.000000
Cranes	194	0.002750	0.000590	0.004440	0.000005	0.000255	0.459000	0.000053	0.000000
Crawler Tractors/Dozers	120	0.004050	0.001080	0.006400	0.000006	0.000565	0.548000	0.000097	0.000000
Crushing/Processing Eq.	127	0.004800	0.001170	0.007130	0.000008	0.000651	0.692000	0.000106	0.000000
Dump and Tender Trucks	25	0.001280	0.000386	0.002400	0.000004	0.000116	0.305000	0.000035	0.000000
Excavators	152	0.004310	0.000907	0.005660	0.000007	0.000490	0.613000	0.000082	0.000000
Forklifts/Aerial Lifts/Booms	120	0.002010	0.000453	0.003090	0.000004	0.000244	0.317000	0.000041	0.000000
Generators/Compressors	50	0.005210	0.001690	0.005660	0.000008	0.000460	0.612000	0.000153	0.000000
Graders	157	0.004190	0.000840	0.006400	0.000008	0.000362	0.707000	0.000076	0.000000
Off Highway Tractors	120	0.005990	0.001760	0.010300	0.000009	0.000899	0.780000	0.000159	0.000000
Off Highway Trucks	250	0.001530	0.000560	0.004950	0.000007	0.000165	0.666000	0.000051	0.000000
Other Const. Eq.-Diesel	175	0.003350	0.000536	0.004580	0.000007	0.000240	0.608000	0.000048	0.000000
Pavers	99	0.004210	0.001160	0.006960	0.000007	0.000608	0.576000	0.000104	0.000000
Paving Eq./Surfacing Eq.	91	0.003510	0.000809	0.005440	0.000006	0.000431	0.531000	0.000073	0.000000
Plate Compactors	15	0.001750	0.000334	0.002090	0.000004	0.000082	0.287000	0.000030	0.000000
Rollers/Compactors	99	0.003380	0.000823	0.005210	0.000006	0.000445	0.491000	0.000074	0.000000
Rough Terrain Forklifts	120	0.003600	0.000797	0.005000	0.000006	0.000442	0.520000	0.000072	0.000000
Rubber Tired Dozers	356	0.002730	0.000972	0.008320	0.000008	0.000351	0.733000	0.000088	0.000000
Rubber Tired Loaders	175	0.003580	0.000708	0.005430	0.000007	0.000306	0.607000	0.000064	0.000000
Scrapers	267	0.002560	0.000900	0.008190	0.000009	0.000316	0.873000	0.000081	0.000000
Signal Boards/Light Sets	15	0.002510	0.000478	0.003000	0.000006	0.000117	0.411000	0.000043	0.000000
Skid Steer Loaders	50	0.004530	0.001040	0.004550	0.000007	0.000314	0.510000	0.000094	0.000000
Tractors/Loaders/Backhoes	120	0.002940	0.000580	0.003810	0.000005	0.000320	0.431000	0.000052	0.000000
Trenchers	120	0.003900	0.001070	0.006550	0.000006	0.000558	0.540000	0.000096	0.000000
Welders	50	0.005430	0.001900	0.005040	0.000007	0.000471	0.519000	0.000172	0.000000
Other Const. Eq.-Gasoline	175	0.018900	0.000256	0.000899	0.000006	0.000046	0.574000	0.000015	0.000051
Avg Offroad Diesel EFs		*0.0036*	*0.0009*	*0.0054*	*0.000007*	*0.0004*	*0.5721*	*0.0001*	*0.0000*

Construction Period Emissions, lbs

Equip. Type	CO	VOC	NOx	SOx	PM10	CO2	CH4	N2O
Bore/Drill Rigs/Pile Drivers	0	0	0	0	0	0	0	0
Cement Mixers	0	0	0	0	0	0	0	0
Industrial/Concrete Saws	0	0	0	0	0	0	0	0
Cranes	0	0	0	0	0	0	0	0
Crawler Tractors/Dozers	428	114	676	1	60	57869	10	0
Crushing/Processing Eq.	0	0	0	0	0	0	0	0
Dump and Tender Trucks	128	39	240	0	12	30500	3	0
Excavators	524	110	688	1	60	74541	10	0
Forklifts/Aerial Lifts/Booms	0	0	0	0	0	0	0	0
Generators/Compressors	0	0	0	0	0	0	0	0
Graders	2316	464	3537	4	200	390716	42	0
Off Highway Tractors	0	0	0	0	0	0	0	0
Off Highway Trucks	287	105	928	1	31	124875	9	0
Other Const. Eq.-Diesel	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	0	0	0	0
Paving Eq./Surfacing Eq.	0	0	0	0	0	0	0	0
Plate Compactors	0	0	0	0	0	0	0	0
Rollers/Compactors	161	39	248	0	21	23332	4	0
Rough Terrain Forklifts	0	0	0	0	0	0	0	0
Rubber Tired Dozers	0	0	0	0	0	0	0	0
Rubber Tired Loaders	0	0	0	0	0	0	0	0
Scrapers	1203	423	3849	4	148	410240	38	0
Signal Boards/Light Sets	0	0	0	0	0	0	0	0
Skid Steer Loaders	489	112	491	1	34	55080	10	0
Tractors/Loaders/Backhoes	1016	200	1317	2	111	148954	18	0
Trenchers	674	185	1132	1	96	93312	17	0
Welders	0	0	0	0	0	0	0	0
Other Const. Eq.-Gasoline	6615	90	315	2	16	200900	5	18

Totals	**CO**	**VOC**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**CH4**	**N2O**
lbs per const. period	13840	1881	13420	18	788	781.31	1610319	167	18
tons per const. period	6.9	0.9	6.7	0.009	0.39	0.39	805.16	0.08	0.01
Estimated Maximum lbs/day =	106.5	14.5	103.2	0.138	6.06	6.01	12387.07	1.28	0.14
Average lbs/day =	*85.2*	*11.6*	*82.6*	*0.111*	*4.85*	*4.81*	*9909.7*	*1.0*	*0.1*
Average lbs/month =	2768.0	376.3	2684.0	3.6	157.68	156.26	322063.83	33.33	3.55

CARB-CEIDARS, Updated Size Fractions for PM Profiles: PM2.5 = 0.991 of PM10 : Diesel Vehicle Exhaust
ROG reported as VOC.

Other Assumptions and References:

1. Trench construction times per: Southern Regional Water Pipeline Alliance, 3/08.
   Optimum trench construction progress rate is 80m (260ft) per day.
   Non-optimum trench construction progress rate is 30m (100 ft) per day.
   An average progress of 180 ft/day is used where applicable.
2. Paving speeds can range from 3 to 15 m/min depending on asphalt delivery rates and required compaction thickness.
   A minium paving speed of 3 m/min (10 ft/min or 600 ft/hr) was used where applicable.
   The minimum speed is based upon a 3" compacted layer, 12 ft lane width, with an asphalt delivery rate of ~ 140 tons/hr.
   Ref: Asphalt Paving Speed, Pavement Worktip No. 31, AAPA, 11/2001.
3. Estimation of maximum daily emissions is extremely variable. Some projects provide estimated manpower and equipment use schedules, but even this data usually leads to a wide range of assumptions being made in order to estimate equipment exhaust emissions for a maximum work day.
   Estimated maximum daily emissions assumes all listed equipment is on site and operating for the maximum stated hours.
   Since only approx. 20 workers will be onsite during the grading/prep phase, the avg daily emissions will be considerably less than the estimated maximum daily values noted above.
   Average dialy emissions, per the Applicant, are expected to be approx. 80% of the max daily values.
4. Construction schedule note: most equipment use and emissions are based on 8 hrs of activity in a 10 hr workday.
   a. 1 hour for lunch break, plus two 15 minute periods of labor inactivity (one in morning and one in afternoon)
   b. a 30 minute period each day for each piece of equipment for re-fueling, maintenance, and normal downtime

CONSTRUCTION EQUIPMENT EXHAUST EMISSIONS

Project: Blythe Solar Power **Each 125 MW Block, Phase 6**

Assumptions:

1. The average engines employed in construction equipment use consumes fuel at a rate of: diesel 0.06 gal/hp-hr
Ref: EPA, NR-009b Publication, November 2002. gasoline 0.11 gal/hp-hr
Ref: Sacramento County APCD Const. Program Data, V. 6.0.3, 3/2007.
Ref: EPA, NR-009c Publication, EPA 420-P-04-009, April 2004.
Ref: Niland Energy Project, IID, AFC Vol 2, App A.
Ref: South Coast AQMD PR XXI, Draft Staff Report, 3-15-95, and SCAQMD CEQA Manual, 11/03.
The above noted references present fuel consumption values which range from 0.050 to 0.064 gal/hp-hr for diesel engines used in construction related equipment. The value of 0.060 gal/hp-hr was chosen as a reasonable upper mid-range value for construction diesel emissions calculations.
For gasoline the mid-range value from SCAQMD of 0.11 gal/hp-hr was used.

2. Construction equipment exhaust emissions will be calculated on a period basis using the site specific equipment list, HP ratings, hours of use, days of use, etc. Period emissions will be apportioned to daily values based on the estimated construction period time on site.

3. The equipment list derived from the South Coast AQMD (12/2006) will be used to establish the various equipment categories. Data produced by the Sacramento APCD was used to establish the average HP ratings for each equipment category. HP rating data was supplemented by data from SCAQMD CEQA Handbook (Table A9-8-C) if not available from Sacramento APCD.

4. Construction Schedule:	10	hrs/day	Construction Totals:	260	hrs/month
	6	days/week		1300	hrs/const period
	26	days/month		130	days/const period
	5	months			

5. Anticipated Construction Start Year: 2013

6. Maximum anticipated equipment use month is: n/a

Equipment types and use rates supplied by the Applicant.

Equipment Category**	Avg HP	# of Units Used for Project	Max Use Rate Hrs/day	# of Days On Site (each)	Total Hrs/Day	Total Hp-Hrs per Day	Total Hrs per Const Period	Total Hp-Hrs per Const Period
Bore/Drill Rigs/Pile Drivers	209	0	0	0	0	0	0	0
Cement Mixers	25	0	0	0	0	0	0	0
Industrial/Concrete Saws	56	0	0	0	0	0	0	0
Cranes	194	0	0	0	0	0	0	0
Crawler Tractors/Dozers	120	2	8	110	16	1920	1760	211200
Crushing/Processing Eq.	127	0	0	0	0	0	0	0
Dump and Tender Trucks	25	5	8	100	40	1000	4000	100000
Excavators	152	1	8	100	8	1216	800	121600
Forklifts/Aerial Lifts/Booms	120	0	0	0	0	0	0	0
Generators/Compressors	50	0	0	0	0	0	0	0
Graders	157	4	8	110	32	5024	3520	552640
Off Highway Tractors	120	0	0	0	0	0	0	0
Off Highway Trucks	250	1	6	125	6	1500	750	187500
Other Const. Eq.-DIESEL	175	0	0	0	0	0	0	0
Pavers	99	0	0	0	0	0	0	0
Paving Eq./Surfacing Eq.	91	0	0	0	0	0	0	0
Plate Compactors	15	0	0	0	0	0	0	0
Rollers/Compactors	99	1	8	60	8	792	480	47520
Rough Terrain Forklifts	120	0	0	0	0	0	0	0
Rubber Tired Dozers	356	0	0	0	0	0	0	0
Rubber Tired Loaders	175	0	0	0	0	0	0	0
Scrapers	267	4	8	110	32	8544	3520	939840
Signal Boards/Light Sets	15	0	0	0	0	0	0	0
Skid Steer Loaders	50	3	8	90	24	1200	2160	108000
Tractors/Loaders/Backhoes	120	4	8	90	32	3840	2880	345600
Trenchers	120	2	8	90	16	1920	1440	172800
Welders	50	0	0	0	0	0	0	0
Other Const. Eq.- GASOLINE	175	2	8	125	16	2800	2000	350000

*includes equipment and use rates for proposed offsite linears.
** diesel equipment unless otherwise specified.

Const Period Diesel Hp-Hrs =	2786700	
Const Period Gasoline Hp-Hrs =	350000	
Const Period Diesel Fuel Use =	167202	gals
Const Period Gasoline Fuel Use =	38500	gals

Emissions factors from SCAQMD Offroad database for 2013.
EFs are for the anticipated construction start year of 2013.

Emissions factors for each category of equipment were either HP class specific, or they represent the highest of the two bounding factors for the HP listing.

				2013 Equipment Emissions Factors					
Equip. Type	**HP**	**lbs/hp-hr CO**	**lbs/hp-hr VOC** as ROG	**lbs/hp-hr NOx**	**lbs/hp-hr SOx**	**lbs/hp-hr PM10**	**lbs/hp-hr CO2**	**lbs/hp-hr CH4**	**lbs/hp-hr N2O**
Bore/Drill Rigs/Pile Drivers	209	0.004300	0.000402	0.003960	0.000009	0.000172	0.805000	0.000036	0.000000
Cement Mixers	25	0.003250	0.001080	0.006040	0.000009	0.000332	0.702000	0.000098	0.000000
Industrial/Concrete Saws	56	0.005840	0.001910	0.005710	0.000008	0.000494	0.604000	0.000173	0.000000
Cranes	194	0.002750	0.000590	0.004440	0.000005	0.000255	0.459000	0.000053	0.000000
Crawler Tractors/Dozers	120	0.004050	0.001080	0.006400	0.000006	0.000565	0.548000	0.000097	0.000000
Crushing/Processing Eq.	127	0.004800	0.001170	0.007130	0.000008	0.000651	0.692000	0.000106	0.000000
Dump and Tender Trucks	25	0.001280	0.000386	0.002400	0.000004	0.000116	0.305000	0.000035	0.000000
Excavators	152	0.004310	0.000907	0.005660	0.000007	0.000490	0.613000	0.000082	0.000000
Forklifts/Aerial Lifts/Booms	120	0.002010	0.000453	0.003090	0.000004	0.000244	0.317000	0.000041	0.000000
Generators/Compressors	50	0.005210	0.001690	0.005660	0.000008	0.000460	0.612000	0.000153	0.000000
Graders	157	0.004190	0.000840	0.006400	0.000008	0.000362	0.707000	0.000076	0.000000
Off Highway Tractors	120	0.005990	0.001760	0.010300	0.000009	0.000899	0.780000	0.000159	0.000000
Off Highway Trucks	250	0.001530	0.000560	0.004950	0.000007	0.000165	0.666000	0.000051	0.000000
Other Const. Eq.-Diesel	175	0.003350	0.000536	0.004580	0.000007	0.000240	0.608000	0.000048	0.000000
Pavers	99	0.004210	0.001160	0.006960	0.000007	0.000608	0.576000	0.000104	0.000000
Paving Eq./Surfacing Eq.	91	0.003510	0.000809	0.005440	0.000006	0.000431	0.531000	0.000073	0.000000
Plate Compactors	15	0.001750	0.000334	0.002090	0.000004	0.000082	0.287000	0.000030	0.000000
Rollers/Compactors	99	0.003380	0.000823	0.005210	0.000006	0.000445	0.491000	0.000074	0.000000
Rough Terrain Forklifts	120	0.003600	0.000797	0.005000	0.000006	0.000442	0.520000	0.000072	0.000000
Rubber Tired Dozers	356	0.002730	0.000972	0.008320	0.000008	0.000351	0.733000	0.000088	0.000000
Rubber Tired Loaders	175	0.003580	0.000708	0.005430	0.000007	0.000306	0.607000	0.000064	0.000000
Scrapers	267	0.002560	0.000900	0.008190	0.000009	0.000316	0.873000	0.000081	0.000000
Signal Boards/Light Sets	15	0.002510	0.000478	0.003000	0.000006	0.000117	0.411000	0.000043	0.000000
Skid Steer Loaders	50	0.004530	0.001040	0.004550	0.000007	0.000314	0.510000	0.000094	0.000000
Tractors/Loaders/Backhoes	120	0.002940	0.000580	0.003810	0.000005	0.000320	0.431000	0.000052	0.000000
Trenchers	120	0.003900	0.001070	0.006550	0.000006	0.000558	0.540000	0.000096	0.000000
Welders	50	0.005430	0.001900	0.005040	0.000007	0.000471	0.519000	0.000172	0.000000
Other Const. Eq.-Gasoline	175	0.018900	0.000256	0.000899	0.000006	0.000046	0.574000	0.000015	0.000051
Avg Offroad Diesel EFs		*0.0036*	*0.0009*	*0.0054*	*0.000007*	*0.0004*	*0.5721*	*0.0001*	*0.0000*

Construction Period Emissions, lbs

Equip. Type	CO	VOC	NOx	SOx	PM10	CO2	CH4	N2O
Bore/Drill Rigs/Pile Drivers	0	0	0	0	0	0	0	0
Cement Mixers	0	0	0	0	0	0	0	0
Industrial/Concrete Saws	0	0	0	0	0	0	0	0
Cranes	0	0	0	0	0	0	0	0
Crawler Tractors/Dozers	855	228	1352	1	119	115738	21	0
Crushing/Processing Eq.	0	0	0	0	0	0	0	0
Dump and Tender Trucks	128	39	240	0	12	30500	3	0
Excavators	524	110	688	1	60	74541	10	0
Forklifts/Aerial Lifts/Booms	0	0	0	0	0	0	0	0
Generators/Compressors	0	0	0	0	0	0	0	0
Graders	2316	464	3537	4	200	390716	42	0
Off Highway Tractors	0	0	0	0	0	0	0	0
Off Highway Trucks	287	105	928	1	31	124875	9	0
Other Const. Eq.-Diesel	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	0	0	0	0
Paving Eq./Surfacing Eq.	0	0	0	0	0	0	0	0
Plate Compactors	0	0	0	0	0	0	0	0
Rollers/Compactors	161	39	248	0	21	23332	4	0
Rough Terrain Forklifts	0	0	0	0	0	0	0	0
Rubber Tired Dozers	0	0	0	0	0	0	0	0
Rubber Tired Loaders	0	0	0	0	0	0	0	0
Scrapers	2406	846	7697	9	297	820480	76	0
Signal Boards/Light Sets	0	0	0	0	0	0	0	0
Skid Steer Loaders	489	112	491	1	34	55080	10	0
Tractors/Loaders/Backhoes	1016	200	1317	2	111	148954	18	0
Trenchers	674	185	1132	1	96	93312	17	0
Welders	0	0	0	0	0	0	0	0
Other Const. Eq.-Gasoline	6615	90	315	2	16	200900	5	18

Totals	**CO**	**VOC**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**CH4**	**N2O**
lbs per const. period	15471	2418	17944	23	997	987.59	2078428	215	18
tons per const. period	7.7	1.2	9.0	0.012	0.50	0.49	1039.21	0.11	0.01
Estimated Maximum lbs/day =	119.0	18.6	138.0	0.178	7.67	7.60	15987.91	1.65	0.14
Average lbs/day =	*95.2*	*14.9*	*110.4*	*0.142*	*6.13*	*6.08*	*12790.3*	*1.3*	*0.1*
Average lbs/month =	3094.1	483.7	3588.9	4.6	199.31	197.52	415685.62	43.02	3.55

CARB-CEIDARS, Updated Size Fractions for PM Profiles: PM2.5 = 0.991 of PM10 : Diesel Vehicle Exhaust
ROG reported as VOC.

Other Assumptions and References:

1. Trench construction times per: Southern Regional Water Pipeline Alliance, 3/08.
   Optimum trench construction progress rate is 80m (260ft) per day.
   Non-optimum trench construction progress rate is 30m (100 ft) per day.
   An average progress of 180 ft/day is used where applicable.
2. Paving speeds can range from 3 to 15 m/min depending on asphalt delivery rates and required compaction thickness.
   A minium paving speed of 3 m/min (10 ft/min or 600 ft/hr) was used where applicable.
   The minimum speed is based upon a 3" compacted layer, 12 ft lane width, with an asphalt delivery rate of ~ 140 tons/hr.
   Ref: Asphalt Paving Speed, Pavement Worktip No. 31, AAPA, 11/2001.
3. Estimation of maximum daily emissions is extremely variable. Some projects provide estimated manpower and equipment use schedules, but even this data usually leads to a wide range of assumptions being made in order to estimate equipment exhaust emissions for a maximum work day.
   Estimated maximum daily emissions assumes all listed equipment is on site and operating for the maximum stated hours.
   Since only approx. 20 workers will be onsite during the grading/prep phase, the avg daily emissions will be considerably less than the estimated maximum daily values noted above.
   Average dialy emissions, per the Applicant, are expected to be approx. 80% of the max daily values.
4. Construction schedule note: most equipment use and emissions are based on 8 hrs of activity in a 10 hr workday.
   a. 1 hour for lunch break, plus two 15 minute periods of labor inactivity (one in morning and one in afternoon)
   b. a 30 minute period each day for each piece of equipment for re-fueling, maintenance, and normal downtime

CONSTRUCTION EQUIPMENT EXHAUST EMISSIONS

Project: Blythe Solar Power **Each 125 MW Block, Phase 7**

Assumptions:

1. The average engines employed in construction equipment use consumes fuel at a rate of: diesel 0.06 gal/hp-hr
Ref: EPA, NR-009b Publication, November 2002. gasoline 0.11 gal/hp-hr
Ref: Sacramento County APCD Const. Program Data, V. 6.0.3, 3/2007.
Ref: EPA, NR-009c Publication, EPA 420-P-04-009, April 2004.
Ref: Niland Energy Project, IID, AFC Vol 2, App A.
Ref: South Coast AQMD PR XXI, Draft Staff Report, 3-15-95, and SCAQMD CEQA Manual, 11/03.
The above noted references present fuel consumption values which range from 0.050 to 0.064 gal/hp-hr for diesel engines used in construction related equipment. The value of 0.060 gal/hp-hr was chosen as a reasonable upper mid-range value for construction diesel emissions calculations.
For gasoline the mid-range value from SCAQMD of 0.11 gal/hp-hr was used.

2. Construction equipment exhaust emissions will be calculated on a period basis using the site specific equipment list, HP ratings, hours of use, days of use, etc. Period emissions will be apportioned to daily values based on the estimated construction period time on site.

3. The equipment list derived from the South Coast AQMD (12/2006) will be used to establish the various equipment categories. Data produced by the Sacramento APCD was used to establish the average HP ratings for each equipment category. HP rating data was supplemented by data from SCAQMD CEQA Handbook (Table A9-8-C) if not available from Sacramento APCD.

4. Construction Schedule:	10	hrs/day	Construction Totals:	260	hrs/month
	6	days/week		1300	hrs/const period
	26	days/month		130	days/const period
	5	months			

5. Anticipated Construction Start Year: 2013

6. Maximum anticipated equipment use month is: n/a

Equipment types and use rates supplied by the Applicant.

Equipment Category**	Avg HP	# of Units Used for Project	Max Use Rate Hrs/day	# of Days On Site (each)	Total Hrs/Day	Total Hp-Hrs per Day	Total Hrs per Const Period	Total Hp-Hrs per Const Period
Bore/Drill Rigs/Pile Drivers	209	0	0	0	0	0	0	0
Cement Mixers	25	0	0	0	0	0	0	0
Industrial/Concrete Saws	56	0	0	0	0	0	0	0
Cranes	194	0	0	0	0	0	0	0
Crawler Tractors/Dozers	120	2	8	110	16	1920	1760	211200
Crushing/Processing Eq.	127	0	0	0	0	0	0	0
Dump and Tender Trucks	25	5	8	100	40	1000	4000	100000
Excavators	152	1	8	100	8	1216	800	121600
Forklifts/Aerial Lifts/Booms	120	0	0	0	0	0	0	0
Generators/Compressors	50	0	0	0	0	0	0	0
Graders	157	5	8	110	40	6280	4400	690800
Off Highway Tractors	120	0	0	0	0	0	0	0
Off Highway Trucks	250	1	6	125	6	1500	750	187500
Other Const. Eq.-DIESEL	175	0	0	0	0	0	0	0
Pavers	99	0	0	0	0	0	0	0
Paving Eq./Surfacing Eq.	91	0	0	0	0	0	0	0
Plate Compactors	15	0	0	0	0	0	0	0
Rollers/Compactors	99	1	8	60	8	792	480	47520
Rough Terrain Forklifts	120	0	0	0	0	0	0	0
Rubber Tired Dozers	356	0	0	0	0	0	0	0
Rubber Tired Loaders	175	0	0	0	0	0	0	0
Scrapers	267	6	8	110	48	12816	5280	1409760
Signal Boards/Light Sets	15	0	0	0	0	0	0	0
Skid Steer Loaders	50	3	8	90	24	1200	2160	108000
Tractors/Loaders/Backhoes	120	4	8	90	32	3840	2880	345600
Trenchers	120	2	8	90	16	1920	1440	172800
Welders	50	0	0	0	0	0	0	0
Other Const. Eq.- GASOLINE	175	2	8	125	16	2800	2000	350000

*includes equipment and use rates for proposed offsite linears.
** diesel equipment unless otherwise specified.

Const Period Diesel Hp-Hrs =	3394780	
Const Period Gasoline Hp-Hrs =	350000	
Const Period Diesel Fuel Use =	203687	gals
Const Period Gasoline Fuel Use =	38500	gals

Emissions factors from SCAQMD Offroad database for 2013.
EFs are for the anticipated construction start year of 2013.

Emissions factors for each category of equipment were either HP class specific, or they represent the highest of the two bounding factors for the HP listing.

				2013 Equipment Emissions Factors					
Equip. Type	**HP**	**lbs/hp-hr CO**	**lbs/hp-hr VOC** as ROG	**lbs/hp-hr NOx**	**lbs/hp-hr SOx**	**lbs/hp-hr PM10**	**lbs/hp-hr CO2**	**lbs/hp-hr CH4**	**lbs/hp-hr N2O**
Bore/Drill Rigs/Pile Drivers	209	0.004300	0.000402	0.003960	0.000009	0.000172	0.805000	0.000036	0.000000
Cement Mixers	25	0.003250	0.001080	0.006040	0.000009	0.000332	0.702000	0.000098	0.000000
Industrial/Concrete Saws	56	0.005840	0.001910	0.005710	0.000008	0.000494	0.604000	0.000173	0.000000
Cranes	194	0.002750	0.000590	0.004440	0.000005	0.000255	0.459000	0.000053	0.000000
Crawler Tractors/Dozers	120	0.004050	0.001080	0.006400	0.000006	0.000565	0.548000	0.000097	0.000000
Crushing/Processing Eq.	127	0.004800	0.001170	0.007130	0.000008	0.000651	0.692000	0.000106	0.000000
Dump and Tender Trucks	25	0.001280	0.000386	0.002400	0.000004	0.000116	0.305000	0.000035	0.000000
Excavators	152	0.004310	0.000907	0.005660	0.000007	0.000490	0.613000	0.000082	0.000000
Forklifts/Aerial Lifts/Booms	120	0.002010	0.000453	0.003090	0.000004	0.000244	0.317000	0.000041	0.000000
Generators/Compressors	50	0.005210	0.001690	0.005660	0.000008	0.000460	0.612000	0.000153	0.000000
Graders	157	0.004190	0.000840	0.006400	0.000008	0.000362	0.707000	0.000076	0.000000
Off Highway Tractors	120	0.005990	0.001760	0.010300	0.000009	0.000899	0.780000	0.000159	0.000000
Off Highway Trucks	250	0.001530	0.000560	0.004950	0.000007	0.000165	0.666000	0.000051	0.000000
Other Const. Eq.-Diesel	175	0.003350	0.000536	0.004580	0.000007	0.000240	0.608000	0.000048	0.000000
Pavers	99	0.004210	0.001160	0.006960	0.000007	0.000608	0.576000	0.000104	0.000000
Paving Eq./Surfacing Eq.	91	0.003510	0.000809	0.005440	0.000006	0.000431	0.531000	0.000073	0.000000
Plate Compactors	15	0.001750	0.000334	0.002090	0.000004	0.000082	0.287000	0.000030	0.000000
Rollers/Compactors	99	0.003380	0.000823	0.005210	0.000006	0.000445	0.491000	0.000074	0.000000
Rough Terrain Forklifts	120	0.003600	0.000797	0.005000	0.000006	0.000442	0.520000	0.000072	0.000000
Rubber Tired Dozers	356	0.002730	0.000972	0.008320	0.000008	0.000351	0.733000	0.000088	0.000000
Rubber Tired Loaders	175	0.003580	0.000708	0.005430	0.000007	0.000306	0.607000	0.000064	0.000000
Scrapers	267	0.002560	0.000900	0.008190	0.000009	0.000316	0.873000	0.000081	0.000000
Signal Boards/Light Sets	15	0.002510	0.000478	0.003000	0.000006	0.000117	0.411000	0.000043	0.000000
Skid Steer Loaders	50	0.004530	0.001040	0.004550	0.000007	0.000314	0.510000	0.000094	0.000000
Tractors/Loaders/Backhoes	120	0.002940	0.000580	0.003810	0.000005	0.000320	0.431000	0.000052	0.000000
Trenchers	120	0.003900	0.001070	0.006550	0.000006	0.000558	0.540000	0.000096	0.000000
Welders	50	0.005430	0.001900	0.005040	0.000007	0.000471	0.519000	0.000172	0.000000
Other Const. Eq.-Gasoline	175	0.018900	0.000256	0.000899	0.000006	0.000046	0.574000	0.000015	0.000051
Avg Offroad Diesel EFs		*0.0036*	*0.0009*	*0.0054*	*0.000007*	*0.0004*	*0.5721*	*0.0001*	*0.0000*

Construction Period Emissions, lbs

Equip. Type	CO	VOC	NOx	SOx	PM10	CO2	CH4	N2O
Bore/Drill Rigs/Pile Drivers	0	0	0	0	0	0	0	0
Cement Mixers	0	0	0	0	0	0	0	0
Industrial/Concrete Saws	0	0	0	0	0	0	0	0
Cranes	0	0	0	0	0	0	0	0
Crawler Tractors/Dozers	855	228	1352	1	119	115738	21	0
Crushing/Processing Eq.	0	0	0	0	0	0	0	0
Dump and Tender Trucks	128	39	240	0	12	30500	3	0
Excavators	524	110	688	1	60	74541	10	0
Forklifts/Aerial Lifts/Booms	0	0	0	0	0	0	0	0
Generators/Compressors	0	0	0	0	0	0	0	0
Graders	2894	580	4421	5	250	488396	52	0
Off Highway Tractors	0	0	0	0	0	0	0	0
Off Highway Trucks	287	105	928	1	31	124875	9	0
Other Const. Eq.-Diesel	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	0	0	0	0
Paving Eq./Surfacing Eq.	0	0	0	0	0	0	0	0
Plate Compactors	0	0	0	0	0	0	0	0
Rollers/Compactors	161	39	248	0	21	23332	4	0
Rough Terrain Forklifts	0	0	0	0	0	0	0	0
Rubber Tired Dozers	0	0	0	0	0	0	0	0
Rubber Tired Loaders	0	0	0	0	0	0	0	0
Scrapers	3609	1269	11546	13	445	1230720	114	0
Signal Boards/Light Sets	0	0	0	0	0	0	0	0
Skid Steer Loaders	489	112	491	1	34	55080	10	0
Tractors/Loaders/Backhoes	1016	200	1317	2	111	148954	18	0
Trenchers	674	185	1132	1	96	93312	17	0
Welders	0	0	0	0	0	0	0	0
Other Const. Eq.-Gasoline	6615	90	315	2	16	200900	5	18

Totals	**CO**	**VOC**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**CH4**	**N2O**
lbs per const. period	17253	2957	22677	29	1195	1184.32	2586347	264	18
tons per const. period	8.6	1.5	11.3	0.014	0.60	0.59	1293.17	0.13	0.01
Estimated Maximum lbs/day =	132.7	22.7	174.4	0.220	9.19	9.11	19894.98	2.03	0.14
Average lbs/day =	*106.2*	*18.2*	*139.6*	*0.176*	*7.35*	*7.29*	*15916.0*	*1.6*	*0.1*
Average lbs/month =	3450.5	591.5	4535.5	5.7	239.01	236.86	517269.48	52.75	3.55

CARB-CEIDARS, Updated Size Fractions for PM Profiles: PM2.5 = 0.991 of PM10 : Diesel Vehicle Exhaust
ROG reported as VOC.

Other Assumptions and References:

1. Trench construction times per: Southern Regional Water Pipeline Alliance, 3/08.
   Optimum trench construction progress rate is 80m (260ft) per day.
   Non-optimum trench construction progress rate is 30m (100 ft) per day.
   An average progress of 180 ft/day is used where applicable.
2. Paving speeds can range from 3 to 15 m/min depending on asphalt delivery rates and required compaction thickness.
   A minium paving speed of 3 m/min (10 ft/min or 600 ft/hr) was used where applicable.
   The minimum speed is based upon a 3" compacted layer, 12 ft lane width, with an asphalt delivery rate of ~ 140 tons/hr.
   Ref: Asphalt Paving Speed, Pavement Worktip No. 31, AAPA, 11/2001.
3. Estimation of maximum daily emissions is extremely variable. Some projects provide estimated manpower and equipment use schedules, but even this data usually leads to a wide range of assumptions being made in order to estimate equipment exhaust emissions for a maximum work day.
   Estimated maximum daily emissions assumes all listed equipment is on site and operating for the maximum stated hours.
   Since only approx. 20 workers will be onsite during the grading/prep phase, the avg daily emissions will be considerably less than the estimated maximum daily values noted above.
   Average dialy emissions, per the Applicant, are expected to be approx. 80% of the max daily values.
4. Construction schedule note: most equipment use and emissions are based on 8 hrs of activity in a 10 hr workday.
   a. 1 hour for lunch break, plus two 15 minute periods of labor inactivity (one in morning and one in afternoon)
   b. a 30 minute period each day for each piece of equipment for re-fueling, maintenance, and normal downtime

CONSTRUCTION EQUIPMENT EXHAUST EMISSIONS

Project: Blythe Solar Power **Each 125 MW Block, Phase 8**

Assumptions:

1. The average engines employed in construction equipment use consumes fuel at a rate of: diesel 0.06 gal/hp-hr
Ref: EPA, NR-009b Publication, November 2002. gasoline 0.11 gal/hp-hr
Ref: Sacramento County APCD Const. Program Data, V. 6.0.3, 3/2007.
Ref: EPA, NR-009c Publication, EPA 420-P-04-009, April 2004.
Ref: Niland Energy Project, IID, AFC Vol 2, App A.
Ref: South Coast AQMD PR XXI, Draft Staff Report, 3-15-95, and SCAQMD CEQA Manual, 11/03.
The above noted references present fuel consumption values which range from 0.050 to 0.064 gal/hp-hr for diesel engines used in construction related equipment. The value of 0.060 gal/hp-hr was chosen as a reasonable upper mid-range value for construction diesel emissions calculations.
For gasoline the mid-range value from SCAQMD of 0.11 gal/hp-hr was used.

2. Construction equipment exhaust emissions will be calculated on a period basis using the site specific equipment list, HP ratings, hours of use, days of use, etc. Period emissions will be apportioned to daily values based on the estimated construction period time on site.

3. The equipment list derived from the South Coast AQMD (12/2006) will be used to establish the various equipment categories. Data produced by the Sacramento APCD was used to establish the average HP ratings for each equipment category. HP rating data was supplemented by data from SCAQMD CEQA Handbook (Table A9-8-C) if not available from Sacramento APCD.

4. Construction Schedule:	10	hrs/day	Construction Totals:	260	hrs/month
	6	days/week		1300	hrs/const period
	26	days/month		130	days/const period
	5	months			

5. Anticipated Construction Start Year: 2013

6. Maximum anticipated equipment use month is: n/a

Equipment types and use rates supplied by the Applicant.

Equipment Category**	Avg HP	# of Units Used for Project	Max Use Rate Hrs/day	# of Days On Site (each)	Total Hrs/Day	Total Hp-Hrs per Day	Total Hrs per Const Period	Total Hp-Hrs per Const Period
Bore/Drill Rigs/Pile Drivers	209	0	0	0	0	0	0	0
Cement Mixers	25	0	0	0	0	0	0	0
Industrial/Concrete Saws	56	0	0	0	0	0	0	0
Cranes	194	0	0	0	0	0	0	0
Crawler Tractors/Dozers	120	2	8	110	16	1920	1760	211200
Crushing/Processing Eq.	127	0	0	0	0	0	0	0
Dump and Tender Trucks	25	5	8	100	40	1000	4000	100000
Excavators	152	1	8	100	8	1216	800	121600
Forklifts/Aerial Lifts/Booms	120	0	0	0	0	0	0	0
Generators/Compressors	50	0	0	0	0	0	0	0
Graders	157	5	8	110	40	6280	4400	690800
Off Highway Tractors	120	0	0	0	0	0	0	0
Off Highway Trucks	250	1	6	125	6	1500	750	187500
Other Const. Eq.-DIESEL	175	0	0	0	0	0	0	0
Pavers	99	0	0	0	0	0	0	0
Paving Eq./Surfacing Eq.	91	0	0	0	0	0	0	0
Plate Compactors	15	0	0	0	0	0	0	0
Rollers/Compactors	99	1	8	60	8	792	480	47520
Rough Terrain Forklifts	120	0	0	0	0	0	0	0
Rubber Tired Dozers	356	0	0	0	0	0	0	0
Rubber Tired Loaders	175	0	0	0	0	0	0	0
Scrapers	267	7	8	110	56	14952	6160	1644720
Signal Boards/Light Sets	15	0	0	0	0	0	0	0
Skid Steer Loaders	50	3	8	90	24	1200	2160	108000
Tractors/Loaders/Backhoes	120	4	8	90	32	3840	2880	345600
Trenchers	120	2	8	90	16	1920	1440	172800
Welders	50	0	0	0	0	0	0	0
Other Const. Eq.- GASOLINE	175	2	8	125	16	2800	2000	350000

*includes equipment and use rates for proposed offsite linears.
** diesel equipment unless otherwise specified.

Const Period Diesel Hp-Hrs =	3629740	
Const Period Gasoline Hp-Hrs =	350000	
Const Period Diesel Fuel Use =	217784	gals
Const Period Gasoline Fuel Use =	38500	gals

Emissions factors from SCAQMD Offroad database for 2013.
EFs are for the anticipated construction start year of 2013.

Emissions factors for each category of equipment were either HP class specific, or they represent the highest of the two bounding factors for the HP listing.

				2013 Equipment Emissions Factors					
Equip. Type	**HP**	**lbs/hp-hr CO**	**lbs/hp-hr VOC** as ROG	**lbs/hp-hr NOx**	**lbs/hp-hr SOx**	**lbs/hp-hr PM10**	**lbs/hp-hr CO2**	**lbs/hp-hr CH4**	**lbs/hp-hr N2O**
Bore/Drill Rigs/Pile Drivers	209	0.004300	0.000402	0.003960	0.000009	0.000172	0.805000	0.000036	0.000000
Cement Mixers	25	0.003250	0.001080	0.006040	0.000009	0.000332	0.702000	0.000098	0.000000
Industrial/Concrete Saws	56	0.005840	0.001910	0.005710	0.000008	0.000494	0.604000	0.000173	0.000000
Cranes	194	0.002750	0.000590	0.004440	0.000005	0.000255	0.459000	0.000053	0.000000
Crawler Tractors/Dozers	120	0.004050	0.001080	0.006400	0.000006	0.000565	0.548000	0.000097	0.000000
Crushing/Processing Eq.	127	0.004800	0.001170	0.007130	0.000008	0.000651	0.692000	0.000106	0.000000
Dump and Tender Trucks	25	0.001280	0.000386	0.002400	0.000004	0.000116	0.305000	0.000035	0.000000
Excavators	152	0.004310	0.000907	0.005660	0.000007	0.000490	0.613000	0.000082	0.000000
Forklifts/Aerial Lifts/Booms	120	0.002010	0.000453	0.003090	0.000004	0.000244	0.317000	0.000041	0.000000
Generators/Compressors	50	0.005210	0.001690	0.005660	0.000008	0.000460	0.612000	0.000153	0.000000
Graders	157	0.004190	0.000840	0.006400	0.000008	0.000362	0.707000	0.000076	0.000000
Off Highway Tractors	120	0.005990	0.001760	0.010300	0.000009	0.000899	0.780000	0.000159	0.000000
Off Highway Trucks	250	0.001530	0.000560	0.004950	0.000007	0.000165	0.666000	0.000051	0.000000
Other Const. Eq.-Diesel	175	0.003350	0.000536	0.004580	0.000007	0.000240	0.608000	0.000048	0.000000
Pavers	99	0.004210	0.001160	0.006960	0.000007	0.000608	0.576000	0.000104	0.000000
Paving Eq./Surfacing Eq.	91	0.003510	0.000809	0.005440	0.000006	0.000431	0.531000	0.000073	0.000000
Plate Compactors	15	0.001750	0.000334	0.002090	0.000004	0.000082	0.287000	0.000030	0.000000
Rollers/Compactors	99	0.003380	0.000823	0.005210	0.000006	0.000445	0.491000	0.000074	0.000000
Rough Terrain Forklifts	120	0.003600	0.000797	0.005000	0.000006	0.000442	0.520000	0.000072	0.000000
Rubber Tired Dozers	356	0.002730	0.000972	0.008320	0.000008	0.000351	0.733000	0.000088	0.000000
Rubber Tired Loaders	175	0.003580	0.000708	0.005430	0.000007	0.000306	0.607000	0.000064	0.000000
Scrapers	267	0.002560	0.000900	0.008190	0.000009	0.000316	0.873000	0.000081	0.000000
Signal Boards/Light Sets	15	0.002510	0.000478	0.003000	0.000006	0.000117	0.411000	0.000043	0.000000
Skid Steer Loaders	50	0.004530	0.001040	0.004550	0.000007	0.000314	0.510000	0.000094	0.000000
Tractors/Loaders/Backhoes	120	0.002940	0.000580	0.003810	0.000005	0.000320	0.431000	0.000052	0.000000
Trenchers	120	0.003900	0.001070	0.006550	0.000006	0.000558	0.540000	0.000096	0.000000
Welders	50	0.005430	0.001900	0.005040	0.000007	0.000471	0.519000	0.000172	0.000000
Other Const. Eq.-Gasoline	175	0.018900	0.000256	0.000899	0.000006	0.000046	0.574000	0.000015	0.000051
Avg Offroad Diesel EFs		*0.0036*	*0.0009*	*0.0054*	*0.000007*	*0.0004*	*0.5721*	*0.0001*	*0.0000*

Construction Period Emissions, lbs

Equip. Type	CO	VOC	NOx	SOx	PM10	CO2	CH4	N2O
Bore/Drill Rigs/Pile Drivers	0	0	0	0	0	0	0	0
Cement Mixers	0	0	0	0	0	0	0	0
Industrial/Concrete Saws	0	0	0	0	0	0	0	0
Cranes	0	0	0	0	0	0	0	0
Crawler Tractors/Dozers	855	228	1352	1	119	115738	21	0
Crushing/Processing Eq.	0	0	0	0	0	0	0	0
Dump and Tender Trucks	128	39	240	0	12	30500	3	0
Excavators	524	110	688	1	60	74541	10	0
Forklifts/Aerial Lifts/Booms	0	0	0	0	0	0	0	0
Generators/Compressors	0	0	0	0	0	0	0	0
Graders	2894	580	4421	5	250	488396	52	0
Off Highway Tractors	0	0	0	0	0	0	0	0
Off Highway Trucks	287	105	928	1	31	124875	9	0
Other Const. Eq.-Diesel	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	0	0	0	0
Paving Eq./Surfacing Eq.	0	0	0	0	0	0	0	0
Plate Compactors	0	0	0	0	0	0	0	0
Rollers/Compactors	161	39	248	0	21	23332	4	0
Rough Terrain Forklifts	0	0	0	0	0	0	0	0
Rubber Tired Dozers	0	0	0	0	0	0	0	0
Rubber Tired Loaders	0	0	0	0	0	0	0	0
Scrapers	4210	1480	13470	15	520	1435841	134	0
Signal Boards/Light Sets	0	0	0	0	0	0	0	0
Skid Steer Loaders	489	112	491	1	34	55080	10	0
Tractors/Loaders/Backhoes	1016	200	1317	2	111	148954	18	0
Trenchers	674	185	1132	1	96	93312	17	0
Welders	0	0	0	0	0	0	0	0
Other Const. Eq.-Gasoline	6615	90	315	2	16	200900	5	18

Totals	**CO**	**VOC**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**CH4**	**N2O**
lbs per const. period	17854	3169	24602	31	1269	1257.89	2791467	283	18
tons per const. period	8.9	1.6	12.3	0.015	0.63	0.63	1395.73	0.14	0.01
Estimated Maximum lbs/day =	137.3	24.4	189.2	0.237	9.76	9.68	21472.83	2.18	0.14
Average lbs/day =	*109.9*	*19.5*	*151.4*	*0.190*	*7.81*	*7.74*	*17178.3*	*1.7*	*0.1*
Average lbs/month =	3570.8	633.8	4920.3	6.2	253.86	251.58	558293.50	56.56	3.55

CARB-CEIDARS, Updated Size Fractions for PM Profiles: PM2.5 = 0.991 of PM10 : Diesel Vehicle Exhaust
ROG reported as VOC.

Other Assumptions and References:

1. Trench construction times per: Southern Regional Water Pipeline Alliance, 3/08.
   Optimum trench construction progress rate is 80m (260ft) per day.
   Non-optimum trench construction progress rate is 30m (100 ft) per day.
   An average progress of 180 ft/day is used where applicable.
2. Paving speeds can range from 3 to 15 m/min depending on asphalt delivery rates and required compaction thickness.
   A minium paving speed of 3 m/min (10 ft/min or 600 ft/hr) was used where applicable.
   The minimum speed is based upon a 3" compacted layer, 12 ft lane width, with an asphalt delivery rate of ~ 140 tons/hr.
   Ref: Asphalt Paving Speed, Pavement Worktip No. 31, AAPA, 11/2001.
3. Estimation of maximum daily emissions is extremely variable. Some projects provide estimated manpower and equipment use schedules, but even this data usually leads to a wide range of assumptions being made in order to estimate equipment exhaust emissions for a maximum work day.
   Estimated maximum daily emissions assumes all listed equipment is on site and operating for the maximum stated hours.
   Since only approx. 20 workers will be onsite during the grading/prep phase, the avg daily emissions will be considerably less than the estimated maximum daily values noted above.
   Average dialy emissions, per the Applicant, are expected to be approx. 80% of the max daily values.
4. Construction schedule note: most equipment use and emissions are based on 8 hrs of activity in a 10 hr workday.
   a. 1 hour for lunch break, plus two 15 minute periods of labor inactivity (one in morning and one in afternoon)
   b. a 30 minute period each day for each piece of equipment for re-fueling, maintenance, and normal downtime

CONSTRUCTION EQUIPMENT EXHAUST EMISSIONS

Project: Blythe Solar Power **Each 125 MW Block-Avg Day-Erection Subphase**

Assumptions:

1. The average engines employed in construction equipment use consumes fuel at a rate of: diesel 0.06 gal/hp-hr
Ref: EPA, NR-009b Publication, November 2002. gasoline 0.11 gal/hp-hr
Ref: Sacramento County APCD Const. Program Data, V. 6.0.3, 3/2007.
Ref: EPA, NR-009c Publication, EPA 420-P-04-009, April 2004.
Ref: Niland Energy Project, IID, AFC Vol 2, App A.
Ref: South Coast AQMD PR XXI, Draft Staff Report, 3-15-95, and SCAQMD CEQA Manual, 11/03.
The above noted references present fuel consumption values which range from 0.050 to 0.064 gal/hp-hr for diesel engines used in construction related equipment. The value of 0.060 gal/hp-hr was chosen as a reasonable upper mid-range value for construction diesel emissions calculations.
For gasoline the mid-range value from SCAQMD of 0.11 gal/hp-hr was used.

2. Construction equipment exhaust emissions will be calculated on a period basis using the site specific equipment list, HP ratings, hours of use, days of use, etc. Period emissions will be apportioned to daily values based on the estimated construction period time on site.

3. The equipment list derived from the South Coast AQMD (12/2006) will be used to establish the various equipment categories. Data produced by the Sacramento APCD was used to establish the average HP ratings for each equipment category. HP rating data was supplemented by data from SCAQMD CEQA Handbook (Table A9-8-C) if not available from Sacramento APCD.

4. Construction Schedule:	10	hrs/day	Construction Totals:	260	hrs/month
	6	days/week		1820	hrs/const period
	26	days/month		182	days/const period
	7	months			

5. Anticipated Construction Start Year: 2013

6. Maximum anticipated equipment use month is: n/a

Equipment types and use rates supplied by the Applicant.

Equipment Category**	Avg HP	# of Units Used for Project	Max Use Rate Hrs/day	# of Days On Site (each)	Total Hrs/Day	Total Hp-Hrs per Day	Total Hrs per Const Period	Total Hp-Hrs per Const Period
Bore/Drill Rigs/Pile Drivers	209	4	8	170	32	6688	5440	1136960
Cement Mixers	25	0	0	0	0	0	0	0
Industrial/Concrete Saws	56	0	0	0	0	0	0	0
Cranes	194	0	0	0	0	0	0	0
Crawler Tractors/Dozers	120	0	0	0	0	0	0	0
Crushing/Processing Eq.	127	0	0	0	0	0	0	0
Dump and Tender Trucks	25	6	8	170	48	1200	8160	204000
Excavators	152	0	0	0	0	0	0	0
Forklifts/Aerial Lifts/Booms	120	6	8	170	48	5760	8160	979200
Generators/Compressors	50	6	8	170	48	2400	8160	408000
Graders	157	0	0	0	0	0	0	0
Off Highway Tractors	120	0	0	0	0	0	0	0
Off Highway Trucks	489	1	8	160	8	3912	1280	625920
Other Const. Eq.-DIESEL	175	0	0	0	0	0	0	0
Pavers	99	1	8	60	8	792	480	47520
Paving Eq./Surfacing Eq.	91	1	8	60	8	728	480	43680
Plate Compactors	15	0	0	0	0	0	0	0
Rollers/Compactors	99	0	0	0	0	0	0	0
Rough Terrain Forklifts	120	2	8	150	16	1920	2400	288000
Rubber Tired Dozers	356	0	0	0	0	0	0	0
Rubber Tired Loaders	175	2	6	120	12	2100	1440	252000
Scrapers	267	0	0	0	0	0	0	0
Signal Boards/Light Sets	15	0	0	0	0	0	0	0
Skid Steer Loaders	50	0	0	0	0	0	0	0
Tractors/Loaders/Backhoes	120	1	8	160	8	960	1280	153600
Trenchers	120	0	0	0	0	0	0	0
Welders	50	4	8	120	32	1600	3840	192000
Other Const. Eq.- GASOLINE	175	2	8	175	16	2800	2800	490000

*includes equipment and use rates for proposed offsite linears.
** diesel equipment unless otherwise specified.

Const Period Diesel Hp-Hrs =	4330880	
Const Period Gasoline Hp-Hrs =	490000	
Const Period Diesel Fuel Use =	259853	gals
Const Period Gasoline Fuel Use =	53900	gals

Emissions factors from SCAQMD Offroad database for 2013.
EFs are for the anticipated construction start year of 2013.

Emissions factors for each category of equipment were either HP class specific, or they represent the highest of the two bounding factors for the HP listing.

2013 Equipment Emissions Factors

Equip. Type	HP	lbs/hp-hr CO	lbs/hp-hr VOC as ROG	lbs/hp-hr NOx	lbs/hp-hr SOx	lbs/hp-hr PM10	lbs/hp-hr CO2	lbs/hp-hr CH4	lbs/hp-hr N2O
Bore/Drill Rigs/Pile Drivers	209	0.004300	0.000402	0.003960	0.000009	0.000172	0.805000	0.000036	0.000000
Cement Mixers	25	0.003250	0.001080	0.006040	0.000009	0.000332	0.702000	0.000098	0.000000
Industrial/Concrete Saws	56	0.005840	0.001910	0.005710	0.000008	0.000494	0.604000	0.000173	0.000000
Cranes	194	0.002750	0.000590	0.004440	0.000005	0.000255	0.459000	0.000053	0.000000
Crawler Tractors/Dozers	120	0.004050	0.001080	0.006400	0.000006	0.000565	0.548000	0.000097	0.000000
Crushing/Processing Eq.	127	0.004800	0.001170	0.007130	0.000008	0.000651	0.692000	0.000106	0.000000
Dump and Tender Trucks	25	0.001280	0.000386	0.002400	0.000004	0.000116	0.305000	0.000035	0.000000
Excavators	152	0.004310	0.000907	0.005660	0.000007	0.000490	0.613000	0.000082	0.000000
Forklifts/Aerial Lifts/Booms	120	0.002010	0.000453	0.003090	0.000004	0.000244	0.317000	0.000041	0.000000
Generators/Compressors	50	0.005210	0.001690	0.005660	0.000008	0.000460	0.612000	0.000153	0.000000
Graders	157	0.004190	0.000840	0.006400	0.000008	0.000362	0.707000	0.000076	0.000000
Off Highway Tractors	120	0.005990	0.001760	0.010300	0.000009	0.000899	0.780000	0.000159	0.000000
Off Highway Trucks	489	0.001270	0.000434	0.003570	0.000005	0.000127	0.544000	0.000039	0.000000
Other Const. Eq.-Diesel	175	0.003350	0.000536	0.004580	0.000007	0.000240	0.608000	0.000048	0.000000
Pavers	99	0.004210	0.001160	0.006960	0.000007	0.000608	0.576000	0.000104	0.000000
Paving Eq./Surfacing Eq.	91	0.003510	0.000809	0.005440	0.000006	0.000431	0.531000	0.000073	0.000000
Plate Compactors	15	0.001750	0.000334	0.002090	0.000004	0.000082	0.287000	0.000030	0.000000
Rollers/Compactors	99	0.003380	0.000823	0.005210	0.000006	0.000445	0.491000	0.000074	0.000000
Rough Terrain Forklifts	120	0.003600	0.000797	0.005000	0.000006	0.000442	0.520000	0.000072	0.000000
Rubber Tired Dozers	356	0.002730	0.000972	0.008320	0.000008	0.000351	0.733000	0.000088	0.000000
Rubber Tired Loaders	175	0.003580	0.000708	0.005430	0.000007	0.000306	0.607000	0.000064	0.000000
Scrapers	267	0.002560	0.000900	0.008190	0.000009	0.000316	0.873000	0.000081	0.000000
Signal Boards/Light Sets	15	0.002510	0.000478	0.003000	0.000006	0.000117	0.411000	0.000043	0.000000
Skid Steer Loaders	50	0.004530	0.001040	0.004550	0.000007	0.000314	0.510000	0.000094	0.000000
Tractors/Loaders/Backhoes	120	0.002940	0.000580	0.003810	0.000005	0.000320	0.431000	0.000052	0.000000
Trenchers	120	0.003900	0.001070	0.006550	0.000006	0.000558	0.540000	0.000096	0.000000
Welders	50	0.005430	0.001900	0.005040	0.000007	0.000471	0.519000	0.000172	0.000000
Other Const. Eq.-Gasoline	175	0.018900	0.000256	0.000899	0.000006	0.000046	0.574000	0.000015	0.000051
Avg Offroad Diesel EFs		*0.0036*	*0.0009*	*0.0054*	*0.000007*	*0.0004*	*0.5676*	*0.0001*	*0.0000*

Construction Period Emissions, lbs

Equip. Type	CO	VOC as ROG	NOx	SOx	PM10	CO2	CH4	N2O
Bore/Drill Rigs/Pile Drivers	4889	457	4502	10	196	915253	41	0
Cement Mixers	0	0	0	0	0	0	0	0
Industrial/Concrete Saws	0	0	0	0	0	0	0	0
Cranes	0	0	0	0	0	0	0	0
Crawler Tractors/Dozers	0	0	0	0	0	0	0	0
Crushing/Processing Eq.	0	0	0	0	0	0	0	0
Dump and Tender Trucks	261	79	490	1	24	62220	7	0
Excavators	0	0	0	0	0	0	0	0
Forklifts/Aerial Lifts/Booms	1968	444	3026	4	239	310406	40	0
Generators/Compressors	2126	690	2309	3	188	249696	62	0
Graders	0	0	0	0	0	0	0	0
Off Highway Tractors	0	0	0	0	0	0	0	0
Off Highway Trucks	795	272	2235	3	79	340500	24	0
Other Const. Eq.-Diesel	0	0	0	0	0	0	0	0
Pavers	200	55	331	0	29	27372	5	0
Paving Eq./Surfacing Eq.	153	35	238	0	19	23194	3	0
Plate Compactors	0	0	0	0	0	0	0	0
Rollers/Compactors	0	0	0	0	0	0	0	0
Rough Terrain Forklifts	1037	230	1440	2	127	149760	21	0
Rubber Tired Dozers	0	0	0	0	0	0	0	0
Rubber Tired Loaders	902	178	1368	2	77	152964	16	0
Scrapers	0	0	0	0	0	0	0	0
Signal Boards/Light Sets	0	0	0	0	0	0	0	0
Skid Steer Loaders	0	0	0	0	0	0	0	0
Tractors/Loaders/Backhoes	452	89	585	1	49	66202	8	0
Trenchers	0	0	0	0	0	0	0	0
Welders	1043	365	968	1	90	99648	33	0
Other Const. Eq.-Gasoline	9261	125	441	3	22	281260	7	25

Totals	**CO**	**VOC**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**CH4**	**N2O**
lbs per const. period	23086	3018	17932	30	1139	1129.17	2678475	268	25
tons per const. period	11.5	1.5	9.0	0.015	0.57	0.56	1339.24	0.13	0.01
Estimated Maximum lbs/day =	126.8	16.6	98.5	0.166	6.26	6.20	14716.89	1.47	0.14
Average lbs/day =	*101.5*	*13.3*	*78.8*	*0.133*	*5.01*	*4.96*	*11773.5*	*1.2*	*0.1*
Average lbs/month =	3298.0	431.2	2561.7	4.3	162.77	161.31	382639.27	38.33	3.55

CARB-CEIDARS, Updated Size Fractions for PM Profiles: PM2.5 = 0.991 of PM10 : Diesel Vehicle Exhaust
ROG reported as VOC.

Other Assumptions and References:

1. Trench construction times per: Southern Regional Water Pipeline Alliance, 3/08.
   Optimum trench construction progress rate is 80m (260ft) per day.
   Non-optimum trench construction progress rate is 30m (100 ft) per day.
   An average progress of 180 ft/day is used where applicable.
2. Paving speeds can range from 3 to 15 m/min depending on asphalt delivery rates and required compaction thickness.
   A minium paving speed of 3 m/min (10 ft/min or 600 ft/hr) was used where applicable.
   The minimum speed is based upon a 3" compacted layer, 12 ft lane width, with an asphalt delivery rate of ~ 140 tons/hr.
   Ref: Asphalt Paving Speed, Pavement Worktip No. 31, AAPA, 11/2001.
3. Estimation of maximum daily emissions is extremely variable. Some projects provide estimated manpower and equipment use schedules, but even this data usually leads to a wide range of assumptions being made in order to estimate equipment exhaust emissions for a maximum work day.
   Estimated maximum daily emissions assumes all listed equipment is on site and operating for the maximum stated hours.
   Average dialy emissions, per the Applicant, are expected to be approx. 80% of the max daily values.
4. Construction schedule note: most equipment use and emissions are based on 8 hrs of activity in a 10 hr workday.
   a. 1 hour for lunch break, plus two 15 minute periods of labor inactivity (one in morning and one in afternoon)
   b. a 30 minute period each day for each piece of equipment for re-fueling, maintenance, and normal downtime

CONSTRUCTION EQUIPMENT EXHAUST EMISSIONS

Project: Blythe Solar Power **Each 125 MW Block-Max Day-Erection Subphase**

Assumptions:

1. The average engines employed in construction equipment use consumes fuel at a rate of: diesel 0.06 gal/hp-hr
Ref: EPA, NR-009b Publication, November 2002. gasoline 0.11 gal/hp-hr
Ref: Sacramento County APCD Const. Program Data, V. 6.0.3, 3/2007.
Ref: EPA, NR-009c Publication, EPA 420-P-04-009, April 2004.
Ref: Niland Energy Project, IID, AFC Vol 2, App A.
Ref: South Coast AQMD PR XXI, Draft Staff Report, 3-15-95, and SCAQMD CEQA Manual, 11/03.
The above noted references present fuel consumption values which range from 0.050 to 0.064 gal/hp-hr for diesel engines used in construction related equipment. The value of 0.060 gal/hp-hr was chosen as a reasonable upper mid-range value for construction diesel emissions calculations.
For gasoline the mid-range value from SCAQMD of 0.11 gal/hp-hr was used.

2. Construction equipment exhaust emissions will be calculated on a period basis using the site specific equipment list, HP ratings, hours of use, days of use, etc. Period emissions will be apportioned to daily values based on the estimated construction period time on site.

3. The equipment list derived from the South Coast AQMD (12/2006) will be used to establish the various equipment categories. Data produced by the Sacramento APCD was used to establish the average HP ratings for each equipment category. HP rating data was supplemented by data from SCAQMD CEQA Handbook (Table A9-8-C) if not available from Sacramento APCD.

4. Construction Schedule:	20	hrs/day	Construction Totals:	520	hrs/month
	6	days/week		3640	hrs/const period
	26	days/month		182	days/const period
	7	months			

5. Anticipated Construction Start Year: 2013

6. Maximum anticipated equipment use month is: n/a

Equipment types and use rates supplied by the Applicant.

Equipment Category**	Avg HP	# of Units Used for Project	Max Use Rate Hrs/day	# of Days On Site (each)	Total Hrs/Day	Total Hp-Hrs per Day	Total Hrs per Const Period	Total Hp-Hrs per Const Period
Bore/Drill Rigs/Pile Drivers	209	4	16	170	64	13376	10880	2273920
Cement Mixers	25	0	0	0	0	0	0	0
Industrial/Concrete Saws	56	0	0	0	0	0	0	0
Cranes	194	0	0	0	0	0	0	0
Crawler Tractors/Dozers	120	0	0	0	0	0	0	0
Crushing/Processing Eq.	127	0	0	0	0	0	0	0
Dump and Tender Trucks	25	6	16	170	96	2400	16320	408000
Excavators	152	0	0	0	0	0	0	0
Forklifts/Aerial Lifts/Booms	120	6	16	170	96	11520	16320	1958400
Generators/Compressors	50	6	16	170	96	4800	16320	816000
Graders	157	0	0	0	0	0	0	0
Off Highway Tractors	120	0	0	0	0	0	0	0
Off Highway Trucks	489	1	16	160	16	7824	2560	1251840
Other Const. Eq.-DIESEL	175	0	0	0	0	0	0	0
Pavers	99	1	16	60	16	1584	960	95040
Paving Eq./Surfacing Eq.	91	1	16	60	16	1456	960	87360
Plate Compactors	15	0	0	0	0	0	0	0
Rollers/Compactors	99	0	0	0	0	0	0	0
Rough Terrain Forklifts	120	2	16	150	32	3840	4800	576000
Rubber Tired Dozers	356	0	0	0	0	0	0	0
Rubber Tired Loaders	175	2	12	120	24	4200	2880	504000
Scrapers	267	0	0	0	0	0	0	0
Signal Boards/Light Sets	15	4	8	170	32	480	5440	81600
Skid Steer Loaders	50	0	0	0	0	0	0	0
Tractors/Loaders/Backhoes	120	1	16	160	16	1920	2560	307200
Trenchers	120	0	0	0	0	0	0	0
Welders	50	4	16	120	64	3200	7680	384000
Other Const. Eq.- GASOLINE	175	2	16	175	32	5600	5600	980000

*includes equipment and use rates for proposed offsite linears.
** diesel equipment unless otherwise specified.

Const Period Diesel Hp-Hrs =	8743360	
Const Period Gasoline Hp-Hrs =	980000	
Const Period Diesel Fuel Use =	524602	gals
Const Period Gasoline Fuel Use =	107800	gals

Emissions factors from SCAQMD Offroad database for 2013.
EFs are for the anticipated construction start year of 2013.

Emissions factors for each category of equipment were either HP class specific, or they represent the highest of the two bounding factors for the HP listing.

2013 Equipment Emissions Factors

Equip. Type	HP	lbs/hp-hr CO	lbs/hp-hr VOC as ROG	lbs/hp-hr NOx	lbs/hp-hr SOx	lbs/hp-hr PM10	lbs/hp-hr CO2	lbs/hp-hr CH4	lbs/hp-hr N2O
Bore/Drill Rigs/Pile Drivers	209	0.004300	0.000402	0.003960	0.000009	0.000172	0.805000	0.000036	0.000000
Cement Mixers	25	0.003250	0.001080	0.006040	0.000009	0.000332	0.702000	0.000098	0.000000
Industrial/Concrete Saws	56	0.005840	0.001910	0.005710	0.000008	0.000494	0.604000	0.000173	0.000000
Cranes	194	0.002750	0.000590	0.004440	0.000005	0.000255	0.459000	0.000053	0.000000
Crawler Tractors/Dozers	120	0.004050	0.001080	0.006400	0.000006	0.000565	0.548000	0.000097	0.000000
Crushing/Processing Eq.	127	0.004800	0.001170	0.007130	0.000008	0.000651	0.692000	0.000106	0.000000
Dump and Tender Trucks	25	0.001280	0.000386	0.002400	0.000004	0.000116	0.305000	0.000035	0.000000
Excavators	152	0.004310	0.000907	0.005660	0.000007	0.000490	0.613000	0.000082	0.000000
Forklifts/Aerial Lifts/Booms	120	0.002010	0.000453	0.003090	0.000004	0.000244	0.317000	0.000041	0.000000
Generators/Compressors	50	0.005210	0.001690	0.005660	0.000008	0.000460	0.612000	0.000153	0.000000
Graders	157	0.004190	0.000840	0.006400	0.000008	0.000362	0.707000	0.000076	0.000000
Off Highway Tractors	120	0.005990	0.001760	0.010300	0.000009	0.000899	0.780000	0.000159	0.000000
Off Highway Trucks	489	0.001270	0.000434	0.003570	0.000005	0.000127	0.544000	0.000039	0.000000
Other Const. Eq.-Diesel	175	0.003350	0.000536	0.004580	0.000007	0.000240	0.608000	0.000048	0.000000
Pavers	99	0.004210	0.001160	0.006960	0.000007	0.000608	0.576000	0.000104	0.000000
Paving Eq./Surfacing Eq.	91	0.003510	0.000809	0.005440	0.000006	0.000431	0.531000	0.000073	0.000000
Plate Compactors	15	0.001750	0.000334	0.002090	0.000004	0.000082	0.287000	0.000030	0.000000
Rollers/Compactors	99	0.003380	0.000823	0.005210	0.000006	0.000445	0.491000	0.000074	0.000000
Rough Terrain Forklifts	120	0.003600	0.000797	0.005000	0.000006	0.000442	0.520000	0.000072	0.000000
Rubber Tired Dozers	356	0.002730	0.000972	0.008320	0.000008	0.000351	0.733000	0.000088	0.000000
Rubber Tired Loaders	175	0.003580	0.000708	0.005430	0.000007	0.000306	0.607000	0.000064	0.000000
Scrapers	267	0.002560	0.000900	0.008190	0.000009	0.000316	0.873000	0.000081	0.000000
Signal Boards/Light Sets	15	0.002510	0.000478	0.003000	0.000006	0.000117	0.411000	0.000043	0.000000
Skid Steer Loaders	50	0.004530	0.001040	0.004550	0.000007	0.000314	0.510000	0.000094	0.000000
Tractors/Loaders/Backhoes	120	0.002940	0.000580	0.003810	0.000005	0.000320	0.431000	0.000052	0.000000
Trenchers	120	0.003900	0.001070	0.006550	0.000006	0.000558	0.540000	0.000096	0.000000
Welders	50	0.005430	0.001900	0.005040	0.000007	0.000471	0.519000	0.000172	0.000000
Other Const. Eq.-Gasoline	175	0.018900	0.000256	0.000899	0.000006	0.000046	0.574000	0.000015	0.000051
Avg Offroad Diesel EFs		*0.0036*	*0.0009*	*0.0054*	*0.000007*	*0.0004*	*0.5676*	*0.0001*	*0.0000*

Construction Period Emissions, lbs

Equip. Type	CO	VOC as ROG	NOx	SOx	PM10	CO2	CH4	N2O
Bore/Drill Rigs/Pile Drivers	9778	914	9005	21	391	1830506	82	0
Cement Mixers	0	0	0	0	0	0	0	0
Industrial/Concrete Saws	0	0	0	0	0	0	0	0
Cranes	0	0	0	0	0	0	0	0
Crawler Tractors/Dozers	0	0	0	0	0	0	0	0
Crushing/Processing Eq.	0	0	0	0	0	0	0	0
Dump and Tender Trucks	522	157	979	2	47	124440	14	0
Excavators	0	0	0	0	0	0	0	0
Forklifts/Aerial Lifts/Booms	3936	887	6051	7	478	620813	80	0
Generators/Compressors	4251	1379	4619	6	375	499392	125	0
Graders	0	0	0	0	0	0	0	0
Off Highway Tractors	0	0	0	0	0	0	0	0
Off Highway Trucks	1590	543	4469	7	159	681001	49	0
Other Const. Eq.-Diesel	0	0	0	0	0	0	0	0
Pavers	400	110	661	1	58	54743	10	0
Paving Eq./Surfacing Eq.	307	71	475	1	38	46388	6	0
Plate Compactors	0	0	0	0	0	0	0	0
Rollers/Compactors	0	0	0	0	0	0	0	0
Rough Terrain Forklifts	2074	459	2880	4	255	299520	41	0
Rubber Tired Dozers	0	0	0	0	0	0	0	0
Rubber Tired Loaders	1804	357	2737	3	154	305928	32	0
Scrapers	0	0	0	0	0	0	0	0
Signal Boards/Light Sets	205	39	245	1	10	33538	4	0
Skid Steer Loaders	0	0	0	0	0	0	0	0
Tractors/Loaders/Backhoes	903	178	1170	2	98	132403	16	0
Trenchers	0	0	0	0	0	0	0	0
Welders	2085	730	1935	3	181	199296	66	0
Other Const. Eq.-Gasoline	18522	251	881	6	45	562520	14	50

Totals	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	CH4	N2O
lbs per const. period	46377	6076	36108	61	2288	2267.79	5390487	540	50
tons per const. period	23.2	3.0	18.1	0.030	1.14	1.13	2695.24	0.27	0.02
Estimated Maximum lbs/day =	254.8	33.4	198.4	0.335	12.57	12.46	29618.06	2.97	0.27
Average lbs/day =	*203.9*	*26.7*	*158.7*	*0.268*	*10.06*	*9.97*	*23694.4*	*2.4*	*0.2*
Average lbs/month =	6625.4	867.9	5158.3	8.7	326.91	323.97	770069.62	77.17	7.10

CARB-CEIDARS, Updated Size Fractions for PM Profiles: PM2.5 = 0.991 of PM10 : Diesel Vehicle Exhaust
ROG reported as VOC.

Other Assumptions and References:

1. Trench construction times per: Southern Regional Water Pipeline Alliance, 3/08.
   Optimum trench construction progress rate is 80m (260ft) per day.
   Non-optimum trench construction progress rate is 30m (100 ft) per day.
   An average progress of 180 ft/day is used where applicable.
2. Paving speeds can range from 3 to 15 m/min depending on asphalt delivery rates and required compaction thickness.
   A minium paving speed of 3 m/min (10 ft/min or 600 ft/hr) was used where applicable.
   The minimum speed is based upon a 3" compacted layer, 12 ft lane width, with an asphalt delivery rate of ~ 140 tons/hr.
   Ref: Asphalt Paving Speed, Pavement Worktip No. 31, AAPA, 11/2001.
3. Estimation of maximum daily emissions is extremely variable. Some projects provide estimated manpower and equipment use schedules, but even this data usually leads to a wide range of assumptions being made in order to estimate equipment exhaust emissions for a maximum work day.
   Estimated maximum daily emissions assumes all listed equipment is on site and operating for the maximum stated hours.
   Average dialy emissions, per the Applicant, are expected to be approx. 80% of the max daily values.
4. Construction schedule note: most equipment use and emissions are based on 16 hrs of activity in a 20 hr workday.
   a. 1 hour for lunch break, plus two 15 minute periods of labor inactivity (one in morning and one in afternoon)
   b. a 30 minute period each day for each piece of equipment for re-fueling, maintenance, and normal downtime
   c. a and b apply to each of two shifts

CONSTRUCTION PHASE - GenTie Line
MRI Level 2 Analysis (Refs 1, 3-7)

Acres Subject to Construction Disturbance Activites:	12	pole sites and spur roads
Max Acres Subject to Construction Disturbance Activites on any day:	2	
Emissions Factor for PM10 Uncontrolled, tons/acre/month:	0.017	
PM2.5 fraction of PM10 (per CARB CEIDARS Profiles):	0.21	
Activity Levels: Hrs/Day:	10	
Days/Wk:	6	
Days/Month:	26	
Const Period, Months:	12	1.0 years
Const Period, Days:	312	
Wet Season Adjustment: (Per AP-42, Section 13.2.2, Figure 13.2.2-1, 12/03)		
Mean # days/year with rain > = 0.01 inch:	20	
Mean # months/yr with rain > = 0.01 inch:	0.67	
Adjusted Const Period, Months:	11.33	
Adjusted Const Period, Days:	292	
Controls for Fugitive Dust:		
Proposed watering cycle:	3	times per construction shift

SCAQMD Mitigation Measures, Table XI-A, 4/07
3 watering cycles/10 hour construction shift yields a 61% reduction, 2 watering cycles/10 hour shift should yield a 40%+ reduction.
Speed control of onsite const traffic from 35 to 15 mph yields a 57% reduction (use 50% control as conservative in desert area).

Calculated % control based on mitigations proposed:	81	% control
Conservative control % used for emissions estimates:	80	% control
	0.2	release fraction

Emissions: Controlled	PM10	PM2.5
tons/month	0.007	0.001
tons/period	0.077	0.016
Max lbs/day	0.5	0.110

Soil Handling Emissions (Cut and Fill): (2)

Total cu.yds of soil handled:		0	Mean annual wind speed, mph:			7.8
Total tons of soil handled:		0	Avg. Soil moisture, %:			5
Total days soil handled:		292	Avg. Soil density, tons/cu.yd:			1.3
Tons soil/day:		0	k factor for PM10:			0.35
Control Eff, watering, %		70	Number of Drops per ton:			4
Release Fraction:		0.3	Calc 1	wind		1.783
			Calc 2	moisture		3.607
Emissions:	PM10	PM2.5	Calc 3	int		0.494
tons/period	0.00	0.00	Calc 4	PM10	lb/ton	0.0006
tons/month	0.00	0.00	PM2.5 fraction of PM10:			0.210
max lbs/day	0.00	0.00				

Emissions Totals:	**PM10**	**PM2.5**
tons/period	**0.0771**	**0.0162**
tons/month	**0.0068**	**0.0014**
max lbs/day	**0.52**	**0.11**

Methodology References:

(1) MRI Report, South Coast AQMD Project No. 95040, March 1996, Level 2 Analysis Procedure.
MRI Report factor of 0.011 tons/acre/month is based on 168 hours per month of const activity.
For an activity rate of 260 hrs/month, the adjusted EF would be 0.017 tons/acre/month.
(2) Soil Handling (Cut and Fill), EPA, AP-42, Section 13.2.4., 11/06, and Appendix E-2, Palen Solar PP, 8/09.
(3) URBEMIS, Version 9.2.4, User's Manual Appendix A, page A-6.
(4) CARB Area Source Methodology, Section 7.7, 9/02.
(5) WRAP Fugitive Dust Handbook, 9/06.
(6) USEPA, AP-42, Section 13.2.3, 2/10.
(7) Estimating PM Emissions from Construction Operations, USEPA, MRI, 9/99.
(8) Wind speed data for Blythe AP, 2002-2004.
(9) Soil data: AECOM BSPP, App E.2, 8/09. DR-Air-3, 1-6-10, Silt content-18% avg
(10) Soil Moisture; 5% avg, USGS, OFR-02-348, ADRS, 2002.

(11) pole sites, total 87, each 30 x 30. spur roads each 100 by 20 ft ROW. Double acres to account for ROW overlap, etc.

CONSTRUCTION PHASE - Access Road Construction
MRI Level 2 Analysis (Refs 1, 3-7)

Acres Subject to Construction Disturbance Activites:	10	1.5 mi length by 50 ft ROW
Max Acres Subject to Construction Disturbance Activites on any day:	2.5	
Emissions Factor for PM10 Uncontrolled, tons/acre/month:	0.017	
PM2.5 fraction of PM10 (per CARB CEIDARS Profiles):	0.21	
Activity Levels: Hrs/Day:	10	
Days/Wk:	6	
Days/Month:	26	
Const Period, Months:	3	0.3 years
Const Period, Days:	78	
Wet Season Adjustment: (Per AP-42, Section 13.2.2, Figure 13.2.2-1, 12/03)		
Mean # days/year with rain > = 0.01 inch:	20	
Mean # months/yr with rain > = 0.01 inch:	0.67	
Adjusted Const Period, Months:	2.83	
Adjusted Const Period, Days:	73	
Controls for Fugitive Dust:		
Proposed watering cycle:	3	times per construction shift

SCAQMD Mitigation Measures, Table XI-A, 4/07
3 watering cycles/10 hour construction shift yields a 61% reduction, 2 watering cycles/10 hour shift should yield a 40%+ reduction.
Speed control of onsite const traffic from 35 to 15 mph yields a 57% reduction (use 50% control as conservative in desert area).

Calculated % control based on mitigations proposed:	81	% control
Conservative control % used for emissions estimates:	80	% control
	0.2	release fraction

Emissions: Controlled	PM10	PM2.5
tons/month	0.009	0.002
tons/period	0.024	0.005
Max lbs/day	0.7	0.137

Soil Handling Emissions (Cut and Fill): (2)

Total cu.yds of soil handled:		0	Mean annual wind speed, mph:		7.8
Total tons of soil handled:		0	Avg. Soil moisture, %:		5
Total days soil handled:		73	Avg. Soil density, tons/cu.yd:		1.3
Tons soil/day:		0	k factor for PM10:		0.35
Control Eff, watering, %		80	Number of Drops per ton:		4
Release Fraction:		0.2	Calc 1	wind	1.783
			Calc 2	moisture	3.607
Emissions:	PM10	PM2.5	Calc 3	int	0.494
tons/period	0.00	0.00	Calc 4	PM10 lb/ton	0.0006
tons/month	0.00	0.00	PM2.5 fraction of PM10:		0.210
max lbs/day	0.00	0.00			

Emissions Totals:	**PM10**	**PM2.5**
tons/period	**0.0241**	**0.0051**
tons/month	**0.0085**	**0.0018**
max lbs/day	**0.65**	**0.14**

Methodology References:
(1) MRI Report, South Coast AQMD Project No. 95040, March 1996, Level 2 Analysis Procedure.
MRI Report factor of 0.011 tons/acre/month is based on 168 hours per month of const activity.
For an activity rate of 260 hrs/month, the adjusted EF would be 0.017 tons/acre/month.
(2) Soil Handling (Cut and Fill), EPA, AP-42, Section 13.2.4., 11/06, and Appendix E-2, Palen Solar PP, 8/09.
(3) URBEMIS, Version 9.2.4, User's Manual Appendix A, page A-6.
(4) CARB Area Source Methodology, Section 7.7, 9/02.
(5) WRAP Fugitive Dust Handbook, 9/06.
(6) USEPA, AP-42, Section 13.2.3, 2/10.
(7) Estimating PM Emissions from Construction Operations, USEPA, MRI, 9/99.
(8) Wind speed data for Blythe AP, 2002-2004.
(9) Soil data: AECOM BSPP, App E.2, 8/09. DR-Air-3, 1-6-10, Silt content-18% avg
(10) Soil Moisture; 5% avg, USGS, OFR-02-348, ADRS, 2002.
(11) paved road will be 2-12 ft lanes, 24 ft wide with minimal shoulders in a 50 ft ROW

CONSTRUCTION PHASE - Site Prep Each 125 MW Block (Phases 1-5)
MRI Level 2 Analysis (Refs 1, 3-7)

Acres Subject to Construction Disturbance Activites:		868	
Max Acres Subject to Construction Disturbance Activites on any day:		30	
Emissions Factor for PM10 Uncontrolled, tons/acre/month:		0.017	
PM2.5 fraction of PM10 (per CARB CEIDARS Profiles):		0.21	
Activity Levels:	Hrs/Day:	10	
	Days/Wk:	6	
	Days/Month:	26	
	Const Period, Months:	5	0.4 years
	Const Period, Days:	130	
Wet Season Adjustment:	(Per AP-42, Section 13.2.2, Figure 13.2.2-1, 12/03)		
	Mean # days/year with rain > = 0.01 inch:	20	
	Mean # months/yr with rain > = 0.01 inch:	0.67	
	Adjusted Const Period, Months:	4.72	
	Adjusted Const Period, Days:	122	
Controls for Fugitive Dust:			
	Proposed watering cycle:	3	times per construction shift

SCAQMD Mitigation Measures, Table XI-A, 4/07
3 watering cycles/10 hour construction shift yields a 61% reduction, 2 watering cycles/10 hour shift should yield a 40%+ reduction.
Speed control of onsite const traffic from 35 to 15 mph yields a 57% reduction (use 50% control as conservative in desert area).

Calculated % control based on mitigations proposed:	81	% control
Conservative control % used for emissions estimates:	80	% control
	0.2	release fraction

Emissions: Controlled	PM10	PM2.5
tons/month	0.102	0.021
tons/period	0.482	0.101
Max lbs/day	7.8	1.648

Soil Handling Emissions (Cut and Fill): (2)

Total cu.yds of soil handled:		360000	Mean annual wind speed, mph:			7.8
Total tons of soil handled:		1861920	Avg. Soil moisture, %:			5
Total days soil handled:		122	Avg. Soil density, tons/cu.yd:			1.3
Tons soil/day:		15303	k factor for PM10:			0.35
Control Eff, watering, %		80	Number of Drops per ton:			4
Release Fraction:		0.2	Calc 1	wind		1.783
			Calc 2	moisture		3.607
Emissions:	PM10	PM2.5	Calc 3	int		0.494
tons/period	0.10	0.02	Calc 4	PM10	lb/ton	0.0006
tons/month	0.02	0.00	PM2.5 fraction of PM10:			0.210
max lbs/day	1.69	0.36				

Emissions Totals:		**PM10**	**PM2.5**
	tons/period	**0.5857**	**0.1230**
	tons/month	**0.1240**	**0.0260**
	max lbs/day	**9.54**	**2.00**

Methodology References:

(1) MRI Report, South Coast AQMD Project No. 95040, March 1996, Level 2 Analysis Procedure.
MRI Report factor of 0.011 tons/acre/month is based on 168 hours per month of const activity.
For an activity rate of 260 hrs/month, the adjusted EF would be 0.017 tons/acre/month.
(2) Soil Handling (Cut and Fill), EPA, AP-42, Section 13.2.4., 11/06, and Appendix E-2, Palen Solar PP, 8/09.
(3) URBEMIS, Version 9.2.4, User's Manual Appendix A, page A-6.
(4) CARB Area Source Methodology, Section 7.7, 9/02.
(5) WRAP Fugitive Dust Handbook, 9/06.
(6) USEPA, AP-42, Section 13.2.3, 2/10.
(7) Estimating PM Emissions from Construction Operations, USEPA, MRI, 9/99.
(8) Wind speed data for Blythe AP, 2002-2004.
(9) Soil data: AECOM BSPP, App E.2, 8/09. DR-Air-3, 1-6-10, Silt content-18% avg
(10) Soil Moisture; 5% avg, USGS, OFR-02-348, ADRS, 2002.

CONSTRUCTION PHASE - Site Prep Each 125 MW Block (Phase 6)

MRI Level 2 Analysis (Refs 1, 3-7)

Acres Subject to Construction Disturbance Activites:		868	
Max Acres Subject to Construction Disturbance Activites on any day:		30	
Emissions Factor for PM10 Uncontrolled, tons/acre/month:		0.017	
PM2.5 fraction of PM10 (per CARB CEIDARS Profiles):		0.21	
Activity Levels:	Hrs/Day:	10	
	Days/Wk:	6	
	Days/Month:	26	
	Const Period, Months:	5	0.4 years
	Const Period, Days:	130	

Wet Season Adjustment (Per AP-42, Section 13.2.2, Figure 13.2.2-1, 12/03)

Mean # days/year with rain > = 0.01 inch:	20	
Mean # months/yr with rain > = 0.01 inch:	0.67	
Adjusted Const Period, Months:	4.72	
Adjusted Const Period, Days:	122	

Controls for Fugitive Dust:

Proposed watering cycle:	3	times per construction shift

SCAQMD Mitigation Measures, Table XI-A, 4/07

3 watering cycles/10 hour construction shift yields a 61% reduction, 2 watering cycles/10 hour shift should yield a 40%+ reduction.

Speed control of onsite const traffic from 35 to 15 mph yields a 57% reduction (use 50% control as conservative in desert area).

Calculated % control based on mitigations proposed:	81	% control
Conservative control % used for emissions estimates:	80	% control
	0.2	release fraction

Emissions: Controlled	PM10	PM2.5
tons/month	0.102	0.021
tons/period	0.482	0.101
Max lbs/day	7.8	1.648

Soil Handling Emissions (Cut and Fill): (2)

Total cu.yds of soil handled:		900000	Mean annual wind speed, mph:		7.8
Total tons of soil handled:		4654800	Avg. Soil moisture, %:		5
Total days soil handled:		122	Avg. Soil density, tons/cu.yd:		1.3
Tons soil/day:		38259	k factor for PM10:		0.35
Control Eff, watering, %		80	Number of Drops per ton:		4
Release Fraction:		0.2	Calc 1	wind	1.783
			Calc 2	moisture	3.607
Emissions:	PM10	PM2.5	Calc 3	int	0.494
tons/period	0.26	0.05	Calc 4	PM10 lb/ton	0.0006
tons/month	0.06	0.01	PM2.5 fraction of PM10:		0.210
max lbs/day	4.24	0.89			

Emissions Totals:	**PM10**	**PM2.5**
tons/period	**0.7417**	**0.1558**
tons/month	**0.1571**	**0.0330**
max lbs/day	**12.08**	**2.54**

Methodology References:

(1) MRI Report, South Coast AQMD Project No. 95040, March 1996, Level 2 Analysis Procedure.
MRI Report factor of 0.011 tons/acre/month is based on 168 hours per month of const activity.
For an activity rate of 260 hrs/month, the adjusted EF would be 0.017 tons/acre/month.
(2) Soil Handling (Cut and Fill), EPA, AP-42, Section 13.2.4., 11/06, and Appendix E-2, Palen Solar PP, 8/09.
(3) URBEMIS, Version 9.2.4, User's Manual Appendix A, page A-6.
(4) CARB Area Source Methodology, Section 7.7, 9/02.
(5) WRAP Fugitive Dust Handbook, 9/06.
(6) USEPA, AP-42, Section 13.2.3, 2/10.
(7) Estimating PM Emissions from Construction Operations, USEPA, MRI, 9/99.
(8) Wind speed data for Blythe AP, 2002-2004.
(9) Soil data: AECOM BSPP, App E.2, 8/09. DR-Air-3, 1-6-10, Silt content-18% avg
(10) Soil Moisture; 5% avg, USGS, OFR-02-348, ADRS, 2002.

CONSTRUCTION PHASE - Site Prep Each 125 MW Block (Phase 7)
MRI Level 2 Analysis (Refs 1, 3-7)

Acres Subject to Construction Disturbance Activites:		868	
Max Acres Subject to Construction Disturbance Activites on any day:		30	
Emissions Factor for PM10 Uncontrolled, tons/acre/month:		0.017	
PM2.5 fraction of PM10 (per CARB CEIDARS Profiles):		0.21	
Activity Levels:	Hrs/Day:	10	
	Days/Wk:	6	
	Days/Month:	26	
	Const Period, Months:	5	0.4 years
	Const Period, Days:	130	
Wet Season Adjustment:	(Per AP-42, Section 13.2.2, Figure 13.2.2-1, 12/03)		
	Mean # days/year with rain > = 0.01 inch:	20	
	Mean # months/yr with rain > = 0.01 inch:	0.67	
	Adjusted Const Period, Months:	4.72	
	Adjusted Const Period, Days:	122	
Controls for Fugitive Dust:			
	Proposed watering cycle:	3	times per construction shift

SCAQMD Mitigation Measures, Table XI-A, 4/07
3 watering cycles/10 hour construction shift yields a 61% reduction, 2 watering cycles/10 hour shift should yield a 40%+ reduction.
Speed control of onsite const traffic from 35 to 15 mph yields a 57% reduction (use 50% control as conservative in desert area).

Calculated % control based on mitigations proposed:	81	% control
Conservative control % used for emissions estimates:	80	% control
	0.2	release fraction

Emissions: Controlled	PM10	PM2.5
tons/month	0.102	0.021
tons/period	0.482	0.101
Max lbs/day	7.8	1.648

Soil Handling Emissions (Cut and Fill): (2)

Total cu.yds of soil handled:		1500000	Mean annual wind speed, mph:			7.8
Total tons of soil handled:		7758000	Avg. Soil moisture, %:			5
Total days soil handled:		122	Avg. Soil density, tons/cu.yd:			1.3
Tons soil/day:		63764	k factor for PM10:			0.35
Control Eff, watering, %		80	Number of Drops per ton:			4
Release Fraction:		0.2	Calc 1	wind		1.783
			Calc 2	moisture		3.607
Emissions:	PM10	PM2.5	Calc 3	int		0.494
tons/period	0.43	0.09	Calc 4	PM10	lb/ton	0.0006
tons/month	0.09	0.02	PM2.5 fraction of PM10:			0.210
max lbs/day	7.06	1.48				

Emissions Totals:	**PM10**	**PM2.5**
tons/period	**0.9150**	**0.1922**
tons/month	**0.1938**	**0.0407**
max lbs/day	**14.91**	**3.13**

Methodology References:

(1) MRI Report, South Coast AQMD Project No. 95040, March 1996, Level 2 Analysis Procedure.
MRI Report factor of 0.011 tons/acre/month is based on 168 hours per month of const activity.
For an activity rate of 260 hrs/month, the adjusted EF would be 0.017 tons/acre/month.
(2) Soil Handling (Cut and Fill), EPA, AP-42, Section 13.2.4., 11/06, and Appendix E-2, Palen Solar PP, 8/09.
(3) URBEMIS, Version 9.2.4, User's Manual Appendix A, page A-6.
(4) CARB Area Source Methodology, Section 7.7, 9/02.
(5) WRAP Fugitive Dust Handbook, 9/06.
(6) USEPA, AP-42, Section 13.2.3, 2/10.
(7) Estimating PM Emissions from Construction Operations, USEPA, MRI, 9/99.
(8) Wind speed data for Blythe AP, 2002-2004.
(9) Soil data: AECOM BSPP, App E.2, 8/09. DR-Air-3, 1-6-10, Silt content-18% avg
(10) Soil Moisture; 5% avg, USGS, OFR-02-348, ADRS, 2002.

CONSTRUCTION PHASE - Site Prep Each 125 MW Block (Phase 8)
MRI Level 2 Analysis (Refs 1, 3-7)

Acres Subject to Construction Disturbance Activites:		868	
Max Acres Subject to Construction Disturbance Activites on any day:		30	
Emissions Factor for PM10 Uncontrolled, tons/acre/month:		0.017	
PM2.5 fraction of PM10 (per CARB CEIDARS Profiles):		0.21	
Activity Levels:	Hrs/Day:	10	
	Days/Wk:	6	
	Days/Month:	26	
	Const Period, Months:	5	0.4 years
	Const Period, Days:	130	
Wet Season Adjustment:	(Per AP-42, Section 13.2.2, Figure 13.2.2-1, 12/03)		
	Mean # days/year with rain > = 0.01 inch:	20	
	Mean # months/yr with rain > = 0.01 inch:	0.67	
	Adjusted Const Period, Months:	4.72	
	Adjusted Const Period, Days:	122	
Controls for Fugitive Dust:			
	Proposed watering cycle:	3	times per construction shift

SCAQMD Mitigation Measures, Table XI-A, 4/07
3 watering cycles/10 hour construction shift yields a 61% reduction, 2 watering cycles/10 hour shift should yield a 40%+ reduction.
Speed control of onsite const traffic from 35 to 15 mph yields a 57% reduction (use 50% control as conservative in desert area).

Calculated % control based on mitigations proposed:	81	% control
Conservative control % used for emissions estimates:	80	% control
	0.2	release fraction

Emissions: Controlled	PM10	PM2.5
tons/month	0.102	0.021
tons/period	0.482	0.101
Max lbs/day	7.8	1.648

Soil Handling Emissions (Cut and Fill): (2)

Total cu.yds of soil handled:		2000000	Mean annual wind speed, mph:			7.8
Total tons of soil handled:		10344000	Avg. Soil moisture, %:			5
Total days soil handled:		122	Avg. Soil density, tons/cu.yd:			1.3
Tons soil/day:		85019	k factor for PM10:			0.35
Control Eff, watering, %		80	Number of Drops per ton:			4
Release Fraction:		0.2	Calc 1	wind		1.783
			Calc 2	moisture		3.607
Emissions:	PM10	PM2.5	Calc 3	int		0.494
tons/period	0.58	0.12	Calc 4	PM10	lb/ton	0.0006
tons/month	0.12	0.03	PM2.5 fraction of PM10:			0.210
max lbs/day	9.41	1.98				

Emissions Totals:	**PM10**	**PM2.5**
tons/period	**1.0595**	**0.2225**
tons/month	**0.2244**	**0.0471**
max lbs/day	**17.26**	**3.62**

Methodology References:

(1) MRI Report, South Coast AQMD Project No. 95040, March 1996, Level 2 Analysis Procedure.
MRI Report factor of 0.011 tons/acre/month is based on 168 hours per month of const activity.
For an activity rate of 260 hrs/month, the adjusted EF would be 0.017 tons/acre/month.
(2) Soil Handling (Cut and Fill), EPA, AP-42, Section 13.2.4., 11/06, and Appendix E-2, Palen Solar PP, 8/09.
(3) URBEMIS, Version 9.2.4, User's Manual Appendix A, page A-6.
(4) CARB Area Source Methodology, Section 7.7, 9/02.
(5) WRAP Fugitive Dust Handbook, 9/06.
(6) USEPA, AP-42, Section 13.2.3, 2/10.
(7) Estimating PM Emissions from Construction Operations, USEPA, MRI, 9/99.
(8) Wind speed data for Blythe AP, 2002-2004.
(9) Soil data: AECOM BSPP, App E.2, 8/09. DR-Air-3, 1-6-10, Silt content-18% avg
(10) Soil Moisture; 5% avg, USGS, OFR-02-348, ADRS, 2002.

CONSTRUCTION PHASE- Each 125 MW Block (Phases 1-8 Erection Subphase)
MRI Level 2 Analysis (Refs 1, 3-7)

Acres Subject to Construction Disturbance Activites:		868	
Max Acres Subject to Construction Disturbance Activites on any day:		15	
Emissions Factor for PM10 Uncontrolled, tons/acre/month:		0.017	
PM2.5 fraction of PM10 (per CARB CEIDARS Profiles):		0.21	
Activity Levels:	Hrs/Day:	10	
	Days/Wk:	6	
	Days/Month:	26	
	Const Period, Months:	7	0.6 years
	Const Period, Days:	182	
Wet Season Adjustment:	(Per AP-42, Section 13.2.2, Figure 13.2.2-1, 12/03)		
	Mean # days/year with rain > = 0.01 inch:	20	
	Mean # months/yr with rain > = 0.01 inch:	0.67	
	Adjusted Const Period, Months:	6.61	
	Adjusted Const Period, Days:	170	
Controls for Fugitive Dust:			
	Proposed watering cycle:	3	times per construction shift

SCAQMD Mitigation Measures, Table XI-A, 4/07
3 watering cycles/10 hour construction shift yields a 61% reduction, 2 watering cycles/10 hour shift should yield a 40%+ reduction.
Speed control of onsite const traffic from 35 to 15 mph yields a 57% reduction (use 50% control as conservative in desert area).

Calculated % control based on mitigations proposed:	81	% control
Conservative control % used for emissions estimates:	80	% control
	0.2	release fraction

Emissions: Controlled	PM10	PM2.5
tons/month	0.051	0.011
tons/period	0.337	0.071
Max lbs/day	3.9	0.824

Soil Handling Emissions (Cut and Fill): (2)

Total cu.yds of soil handled:		0	Mean annual wind speed, mph:			7.8
Total tons of soil handled:		0	Avg. Soil moisture, %:			5
Total days soil handled:		170	Avg. Soil density, tons/cu.yd:			1.3
Tons soil/day:		0	k factor for PM10:			0.35
Control Eff, watering, %		80	Number of Drops per ton:			4
Release Fraction:		0.2	Calc 1	wind		1.783
			Calc 2	moisture		3.607
Emissions:	PM10	PM2.5	Calc 3	int		0.494
tons/period	0.00	0.00	Calc 4	PM10	lb/ton	0.0006
tons/month	0.00	0.00	PM2.5 fraction of PM10:			0.210
max lbs/day	0.00	0.00				

Emissions Totals:	**PM10**	**PM2.5**
tons/period	**0.3372**	**0.0708**
tons/month	**0.0510**	**0.0107**
max lbs/day	**3.92**	**0.82**

Methodology References:

(1) MRI Report, South Coast AQMD Project No. 95040, March 1996, Level 2 Analysis Procedure.
MRI Report factor of 0.011 tons/acre/month is based on 168 hours per month of const activity.
For an activity rate of 260 hrs/month, the adjusted EF would be 0.017 tons/acre/month.
(2) Soil Handling (Cut and Fill), EPA, AP-42, Section 13.2.4., 11/06, and Appendix E-2, Palen Solar PP, 8/09.
(3) URBEMIS, Version 9.2.4, User's Manual Appendix A, page A-6.
(4) CARB Area Source Methodology, Section 7.7, 9/02.
(5) WRAP Fugitive Dust Handbook, 9/06.
(6) USEPA, AP-42, Section 13.2.3, 2/10.
(7) Estimating PM Emissions from Construction Operations, USEPA, MRI, 9/99.
(8) Wind speed data for Blythe AP, 2002-2004.
(9) Soil data: AECOM BSPP, App E.2, 8/09. DR-Air-3, 1-6-10, Silt content-18% avg
(10) Soil Moisture; 5% avg, USGS, OFR-02-348, ADRS, 2002.

OFFSITE PAVED ROAD FUGITIVE DUST EMISSIONS
(associated with construction traffic)

Each 125 MW Phase-Civil Work Period

Average mileage for construction related vehicles:		22	miles, roundtrip distance***
Avg weight of vehicular equipment on road:		5.3	tons (range 2 - 42 tons)
Road surface silt loading factor:		0.03	g/m2 (range 0.03 - 400 g/m2)
			Limited Access Freeway > 10,000 ADT (I-10)
Particle size multiplier factors:	PM10	0.016	lb/VMT
	PM2.5	0.0024	lb/VMT
C factors (brake and tire wear):	PM10	0.00047	lb/VMT
	PM2.5	0.00036	lb/VMT
Avg vehicle speed on road:		55	mph
Number of vehicles per day:		46	
Number of work days per month:		26	
Total vehicles per month:		1196	
Number of work months:		4.72	
Total vehicles per const period:		5645.12	

VMT/day:	1012
VMT/month:	26312
VMT/period:	124192.64

	PM10	
Calc 1	0.035	
Calc 2	1.577	
Calc 3	0.0004	lb/VMT

Emissions	PM10	PM2.5
lbs/day	0.41	0.07
lbs/month	10.69	1.81
lbs/period	50.48	8.53
tons/period	0.03	0.00

EPA, AP-42, Section 13.2.1, March 2006, updated 9/2008.
PM2.5 fraction of PM10 per CARB CEIDARs is 0.169
*** Note: avg roundtrip distance traveled by delivery or worker vehicles on limited access freeways (I-10)
Delivery Route: from Blythe urban area or Blythe ATSF railyard to site, inlcudes plant paved access road

OFFSITE PAVED ROAD FUGITIVE DUST EMISSIONS
(associated with construction traffic)

Each 125 MW Phase-Erection Period

Average mileage for construction related vehicles:		22	miles, roundtrip distance***
Avg weight of vehicular equipment on road:		14.2	tons (range 2 - 42 tons)
Road surface silt loading factor:		0.03	g/m2 (range 0.03 - 400 g/m2)
			Limited Access Freeway > 10,000 ADT
Particle size multiplier factors:	PM10	0.016	lb/VMT
	PM2.5	0.0024	lb/VMT
C factors (brake and tire wear):	PM10	0.00047	lb/VMT
	PM2.5	0.00036	lb/VMT
Avg vehicle speed on road:		55	mph (range 10-55 mph)
Number of vehicles per day:		330	
Number of work days per month:		26	
Total vehicles per month:		8580	
Number of work months:		6.61	
Total vehicles per const period:		56713.8	

VMT/day:	7260	
VMT/month:	188760	
VMT/period:	1247703.6	

	PM10	
Calc 1	0.035	
Calc 2	3.468	
Calc 3	0.0015	lb/VMT

Emissions	PM10	PM2.5
lbs/day	10.59	1.79
lbs/month	275.23	46.51
lbs/period	1819.26	307.46
tons/period	0.91	0.15

EPA, AP-42, Section 13.2.1, March 2006, updated 9/2008.
PM2.5 fraction of PM10 per CARB CEIDARs is 0.169
*** Note: avg roundtrip distance traveled by delivery or worker vehicles on limited access freeways.
Delivery Route: from Blythe urban area or Blythe ATSF railyard to site, inlcudes plant paved access road

ONSITE PAVED ROAD FUGITIVE DUST EMISSIONS
(associated with construction traffic)

Each 125 MW Phase-Erection Period

Length of Paved Road used for/by Construction Access:		0.5	miles, roundtrip distance*
Avg weight of construction vehicular equipment on road:		14.2	tons (range 2 - 42 tons)
Road surface silt loading factor:		0.06	g/m2 (range 0.03 - 400 g/m2)
Particle size multiplier factors:	PM10	0.016	lb/VMT
	PM2.5	0.0024	lb/VMT
C factors (brake and tire wear):	PM10	0.00047	lb/VMT
	PM2.5	0.00036	lb/VMT
Avg construction vehicle speed on onsite road:		5	mph (range 10-55 mph)
Number of construction vehicles per day:		110	**
Number of construction work days per month:		26	
Total vehicles per month:		2860	
Number of construction work months:		6.61	
Total vehicles per const period:		18904.6	

VMT/day:	55
VMT/month:	1430
VMT/period:	9452.3

	PM10	
Calc 1	0.060	
Calc 2	3.468	
Calc 3	0.0029	lb/VMT

Emissions	PM10	PM2.5
lbs/day	0.16	0.03
lbs/month	4.13	0.70
lbs/period	27.29	4.61
tons/period	0.01	0.00

*mileage for travel on site from entry point across site and back to exit point plus onsite const support equipment movements
** delivery vehicles plus onsite const support equipment, worker vehicles will not be traversing the site
EPA, AP-42, Section 13.2.1, March 2006, updated 9/2008.
PM2.5 fraction of PM10 per CARB CEIDARs is 0.169

Fugitive Dust from Wind Erosion of Soil Storage Piles

Phases 1-8 (Civil period only)

Avg acres of soil storage piles exposed per day:	2	*	
Soil silt content, %:	18.3		0.183
Number of days/year with precipitation > 0.01 inches:	20		
Annual % of time wind speed greater than 12 mph:	20.6		0.206
Watering control efficiency, %:	50		0.5
PM10 aerodynamic factor:	0.5		
PM2.5 aerodynamic factor:	0.2		
Total construction period exposure time, days:	130		

	lb/acre-day	lbs/day	lbs/period	tons/period
PM10	0.260	0.520	67.6	0.034
PM2.5	0.104	0.208	27.0	0.014

MDAQMD, Emissions Inventory Guidance, Mineral Handling and Processing Industries, April 2000.
USEPA, AP-42, Section 13.2.2, Unpaved Roads, Figure 13.2.2-1, Thornethwaite Precipitation Data.
*soil storage areas only, open cut and fill areas are not soil storage areas.

ONSITE UNPAVED ROAD FUGITIVE DUST

		Each 125 MW Phase (Civil and Erection)			
Length of Unpaved Road used for/by Construction Access:		0.5	miles* (roundtrip distance)		
Avg weight of construction vehicular equipment on road:		14.2	tons (range 2 - 42 tons)		
Road surface silt content:		8.5	% (range 1.8 - 35%)		
Road surface material moisture content:		5	% (range 0.03 - 13%)		
		k	a	c	d
Particle size multiplier factors:	PM10	1.8	1	0.2	0.5
	PM2.5	0.18	1	0.2	0.5
C factors (brake and tire wear):	PM10	0.00047	lb/VMT		
	PM2.5	0.00036	lb/VMT		
Avg construction vehicle speed on road:		5	mph (range 10-55 mph)		
Number of construction vehicles per day:		110	**	VMT/day:	55
				VMT/month:	1430
Number of construction work days per month:		26		VMT/period:	17160
Total vehicles per month:		2860			
Number of construction work months:		12			
Total vehicles per const period:		34320			
Control reduction due to watering, speed control, etc. =		80	(assumed same control as main site controls)		
		0.8			
Release Fraction =		0.2			

	PM10	PM2.5
Calc 1	0.708	0.708
Calc 2	0.408	0.408
Calc 3	1.585	1.585
Calc 4	0.328	0.033
Calc 5	0.328	0.032

Emissions	PM10	PM2.5
lbs/day	3.61	0.36
lbs/month	93.79	9.29
lbs/period	1125.54	111.48
tons/period	0.56	0.06

EPA, AP-42, Section 13.2.2, March 2006
Soil Moisture; 5% avg, USGS, OFR-02-348, ADRS, 2002.
Soil data: AECOM BSPP, App E.2, 8/09. DR-Air-3, 1-6-10, Silt content-18% avg, for road sfc used 8.5% per EPA-AP42
*mileage for travel on site from entry point across site and back to exit point for deliveries and misc support traffic
** delivery vehicles plus onsite const support traffic (worker vehicles will not be traversing the site)

OFFSITE UNPAVED ROAD FUGITIVE DUST

		Each 125 MW Phase-Civil Phase			
Length of Unpaved Road used for/by Construction Access:		2.8	miles* (1.4 miles each way)		
			Black Rock Rd from Mesa to plant access road		
Avg weight of construction vehicular equipment on road:		5.3	tons (range 2 - 42 tons)		
Road surface silt content:		2	% (range 1.8 - 35%), rolled gravel surface		
Road surface material moisture content:		5	% (range 0.03 - 13%)		
		k	a	c	d
Particle size multiplier factors:	PM10	1.8	1	0.2	0.5
	PM2.5	0.18	1	0.2	0.5
C factors (brake and tire wear):	PM10	0.00047	lb/VMT		
	PM2.5	0.00036	lb/VMT		
Avg construction vehicle speed on road:		25	mph (range 10-55 mph)		
Number of construction vehicles per day:		46	**	VMT/day:	128.8
				VMT/month:	3348.8
Number of construction work days per month:		26		VMT/period:	15806.336
Total vehicles per month:		1196			
Number of construction work months:		4.72			
Total vehicles per const period:		5645.12			
Control reduction due to watering, speed control, etc. =		80	(assumed same control as main site controls)		
		0.8			
Release Fraction =		0.2			

	PM10	PM2.5
Calc 1	0.167	0.167
Calc 2	0.913	0.913
Calc 3	1.585	1.585
Calc 4	0.173	0.017
Calc 5	0.172	0.017

Emissions	PM10	PM2.5
lbs/day	4.44	0.44
lbs/month	115.42	11.33
lbs/period	544.76	53.49
tons/period	0.27	0.03

EPA, AP-42, Section 13.2.2, March 2006
Soil Moisture; 5% avg, USGS, OFR-02-348, ADRS, 2002.
Soil data: AECOM BSPP, App E.2, 8/09. DR-Air-3, 1-6-10, Silt content-18% avg
Portion of Black Rock Rd unpaved from I-10 (Mesa Dr.) west to plant access connector.
** delivery and worker vehicles plus support staff

OFFSITE UNPAVED ROAD FUGITIVE DUST

		Each 125 MW Phase-Erection subphase			
Length of Unpaved Road used for/by Construction Access:		2.8	miles* (1.4 miles each way)		
			Black Rock Rd from Mesa to plant access road		
Avg weight of construction vehicular equipment on road:		14.2	tons (range 2 - 42 tons)		
Road surface silt content:		2	% (range 1.8 - 35%), rolled gravel surface		
Road surface material moisture content:		5	% (range 0.03 - 13%)		
		k	a	c	d
Particle size multiplier factors:	PM10	1.8	1	0.2	0.5
	PM2.5	0.18	1	0.2	0.5
C factors (brake and tire wear):	PM10	0.00047	lb/VMT		
	PM2.5	0.00036	lb/VMT		
Avg construction vehicle speed on road:		25	mph (range 10-55 mph)		
Number of construction vehicles per day:		330	**	VMT/day:	924
				VMT/month:	24024
Number of construction work days per month:		26		VMT/period:	158798.64
Total vehicles per month:		8580			
Number of construction work months:		6.61			
Total vehicles per const period:		56713.8			
Control reduction due to watering, speed control, etc. =		80	(assumed same control as main site controls)		
		0.8			
Release Fraction =		0.2			

	PM10	PM2.5
Calc 1	0.167	0.167
Calc 2	0.913	0.913
Calc 3	1.585	1.585
Calc 4	0.173	0.017
Calc 5	0.172	0.017

Emissions	PM10	PM2.5
lbs/day	31.85	3.13
lbs/month	827.99	81.29
lbs/period	5472.99	537.36
tons/period	2.74	0.27

EPA, AP-42, Section 13.2.2, March 2006
Soil Moisture; 5% avg, USGS, OFR-02-348, ADRS, 2002.
Soil data: AECOM BSPP, App E.2, 8/09. DR-Air-3, 1-6-10, Silt content-18% avg
Portion of Black Rock Rd unpaved from I-10 (Mesa Dr.) west to plant access connector.
** delivery and worker vehicles plus support staff

CONSTRUCTION PHASE - Truck Hauling/Delivery and Site Support Vehicle Emissions
Each 125 MW Phase - Erection Subphase

Delivery/Hauling Vehicle Use Rates			Emissions Factors (lbs/vmt)							
Delivery Roundtrip Distance:	22	miles	NOx	CO	VOC	SOx	PM10	CO2		
Const Days per Period:	208		0.023285	0.007072	0.001653	0.000001	0.001079	4.0034	HDDT	
Avg Deliveries per Day:	100		0.001325	0.008662	0.000381	0.000016	0.000106	1.4894	MDGT	
Fraction of Deliveries-Diesel:	0.85	HDDT			Daily Emissions (lbs)					
Fraction of Deliveries-Gas:	0.15	MDGT	**NOx**	**CO**	**VOC**	**SOx**	**PM10**	**CO2**	**PM2.5**	
Total Delivery VMT:	457600		**43.543**	**13.225**	**3.091**	**0.002**	**2.018**	**7486.358**	**2.000**	HDDT
Total Daily VMT-Diesel	1870		0.437	2.858	0.126	0.005	0.035	491.502	0.035	MDGT
Total Daily VMT-Gasoline	330				Tons per Const Period					
Total Period VMT-Diesel	388960		4.528	1.375	0.321	0.000	0.210	778.6	0.208	HDDT
Total Period VMT-Gasoline	68640		0.045	0.297	0.013	0.001	0.004	51.1	0.004	MDGT

Construction Site Support Vehicle Use Rates (LDTs)			Daily Emissions, lbs								
Gasoline Vehicle VMT Period:	41600		**NOx**	**CO**	**VOC**	**SOx**	**PM10**	**CO2**			**PM2.5**
Avg Daily Gasoline VMT:	200		0.000752	0.00734	0.000282	0.000011	0.000106	1.0869	lbs/vmt*	LDT gasoline	
Diesel Vehicle VMT Period:	20800		0.000039	0.000014	0.000002	0.000001	0.000002	0.0086	lbs/vmt*	LDT diesel	
Avg Daily Diesel VMT:	100		**0.1504**	**1.4680**	**0.0564**	**0.0022**	**0.0212**	**217.3800**	**lbs/day**	**gasoline**	**0.0212**
Total Phase Const Days:	208		**0.0039**	**0.0014**	**0.0002**	**0.0001**	**0.0002**	**0.8600**	**lbs/day**	**diesel**	**0.0002**
					Tons per Const Period						
Ref: Riverside County, Emfac 2007, V2.3, Nov 2006			0.0156	0.1527	0.0059	0.0002	0.0022	22.6	**tons/period**	**gasoline**	0.0022
On-Road Heavy Duty Diesels (1969-2013)			0.0004	0.0001	0.0000	0.0000	0.0000	0.1	**tons/period**	**diesel**	0.0000
On Road Medium Duty Gas (1969-2013)											
LDTs (1969-2013)											

Notes***

VMT for delivery/hauling for all vehicles includes: (1) materials deliveries to site, (2) materials removal from site, other VMT as specified below.
Support Vehicle VMT: (a) 2 gasoline LDTs at 100 miles/day each, (b) 1 diesel LDT at 100 miles/day, per Phase
Delivery Route: Blythe railyard area to site, 22 miles roundtrip.
CARB-CEIDARS, Updated Fractions for PM Profiles: PM2.5 = 0.991 of PM10 for Diesel Exhaust, and 0.998 for Gasoline Vehicles.
Construction deliveries for each Phase begin 1 month prior to erection and run through total erection, i.e, 8 months, 208 days, per Phase.

CONSTRUCTION PHASE - Truck Hauling/Delivery and Site Support Vehicle Emissions

Gentie Const Phase

Delivery/Hauling Vehicle Use Rates											
				Emissions Factors (lbs/vmt)							
Delivery Roundtrip Distance:	22	miles		NOx	CO	VOC	SOx	PM10	CO2		
Const Days per Period:	312			0.023285	0.007072	0.001653	0.000001	0.001079	4.0034	HDDT	
Avg Deliveries per Day:	2			0.001325	0.008662	0.000381	0.000016	0.000106	1.4894	MDGT	
Fraction of Deliveries-Diesel:	0.85	HDDT				Daily Emissions (lbs)					
Fraction of Deliveries-Gas:	0.15	MDGT		**NOx**	**CO**	**VOC**	**SOx**	**PM10**	**CO2**	**PM2.5**	
Total Delivery VMT:	13728			**0.871**	**0.264**	**0.062**	**0.000**	**0.040**	**149.727**	**0.040**	HDDT
Total Daily VMT-Diesel	37			0.009	0.057	0.003	0.000	0.001	9.830	0.001	MDGT
Total Daily VMT-Gasoline	7					Tons per Const Period					
Total Period VMT-Diesel	11668.8			0.136	0.041	0.010	0.000	0.006	23.4	0.006	HDDT
Total Period VMT-Gasoline	2059.2			0.001	0.009	0.000	0.000	0.000	1.5	0.000	MDGT

Construction Site Support Vehicle Use Rates (LDTs)											
				Daily Emissions, lbs							
Gasoline Vehicle VMT Period:	31200			**NOx**	**CO**	**VOC**	**SOx**	**PM10**	**CO2**			**PM2.5**
Avg Daily Gasoline VMT:	100			0.000752	0.00734	0.000282	0.000011	0.000106	1.0869	lbs/vmt*	LDT gasoline	
Diesel Vehicle VMT Period:	15600			0.000039	0.000014	0.000002	0.000001	0.000002	0.0086	lbs/vmt*	LDT diesel	
Avg Daily Diesel VMT:	50			**0.0752**	**0.7340**	**0.0282**	**0.0011**	**0.0106**	**108.6900**	**lbs/day**	**gasoline**	**0.0106**
Total Phase Const Days:	312			**0.0020**	**0.0007**	**0.0001**	**0.0001**	**0.0001**	**0.4300**	**lbs/day**	**diesel**	**0.0001**
						Tons per Const Period						
Ref: Riverside County, Emfac 2007, V2.3, Nov 2006				0.0117	0.1145	0.0044	0.0002	0.0017	17.0	**tons/period**	**gasoline**	0.0017
On-Road Heavy Duty Diesels (1969-2013)				0.0003	0.0001	0.0000	0.0000	0.0000	0.1	**tons/period**	**diesel**	0.0000
On Road Medium Duty Gas (1969-2013)												
LDTs (1969-2013)												

Notes ***

VMT for delivery/hauling for all vehicles includes: (1) materials deliveries to site, (2) materials removal from site, other VMT as specified below.

Support Vehicle VMT: (a) 2 gasoline LDTs at 50 miles/day each, (b) 1 diesel LDT at 50 miles/day

Delivery Route: Blythe railyard area to site, 2 miles roundtrip.

CARB-CEIDARS, Updated Fractions for PM Profiles: PM2.5 = 0.991 of PM10 for Diesel Exhaust, and 0.998 for Gasoline Vehicles.

CONSTRUCTION PHASE - Truck Hauling/Delivery and Site Support Vehicle Emissions

Access Road Const Phase

Delivery/Hauling Vehicle Use Rates											
					Emissions Factors (lbs/vmt)						
Delivery Roundtrip Distance:	22	miles	NOx	CO	VOC	SOx	PM10	CO2			
Const Days per Period:	78		0.023285	0.007072	0.001653	0.000001	0.001079	4.0034	HDDT		
Avg Deliveries per Day:	10		0.001325	0.008662	0.000381	0.000016	0.000106	1.4894	MDGT		
Fraction of Deliveries-Diesel:	0.85	HDDT			Daily Emissions (lbs)						
Fraction of Deliveries-Gas:	0.15	MDGT	**NOx**	**CO**	**VOC**	**SOx**	**PM10**	**CO2**	**PM2.5**		
Total Delivery VMT:	17160		**4.354**	**1.322**	**0.309**	**0.000**	**0.202**	**748.636**	**0.200**	HDDT	
Total Daily VMT-Diesel	187		0.044	0.286	0.013	0.001	0.003	49.150	0.003	MDGT	
Total Daily VMT-Gasoline	33				Tons per Const Period						
Total Period VMT-Diesel	14586		0.170	0.052	0.012	0.000	0.008	29.2	0.008	HDDT	
Total Period VMT-Gasoline	2574		0.002	0.011	0.000	0.000	0.000	1.9	0.000	MDGT	

Construction Site Support Vehicle Use Rates (LDTs)											
					Daily Emissions, lbs						
Gasoline Vehicle VMT Period:	7800		**NOx**	**CO**	**VOC**	**SOx**	**PM10**	**CO2**			**PM2.5**
Avg Daily Gasoline VMT:	100		0.000752	0.00734	0.000282	0.000011	0.000106	1.0869	lbs/vmt*	LDT gasoline	
Diesel Vehicle VMT Period:	3900		0.000039	0.000014	0.000002	0.000001	0.000002	0.0086	lbs/vmt*	LDT diesel	
Avg Daily Diesel VMT:	50		**0.0752**	**0.7340**	**0.0282**	**0.0011**	**0.0106**	**108.6900**	**lbs/day**	**gasoline**	**0.0106**
Total Phase Const Days:	78		**0.0020**	**0.0007**	**0.0001**	**0.0001**	**0.0001**	**0.4300**	**lbs/day**	**diesel**	**0.0001**
					Tons per Const Period						
Ref: Riverside County, Emfac 2007, V2.3, Nov 2006			0.0029	0.0286	0.0011	0.0000	0.0004	4.2	**tons/period**	**gasoline**	0.0004
On-Road Heavy Duty Diesels (1969-2013)			0.0001	0.0000	0.0000	0.0000	0.0000	0.0	**tons/period**	**diesel**	0.0000
On Road Medium Duty Gas (1969-2013)											
LDTs (1969-2013)											

Notes ***

VMT for delivery/hauling for all vehicles includes: (1) materials deliveries to site, (2) materials removal from site, other VMT as specified below.

Support Vehicle VMT: (a) 2 gasoline LDTs at 50 miles/day each, (b) 1 diesel LDT at 50 miles/day

Delivery Route: Blythe railyard area to site, 22 miles roundtrip.

CARB-CEIDARS, Updated Fractions for PM Profiles: PM2.5 = 0.991 of PM10 for Diesel Exhaust, and 0.998 for Gasoline Vehicles.

CONSTRUCTION PHASE - Worker Travel - Emissions
Each 125 MW Phase (Erection subphase)
Worker Travel to Site

Ref: Riverside County, Emfac 2007, V2.3, Nov 2006
On Road Vehicles (1969-2013)
LDP/LDT Weighted Avg Efs

Avg Occupancy/Vehicle:	1	
Avg Roundtrip Distance, miles:	22	
Avg # of Workers at Site, per day:	220	*
Avg Daily Worker VMT:	4840	
Max # of Workers at Site, per day:	220	*
Max Daily Worker VMT:	4840	
Total Const Days:	183	
Total Const Period Worker VMT:	885720	

Emissions Factors (lbs/VMT)

NOx	CO	VOC	SOx	PM10	CO2
0.00054	0.00598	0.00023	0.00001	0.00009	0.95739

Daily Emissions (lbs)

	NOx	CO	VOC	SOx	PM10	CO2	PM2.5
Avg	2.61	28.94	1.11	0.05	0.44	4633.77	0.43
Max	2.61	28.94	1.11	0.05	0.44	4633.77	0.43

Tons per Const Period

Avg	0.239	2.648	0.102	0.004	0.040	424.0	0.040

Worker Travel by Busing from Staging Area

Total Bus VMT/Const Period:	0	Bus Round Trips/Day:	0	max	Ref: Riverside County, Emfac 2007, V2.3, Nov 2006
Avg Bus VMT/Const Day:	0	Bus Occupancy/Trip:	0		On Road Vehicles (1969-2013)
Max Bus VMT/Const Day:	0				Bus Carriers
Distance to site from Bus staging area:	0	miles (roundtrip)			

(AFC Traffic and Transportation Section)

Emissions Factors (lbs/VMT)

NOx	CO	VOC	SOx	PM10	CO2
0.019565	0.033478	0.003043	0.000043	0.000435	3.4783

Round trip distance: 22 miles from the Blythe urban area.
* estimated 200 workers plus support staff per day

Daily Emissions (lbs)

	NOx	**CO**	**VOC**	**SOx**	**PM10**	**CO2**	**PM2.5**
Avg	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Tons per Const Period

Avg	0.000	0.000	0.000	0.000	0.000	0.000	0.000

CONSTRUCTION PHASE - Worker Travel - Emissions
Each 125 MW Phase (Civil subphase)
Worker Travel to Site

Ref: Riverside County, Emfac 2007, V2.3, Nov 2006
On Road Vehicles (1969-2013)
LDP/LDT Weighted Avg Efs

Avg Occupancy/Vehicle:	1	
Avg Roundtrip Distance, miles:	22	
Avg # of Workers at Site, per day:	30	*
Avg Daily Worker VMT:	660	
Max # of Workers at Site, per day:	30	*
Max Daily Worker VMT:	660	
Total Const Days:	130	
Total Const Period Worker VMT:	85800	

Emissions Factors (lbs/VMT)

NOx	CO	VOC	SOx	PM10	CO2
0.00054	0.00598	0.00023	0.00001	0.00009	0.95739

Daily Emissions (lbs)

	NOx	CO	VOC	SOx	PM10	CO2	PM2.5
Avg	0.36	3.95	0.15	0.01	0.06	631.88	0.06
Max	0.36	3.95	0.15	0.01	0.06	631.88	0.06

Tons per Const Period

Avg	0.023	0.257	0.010	0.000	0.004	41.1	0.004

Worker Travel by Busing from Staging Area

Total Bus VMT/Const Period:	0	Bus Round Trips/Day:	0	max	Ref: Riverside County, Emfac 2007, V2.3, Nov 2006
Avg Bus VMT/Const Day:	0	Bus Occupancy/Trip:	0		On Road Vehicles (1969-2013)
Max Bus VMT/Const Day:	0				Bus Carriers
Distance to site from Bus staging area:	0	miles (roundtrip)			

(AFC Traffic and Transportation Section)

Emissions Factors (lbs/VMT)

NOx	CO	VOC	SOx	PM10	CO2
0.019565	0.033478	0.003043	0.000043	0.000435	3.4783

Round trip distance: 22 miles from the Blythe urban area.
* estimated 20 workers per day plus support staff, etc.

Daily Emissions (lbs)

	NOx	**CO**	**VOC**	**SOx**	**PM10**	**CO2**	**PM2.5**
Avg	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Tons per Const Period

Avg	0.000	0.000	0.000	0.000	0.000	0.000	0.000

CONSTRUCTION PHASE - Worker Travel - Emissions
Gentie Line Const
Worker Travel to Site

Ref: Riverside County, Emfac 2007, V2.3, Nov 2006
On Road Vehicles (1969-2013)
LDP/LDT Weighted Avg Efs

Avg Occupancy/Vehicle:	1	
Avg Roundtrip Distance, miles:	22	
Avg # of Workers at Site, per day:	40	*
Avg Daily Worker VMT:	880	
Max # of Workers at Site, per day:	40	*
Max Daily Worker VMT:	880	
Total Const Days:	312	
Total Const Period Worker VMT:	274560	

Emissions Factors (lbs/VMT)

NOx	CO	VOC	SOx	PM10	CO2
0.00054	0.00598	0.00023	0.00001	0.00009	0.95739

Daily Emissions (lbs)

	NOx	CO	VOC	SOx	PM10	CO2	PM2.5
Avg	0.48	5.26	0.20	0.01	0.08	842.50	0.08
Max	0.48	5.26	0.20	0.01	0.08	842.50	0.08

Tons per Const Period

	NOx	CO	VOC	SOx	PM10	CO2	PM2.5
Avg	0.074	0.821	0.032	0.001	0.012	131.4	0.012

Worker Travel by Busing from Staging Area

Total Bus VMT/Const Period:	0	Bus Round Trips/Day:	0	max	Ref: Riverside County, Emfac 2007, V2.3, Nov 2006
Avg Bus VMT/Const Day:	0	Bus Occupancy/Trip:	0		On Road Vehicles (1969-2013)
Max Bus VMT/Const Day:	0				Bus Carriers
Distance to site from Bus staging area:	0	miles (roundtrip)			

Emissions Factors (lbs/VMT)

NOx	CO	VOC	SOx	PM10	CO2
0.019565	0.033478	0.003043	0.000043	0.000435	3.4783

Round trip distance: 22 miles from the Blythe urban area.
* estimated 40 workers per day including support staff, etc.

Daily Emissions (lbs)

	NOx	**CO**	**VOC**	**SOx**	**PM10**	**CO2**	**PM2.5**
Avg	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Tons per Const Period

Avg	0.000	0.000	0.000	0.000	0.000	0.000	0.000

CONSTRUCTION PHASE - Worker Travel - Emissions
Access Road Const
Worker Travel to Site

Ref: Riverside County, Emfac 2007, V2.3, Nov 2006
On Road Vehicles (1969-2013)
LDP/LDT Weighted Avg Efs

Avg Occupancy/Vehicle:	1	
Avg Roundtrip Distance, miles:	22	
Avg # of Workers at Site, per day:	30	*
Avg Daily Worker VMT:	660	
Max # of Workers at Site, per day:	30	*
Max Daily Worker VMT:	660	
Total Const Days:	78	
Total Const Period Worker VMT:	51480	

Emissions Factors (lbs/VMT)

NOx	CO	VOC	SOx	PM10	CO2
0.00054	0.00598	0.00023	0.00001	0.00009	0.95739

Daily Emissions (lbs)

	NOx	CO	VOC	SOx	PM10	CO2	PM2.5
Avg	0.36	3.95	0.15	0.01	0.06	631.88	0.06
Max	0.36	3.95	0.15	0.01	0.06	631.88	0.06

Tons per Const Period

Avg	0.014	0.154	0.006	0.000	0.002	24.6	0.002

Worker Travel by Busing from Staging Area

Total Bus VMT/Const Period:	0	Bus Round Trips/Day:	0	max	Ref: Riverside County, Emfac 2007, V2.3, Nov 2006
Avg Bus VMT/Const Day:	0	Bus Occupancy/Trip:	0		On Road Vehicles (1969-2013)
Max Bus VMT/Const Day:	0				Bus Carriers
Distance to site from Bus staging area:	0	miles (roundtrip)			

Emissions Factors (lbs/VMT)

NOx	CO	VOC	SOx	PM10	CO2
0.019565	0.033478	0.003043	0.000043	0.000435	3.4783

Round trip distance: 22 miles from the Blythe urban area.
* estimated 30 workers per day including support staff, etc.

Daily Emissions (lbs)

	NOx	**CO**	**VOC**	**SOx**	**PM10**	**CO2**	**PM2.5**
Avg	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Tons per Const Period

Avg	0.000	0.000	0.000	0.000	0.000	0.000	0.000

CONSTRUCTION PHASE - Trackout Emissions

		Each 125 MW Phase				
Paved Road Length (miles):	0.1	estimated roundtrip trackout distance				
Daily # of Vehicles:	120					
Avg Vehicle Weight (tons):	14.2			**PM10**	**PM2.5***	
Total Unadjusted VMT/day	12.0			0.361		
Particle Size Multipliers	PM10			3.468		
lb/VMT	0.023			0.006	0.0010	lb/VMT
C factor, lb/VMT	0.00047			0.476	0.0805	**lbs/day**
Road Sfc Silt Loading (g/m^2):	0.56	local X 2		0.006	0.0010	**tons/month**
# of Active Trackout Points:	1	**		0.07	0.0119	**tons/period**
Added Trackout Miles:	PM10					
Trackout VMT/day:	72		*Default Silt Load Values for Paved Road Types*			
Final Adjusted VMT/day	84			Freeway	0.02 g/m2	
Final Adjusted VMT/month	2184			Arterial	0.036 g/m2	
Final Adjusted VMT/period	24745			Collector	0.036 g/m2	
Construction days/month:	26			Local	0.28 g/m2	
Adj. Construction months/period:	11.33			Rural	1.6 g/m2	
Control Applied to Trackout:	Sweeping and Cleaning (water washing)					
Control Efficiency, %	80	0.8	Release Factor =		0.2	

* PM2.5 fraction of PM10 assumed to be 0.169 (CARB CEIDARS updated fraction values) for paved roads.

** 1 controlled ingress/egress point is planned for site construction

EPA, AP-42, Section 13.2.1, Proposed revisions dated 9/2008.

Use silt loading factor from default values for road type if no site specific data is available.

Trackout effects approximately 0.05 mi. of roadway arriving and departing from the site access point.

Plant access road will be paved prior to main site construction period.

Vehicle count = delivery plus 20 misc support vehicles

Worker vehciles not counted for trackout, as they do not access main site.

CO2e Emissions Estimates

	Total All Construction Phases	
For CO2 Estimated Emissions Only	1551	
Total CO2 emisisons from diesel combustion:	1163.25	tons/period
(approx 75% of total)		
Total CO2 emissions from gasoline combustion:	387.75	tons/period
(approx 25% of total)		
Approximate methane fraction of CO2 for diesel combustion:		0.000051
Approximate N2O fraction of CO2 for diesel combustion:		0.000032
Approximate methane fraction of CO2 for gasoline combustion:		0.000213
Approximate N2O fraction of CO2 for gasoline combustion:		0.000113
Estimated methane from diesel combustion:	0.05932575	tons/period
Estimated N2O from diesel combustion:	0.037224	tons/period
Estimated methane from gasoline combustion:	0.08259075	tons/period
Estimated N2O from diesel combustion:	0.04381575	tons/period
Estimated methane CO2e from diesel combustion:	1.24584075	tons/period
Estimated N2O CO2e from diesel combustion:	11.53944	tons/period
Estimated methane CO2e from gasoline combustion:	1.73440575	tons/period
Estimated N2O CO2e from gasoline combustion:	13.5828825	tons/period

Partial CO2e emissions from construction: 1579 tons/period

For GHG Where All Species are Estimated

CO2	7951.3	tons/period
CH4	0.8	tons/period
N2O	0.1	tons/period

Adjusted GWP Rates

CO2	7951.3	tons/period
CH4	16.8	tons/period
N2O	31	tons/period
CO2e	7999.1	tons/period

Total CO2e emissions from construction: 9578 tons/period

8707 metric tons/period

CCAR General Protocol, January 2009, Version 3.1.
IPCC SAR values for methane and N2O.

Average Vehicle Weight Estimate for Construction Period-Civil Work Period

Vehicle Type	Weight tons	# Vehicles per day	Frac. of total vehicles	
Passenger LDP/LDT	2.5	30	0.714	Worker and support travel vehicles
HDD Loaded	20	2	0.048	Equipment service trucks, fuel,
HDD Unloaded	10	2	0.048	maintenance, etc., and minor
MDGT Loaded	15	4	0.095	deliveries during site prep phases.
MDGT Unloaded	7	4	0.095	
		42	1.000	
Vehicle Total		36		

Weighted Avg Vehicle Weight, tons: **5.3**

Average Vehicle Weight Estimate for Construction Period-Erection Work Period

Vehicle Type	Weight tons	# Vehicles per day	Frac. of total vehicles	
Passenger LDP/LDT	2.5	220	0.524	Worker and support travel vehicles
HDD Loaded	40	85	0.202	Equipment service trucks, fuel,
HDD Unloaded	20	85	0.202	maintenance, etc., and major
MDGT Loaded	15	15	0.036	deliveries during site building phases.
MDGT Unloaded	7	15	0.036	
		420	1.000	
Vehicle Total		320		

Weighted Avg Vehicle Weight, tons: **14.2**

Ref: AP-42, Section 13.2.2, 11/06, mean vehicle weight guidance, p.13.2.2-6.

Table 10

EMFAC Composite Emissions Factor Conversion EMFAC 2007, V2.3, Nov 2006

County: Riverside
Year: 2013
Model Years: 1969-2013

EMFAC Burden Output

		LDP(gas)	LDP(diesel)	LDT(gas)	LDT(diesel)	MDT(gas)	MDT(diesel)	HDT(gas)	HDT(diesel)	Buses	Motorcycles
Daily VMT/1000		29689	30	20886	248	8876	500	440	4706	46	703
Daily VMT		29689000	30000	20886000	248000	8876000	500000	440000	4706000	46000	703000
ROG, tpd		2.94	0.01	2.94	0.02	1.69	0.06	0.54	3.89	0.07	2.68
CO, tpd		74.61	0.02	76.65	0.15	38.44	0.39	10.17	16.64	0.77	27.13
NOx, tpd		5.86	0.05	7.85	0.41	5.88	2.41	1.63	54.79	0.45	0.96
CO2, tpd	(x 1000) >	12860	10	11350	90	6610	260	320	9420	80	130
PM10, tpd		1.11	0.01	1.11	0.02	0.47	0.03	0.02	2.54	0.01	0.03
SOx, tpd		0.12	0.001	0.11	0.001	0.07	0.001	0.09	0.001	0.001	0.001

Composite Efs

	LDP(gas)	LDP(diesel)	LDT(gas)	LDT(diesel)	MDT(gas)	MDT(diesel)	HDT(gas)	HDT(diesel)	Buses	Motorcycles
	g/VMT	g/VMT	g/VMT	g/VMT	g/VMT	g/VMT	g/VMT	g/VMT	g/VMT	g/VMT
ROG	0.0898	0.0003	0.1277	0.0009	0.1727	0.0018	1.1134	0.7499	1.3805	3.4584
CO	2.2798	0.0006	3.3293	0.0065	3.9288	0.0119	20.9682	3.2077	15.1854	35.0097
NOx	0.1791	0.0015	0.3410	0.0178	0.6010	0.0736	3.3607	10.5619	8.8746	1.2388
CO2	393.0	0.3	493.0	3.9	675.6	7.9	659.8	1815.9	1577.7	167.8
PM10	0.0339	0.0003	0.0482	0.0009	0.0480	0.0009	0.0412	0.4896	0.1972	0.0387
SOx	0.0037	0.0000	0.0048	0.0000	0.0072	0.0000	0.1856	0.0002	0.0197	0.0013

Composite Efs

	LDP(gas)	LDP(diesel)	LDT(gas)	LDT(diesel)	MDT(gas)	MDT(diesel)	HDT(gas)	HDT(diesel)	Buses	Motorcycles
	lb/VMT	lb/VMT	lb/VMT	lb/VMT	lb/VMT	lb/VMT	lb/VMT	lb/VMT	lb/VMT	lb/VMT
ROG	0.000198	0.000001	0.000282	0.000002	0.000381	0.000004	0.002455	0.001653	0.003043	0.007624
CO	0.005026	0.000001	0.007340	0.000014	0.008662	0.000026	0.046227	0.007072	0.033478	0.077183
NOx	0.000395	0.000003	0.000752	0.000039	0.001325	0.000162	0.007409	0.023285	0.019565	0.002731
CO2	0.8663	0.0007	1.0869	0.0086	1.4894	0.0175	1.4545	4.0034	3.4783	0.3698
PM10	0.000075	0.000001	0.000106	0.000002	0.000106	0.000002	0.000091	0.001079	0.000435	0.000085
SOx	0.000008	0.000000	0.000011	0.000000	0.000016	0.000000	0.000409	0.000000	0.000043	0.000003

Weighted Avg LDP/LDT Gasoline

	g/VMT	lb/VMT	Calc 1	0.413
ROG	0.105	0.00023	Calc 2	0.587
CO	2.713	0.00598		
NOx	0.246	0.00054		
CO2	434.3	0.95739		
PM10	0.040	0.00009		
SOx	0.004	0.00001		

	LDP(gas)	LDP(diesel)	LDT(gas)	LDT(diesel)	MDT(gas)	MDT(diesel)	HDT(gas)	HDT(diesel)	Buses	Motorcycles
Annual VMT	1.08E+10	1.10E+07	7.62E+09	9.05E+07	3.24E+09	1.83E+08	1.61E+08	1.72E+09	1.68E+07	2.57E+08
Daily Fuel Use, 10^3 gal	1329.69	1.08	1175.37	8.51	682.84	25.59	34.1	847.43	7.25	18.35
Daily Fuel Use, gals	1329690	1080	1175370	8510	682840	25590	34100	847430	7250	18350
Annual Fuel Use, gals	485336850	394200	429010050	3106150	249236600	9340350	12446500	309311950	2646250	6697750
Average Miles/gallon	22.3	27.8	17.8	29.1	13.0	19.5	12.9	5.6	6.3	38.3

Table 11 EMFAC Burden Output for 2013 **5 Pages**

Version : Emfac2007 V2.3 Nov 1 2006

Run Date : 2012/05/23 15:43:02

Scen Year: 2013 -- All model years in the range 1969 to 2013 selected

Season : Annual

Area : Riverside County Average

I/M Stat : Enhanced Interim (2005) -- Using I/M schedule for area 61 Riverside (SC)

Emissions: Tons Per Day

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	LDA-NCAT	LDA-CAT	LDA-DSL	LDA-TOT	LDT1-NCAT	LDT1-CAT	LDT1-DSL	LDT1-TOT	LDT2-NCAT	LDT2-CAT	LDT2-DSL
Vehicles	3106	743936	1244	748287	1682	146667	6597	154946	1226	336672	488
VMT/1000	49	29640	30	29719	37	6314	232	6583	27	14508	16
Trips	12052	4690170	6666	4708890	6559	921334	40020	967913	4808	2117340	2785
Reactive Organic Gas Emissions											
Run Exh	0.34	1.06	0	1.4	0.27	0.3	0.02	0.59	0.2	0.89	0
Idle Exh	0	0	0	0	0	0	0	0	0	0	0
Start Ex	0.07	1.47	0	1.53	0.04	0.3	0	0.34	0.03	0.91	0
	---	---	---	---	---	---	---	---	---	---	---
Total Ex	0.41	2.53	0	2.94	0.31	0.6	0.02	0.93	0.23	1.8	0
Diurnal	0.03	0.5	0	0.53	0.01	0.1	0	0.12	0.01	0.26	0
Hot Soak	0.04	0.72	0	0.76	0.02	0.15	0	0.17	0.02	0.36	0
Running	0.22	1.74	0	1.96	0.07	0.6	0	0.66	0.05	1.51	0
Resting	0.02	0.33	0	0.34	0.01	0.07	0	0.08	0.01	0.18	0
	---	---	---	---	---	---	---	---	---	---	---
Total	0.72	5.81	0	6.54	0.43	1.52	0.02	1.96	0.31	4.11	0
Carbon Monoxide Emissions											
Run Exh	4.09	51.26	0.02	55.37	3.14	14.76	0.14	18.05	2.27	39.35	0.01
Idle Exh	0	0	0	0	0	0	0	0	0	0	0
Start Ex	0.41	18.85	0	19.26	0.23	4.48	0	4.71	0.16	12.25	0
	---	---	---	---	---	---	---	---	---	---	---
Total Ex	4.49	70.11	0.02	74.63	3.37	19.24	0.14	22.76	2.43	51.6	0.01
Oxides of Nitrogen Emissions											
Run Exh	0.24	4.26	0.05	4.55	0.18	1.23	0.39	1.8	0.13	4.79	0.03
Idle Exh	0	0	0	0	0	0	0	0	0	0	0
Start Ex	0.02	1.34	0	1.36	0.01	0.29	0	0.3	0.01	1.2	0
	---	---	---	---	---	---	---	---	---	---	---
Total Ex	0.26	5.61	0.05	5.91	0.19	1.52	0.39	2.1	0.14	6	0.03
Carbon Dioxide Emissions (000)											
Run Exh	0.03	12.46	0.01	12.5	0.02	3.34	0.09	3.45	0.02	7.67	0.01
Idle Exh	0	0	0	0	0	0	0	0	0	0	0
Start Ex	0	0.37	0	0.37	0	0.09	0	0.09	0	0.21	0
	---	---	---	---	---	---	---	---	---	---	---
Total Ex	0.03	12.83	0.01	12.87	0.02	3.43	0.09	3.54	0.02	7.88	0.01
PM10 Emissions											
Run Exh	0	0.4	0	0.4	0	0.1	0.01	0.11	0	0.48	0
Idle Exh	0	0	0	0	0	0	0	0	0	0	0
Start Ex	0	0.04	0	0.04	0	0.01	0	0.01	0	0.04	0
	---	---	---	---	---	---	---	---	---	---	---
Total Ex	0	0.44	0	0.44	0	0.11	0.01	0.12	0	0.52	0
TireWear	0	0.26	0	0.26	0	0.06	0	0.06	0	0.13	0
BrakeWr	0	0.41	0	0.41	0	0.09	0	0.09	0	0.2	0
	---	---	---	---	---	---	---	---	---	---	---
Total	0	1.11	0	1.12	0	0.25	0.02	0.27	0	0.85	0
Lead	0	0	0	0	0	0	0	0	0	0	0
SOx	0	0.12	0	0.12	0	0.03	0	0.03	0	0.08	0
Fuel Consumption (000 gallons)											
Gasoline	3.94	1325.75	0	1329.69	2.93	354.63	0	357.56	2.14	815.67	0
Diesel	0	0	1.08	1.08	0	0	7.97	7.97	0	0	0.54

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LDT2-TOT	MDV-NCAT	MDV-CAT	MDV-DSL	MDV-TOT	.HDT1-NCA	LHDT1-CAT	LHDT1-DSL	LHDT1-TOT	LHDT2-NCA	LHDT2-CAT	LHDT2-DSL	LHDT2-TOT
338387	865	186160	695	187720	58	23121	6648	29827	16	4673	4608	9297
14551	20	7634	24	7678	1	1026	293	1320	0	195	183	378
2124930	3572	1175560	4276	1183410	1925	764544	83619	850088	535	154532	57961	213028
1.09	0.18	0.58	0	0.76	0	0.08	0.03	0.12	0	0.01	0.03	0.04
0	0	0	0	0	0	0.03	0	0.03	0	0.01	0	0.01
0.94	0.02	0.65	0	0.68	0.01	0.26	0	0.28	0	0.06	0	0.06
---	---	---	---	---	---	---	---	---	---	---	---	---
2.03	0.2	1.24	0	1.44	0.02	0.38	0.03	0.43	0	0.08	0.03	0.11
0.27	0	0.13	0	0.13	0	0	0	0	0	0	0	0
0.37	0	0.18	0	0.19	0	0.03	0	0.03	0	0.01	0	0.01
1.56	0.01	0.75	0	0.76	0.01	0.34	0	0.35	0	0.09	0	0.09
0.18	0	0.09	0	0.09	0	0	0	0	0	0	0	0
---	---	---	---	---	---	---	---	---	---	---	---	---
4.42	0.22	2.39	0	2.61	0.03	0.75	0.03	0.8	0.01	0.17	0.03	0.21
41.63	2.8	21.62	0.01	24.43	0.13	1.43	0.21	1.77	0.03	0.24	0.15	0.43
0	0	0	0	0	0	0.19	0.01	0.2	0	0.04	0	0.04
12.41	0.22	7.48	0	7.71	0.09	3.47	0	3.55	0.02	0.68	0	0.71
---	---	---	---	---	---	---	---	---	---	---	---	---
54.04	3.02	29.1	0.01	32.14	0.21	5.09	0.22	5.52	0.06	0.96	0.16	1.18
4.95	0.15	2.93	0.04	3.12	0	0.4	1.28	1.69	0	0.08	1.05	1.14
0	0	0	0	0	0	0	0.02	0.02	0	0	0.01	0.01
1.21	0.01	0.77	0	0.78	0	1.27	0	1.27	0	0.27	0	0.27
---	---	---	---	---	---	---	---	---	---	---	---	---
6.16	0.16	3.7	0.04	3.9	0	1.67	1.3	2.98	0	0.35	1.07	1.42
7.69	0.01	5.51	0.01	5.53	0	0.73	0.17	0.9	0	0.14	0.11	0.24
0	0	0	0	0	0	0.01	0	0.01	0	0	0	0
0.21	0	0.16	0	0.16	0	0.04	0	0.04	0	0.01	0	0.01
---	---	---	---	---	---	---	---	---	---	---	---	---
7.9	0.01	5.67	0.01	5.69	0	0.77	0.17	0.94	0	0.15	0.11	0.25
0.49	0	0.23	0	0.24	0	0.01	0.01	0.01	0	0	0.01	0.01
0	0	0	0	0	0	0	0	0	0	0	0	0
0.04	0	0.02	0	0.02	0	0	0	0	0	0	0	0
---	---	---	---	---	---	---	---	---	---	---	---	---
0.53	0	0.26	0	0.26	0	0.01	0.01	0.02	0	0	0.01	0.01
0.13	0	0.07	0	0.07	0	0.01	0	0.02	0	0	0	0
0.2	0	0.11	0	0.11	0	0.01	0	0.02	0	0	0	0.01
---	---	---	---	---	---	---	---	---	---	---	---	---
0.86	0	0.43	0	0.43	0	0.03	0.02	0.05	0	0.01	0.01	0.02
0	0	0	0	0	0	0	0	0	0	0	0	0
0.08	0	0.05	0	0.06	0	0.01	0	0.01	0	0	0	0
817.81	2.06	585.54	0	587.59	0.18	79.78	0	79.96	0.05	15.24	0	15.29
0.54	0	0	0.83	0.83	0	0	15.19	15.19	0	0	9.56	9.56

MHDT-NCA	MHDT-CAT	MHDT-DSL	MHDT-TOT	HHDT-NCA	HHDT-CAT	HHDT-DSL	HHDT-TOT	OBUS-NCA	OBUS-CAT	OBUS-DSL	OBUS-TOT	SBUS-NCAT
146	2240	9391	11777	26	529	23173	23727	13	530	326	869	15
1	119	608	728	0	59	3984	4044	0	23	18	41	1
6659	102301	263334	372295	1166	24149	117265	142581	593	24214	9129	33936	60
0.01	0.03	0.09	0.13	0	0.11	3.3	3.42	0	0.01	0	0.01	0.01
0	0	0	0.01	0	0	0.46	0.46	0	0	0	0	0
0.06	0.1	0	0.17	0.02	0.08	0	0.1	0.01	0.04	0	0.04	0
---	---	---	---	---	---	---	---	---	---	---	---	---
0.07	0.13	0.1	0.3	0.03	0.19	3.76	3.98	0.01	0.05	0	0.06	0.01
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0.01	0	0	0	0	0	0	0	0	0
0.03	0.04	0	0.07	0.01	0.01	0	0.02	0	0.01	0	0.01	0
0	0	0	0	0	0	0	0	0	0	0	0	0
---	---	---	---	---	---	---	---	---	---	---	---	---
0.1	0.18	0.1	0.38	0.03	0.21	3.76	4.01	0.01	0.06	0	0.07	0.01
0.18	0.57	1.02	1.77	0.21	2.43	13.36	16	0.02	0.27	0.03	0.31	0.11
0	0.03	0.03	0.06	0	0	1.98	1.98	0	0.01	0	0.01	0
0.44	1.73	0	2.17	0.35	1.35	0	1.69	0.04	0.63	0	0.66	0.01
---	---	---	---	---	---	---	---	---	---	---	---	---
0.62	2.34	1.05	4.01	0.56	3.78	15.34	19.67	0.05	0.9	0.03	0.99	0.12
0	0.19	4.37	4.56	0.01	0.56	44.29	44.85	0	0.1	0.14	0.23	0
0	0	0.08	0.08	0	0	4.96	4.96	0	0	0	0	0
0.01	0.23	0	0.23	0.01	0.17	0	0.18	0	0.09	0	0.09	0
---	---	---	---	---	---	---	---	---	---	---	---	---
0.01	0.41	4.45	4.87	0.01	0.73	49.24	49.99	0	0.19	0.14	0.33	0
0	0.08	1.01	1.09	0	0.04	7.93	7.97	0	0.02	0.03	0.05	0
0	0	0	0.01	0	0	0.29	0.29	0	0	0	0	0
0	0	0	0.01	0	0	0	0	0	0	0	0	0
---	---	---	---	---	---	---	---	---	---	---	---	---
0	0.09	1.01	1.1	0	0.04	8.21	8.25	0	0.02	0.03	0.05	0
0	0	0.11	0.12	0	0	2.03	2.03	0	0	0	0	0
0	0	0	0	0	0	0.05	0.05	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
---	---	---	---	---	---	---	---	---	---	---	---	---
0	0	0.12	0.12	0	0	2.08	2.09	0	0	0	0	0
0	0	0.01	0.01	0	0	0.16	0.16	0	0	0	0	0
0	0	0.01	0.01	0	0	0.12	0.13	0	0	0	0	0
---	---	---	---	---	---	---	---	---	---	---	---	---
0	0	0.13	0.14	0	0	2.37	2.37	0	0	0	0.01	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0.01	0.01	0	0	0.08	0.08	0	0	0	0	0
0.37	9.38	0	9.75	0.15	4.97	0	5.12	0.03	1.91	0	1.94	0.08
0	0	91.11	91.11	0	0	739.02	739.02	0	0	2.75	2.75	0

SBUS-CAT	SBUS-DSL	SBUS-TOT	UB-NCAT	UB-CAT	UB-DSL	UB-TOT	MH-NCAT	MH-CAT	MH-DSL	MH-TOT	MCY-NCAT	MCY-CAT
165	1463	1644	5	211	142	357	270	19196	2770	22236	37956	31653
7	63	71	1	27	18	46	2	228	32	263	345	358
661	5854	6574	19	843	567	1430	27	1920	277	2224	75904	63300
0.01	0.02	0.03	0.01	0.05	0.01	0.07	0.01	0.04	0	0.05	1.53	0.82
0	0	0.01	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0.19	0.14
---	---	---	---	---	---	---	---	---	---	---	---	---
0.01	0.02	0.04	0.01	0.06	0.01	0.07	0.01	0.04	0	0.05	1.72	0.96
0	0	0	0	0	0	0	0	0	0	0	0.01	0.16
0	0	0	0	0	0	0	0	0	0	0	0.01	0.04
0	0	0	0	0	0	0	0	0	0	0	0.04	0.17
0	0	0	0	0	0	0	0	0	0	0	0.01	0.08
---	---	---	---	---	---	---	---	---	---	---	---	---
0.01	0.02	0.04	0.01	0.06	0.01	0.08	0.01	0.05	0	0.06	1.79	1.4
0.08	0.18	0.37	0.13	0.5	0.07	0.7	0.34	1.32	0.03	1.68	20.89	4.75
0.01	0.02	0.04	0	0	0	0	0	0	0	0	0	0
0.02	0	0.03	0	0.06	0	0.06	0	0.02	0	0.03	0.65	0.84
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0.11	0.2	0.43	0.14	0.56	0.07	0.77	0.34	1.34	0.03	1.71	21.54	5.59
0.01	0.6	0.61	0	0.14	0.31	0.45	0.01	0.24	0.3	0.55	0.51	0.41
0	0.06	0.06	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0.01	0	0.01	0	0	0	0	0.03	0.02
---	---	---	---	---	---	---	---	---	---	---	---	---
0.02	0.66	0.68	0	0.14	0.31	0.45	0.01	0.24	0.3	0.55	0.54	0.43
0.01	0.1	0.11	0	0.02	0.05	0.08	0	0.16	0.05	0.21	0.04	0.08
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0.01	0
---	---	---	---	---	---	---	---	---	---	---	---	---
0.01	0.11	0.11	0	0.02	0.05	0.08	0	0.16	0.05	0.21	0.05	0.08
0	0.03	0.03	0	0	0.01	0.01	0	0	0	0.01	0.02	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
---	---	---	---	---	---	---	---	---	---	---	---	---
0	0.03	0.03	0	0	0.01	0.01	0	0	0	0.01	0.02	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
---	---	---	---	---	---	---	---	---	---	---	---	---
0	0.03	0.03	0	0	0.01	0.01	0	0.01	0.01	0.01	0.03	0.01
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0.67	0	0.75	0.08	2.38	0	2.46	0.23	16.31	0	16.54	9.17	9.18
0	9.72	9.72	0	0	4.79	4.79	0	0	4.83	4.83	0	0

MCY-DSL	MCY-TOT	ALL-TOT
0	69609	1598680
0	703	66125
0	139204	10746500
0	2.35	10.06
0	0	0.52
0	0.33	4.48
---	---	---
0	2.68	15.06
0	0.17	1.23
0	0.05	1.59
0	0.21	5.7
0	0.08	0.79
---	---	---
0	3.19	24.37
0	25.64	188.16
0	0	2.32
0	1.49	54.49
---	---	---
0	27.13	244.97
0	0.91	69.41
0	0	5.14
0	0.05	5.75
---	---	---
0	0.96	80.3
0	0.12	39.94
0	0	0.3
0	0.01	0.9
---	---	---
0	0.13	41.14
0	0.02	3.47
0	0	0.06
0	0	0.11
---	---	---
0	0.02	3.64
0	0	0.72
0	0	0.98
---	---	---
0	0.03	5.33
0	0	0
0	0	0.4
0	18.35	3242.81
0	0	887.4

Table 12

Modeling Inputs/Results for Blythe Solar Construction Impacts (Combustion+Fugitive Sources as Area Source) - Previous Project Receptor Grids

Short Term Impacts (24 hrs and less)						Long Term Impacts (annual)					
	NOx	CO	SOx	PM10	PM2.5		NOx	CO	SOx	PM10	PM2.5
Combustion (lbs/day)	287.7	264.1	0.4	16.02	15.88	Combustion (tons/year)	33.7	39.2	0.052	2.05	2.03
						Combustion (days/year)**	312	312	312	312	312
Combustion (hrs/day)	10	10	10	10	10	Combustion (hrs/day)	10	10	10	10	10
Combustion (lbs/hr)	28.77	26.41	0.04	1.60	1.59	Combustion (lbs/hr)**	18.47	21.48	0.03	1.12	1.11
Combustion (g/sec)	3.63E+00	3.33E+00	5.04E-03	2.02E-01	2.00E-01	Combustion (g/sec)	2.33E+00	2.71E+00	3.59E-03	1.42E-01	1.40E-01
Construction Dust (lbs/day)				25.47	5.04	Construction Dust (tons/year)				2.15	0.42
						Construction Dust (days/year)				312	312
Construction Dust (hrs/day)				10	10	Construction Dust (hrs/day)				10	10
Construction Dust (lbs/hr)				2.55	0.50	Construction Dust (lbs/hr)**				1.178	0.230
Construction Dust (g/sec)	45 acres			3.21E-01	6.35E-02	Construction Dust (g/sec)	868 acres			1.48E-01	2.90E-02
AERMOD Inputs	**182,109 m^2**		**182,109 m^2**				**3,512,671 m^2**		**3,512,671 m^2**		
Combustion ($g/s/m^2$)	1.991E-05	1.827E-05	2.768E-08	1.108E-06	1.099E-06	Combustion ($g/s/m^2$)	6.624E-07	7.705E-07	1.022E-09	4.029E-08	3.990E-08
Construction Dust ($g/s/m^2$)				1.762E-06	3.487E-07	Construction Dust ($g/s/m^2$)				4.226E-08	8.255E-09
AERMOD Results (ug/m^3)											
Combustion Only						Combustion Only					
1-hour Max	1033.413	948.642	1.437	57.54354							
3-hour Max			0.594	23.77537							
8-hour Max		158.107		9.59059							
24-hour Max			0.131	5.23741	5.19164	Annual	0.593		0.001	0.03605	0.03570
All Particulate Sources						All Particulate Sources					
24-hour Max				16.50908	7.42553	Annual				0.07719	0.04373
1-hour NO2 w/ OLM	238.832	based on O3 (ppm) of:		0.072		Annual NO2 w/ ARM	0.444	based on ARM Ratio of:		75%	
Background (ug/m^3)						Background (ug/m^3)					
1-hour Max	90.2	3437	136.3								
3-hour Max			N/A								
8-hour Max		768									
24-hour Max			18.4	96	14.7	Annual	16.9		2.6	35.4	7.8
Total + Background (ug/m^3)						Total + Background (ug/m^3)					
1-hour Max	329.0	4386	137.7								
8-hour Max		926									
24-hour Max			18.53	112.5	22.1	Annual	17.3		2.6	35.5	7.8

**Even for construction projects taking less than 12-months or 7 days/wk, the hourly emissions for modeling are still based on total tons (projects<12 months) or tons/year (projects>12months) divided by 365 days since all days in the met dataset (i.e., all 12 months and all 365 days - i.e., 7 days/week) are modeled.

Table 13 Construction Screening Diesel PM Risk Calculations

Project ID:	Blythe Solar		
Phase:	Construction		
Current DPM URF:	0.0003	ug/m3^-1	Cancer
Current DPM REL:	5	ug/m3^-1	Chronic

Receptor Data:

Receptor ID	1	2	*Construction Period Exposure Values*	
Exposure Scenario	MIR	MIR	hrs/day	20
Receptor Type	Fenceline	Residential	days/week	6
UTM E, meters	705922	710535	weeks/yr	52
UTM N, meters	3727306	3721040	years	6.25
Elevation, meters-AMSL	na	119		
Annual Conc (ug/m3):	0.03605	0.00070		
Exposure Adjustment Factor:	0.0638	0.0638		

Predicted Risk Data for the Construction Period

Cancer Risk per million	*0.69*	*0.01*
Chronic HI	*0.007*	*0.000*
Acute HI	*n/a*	*n/a*

Receptor 1 - The risks presented are for MIR-1, which is the maximum impacted location for a non-habitable receptor (fenceline).
Receptor 2 - The risks presented are for MIR -2 at the ***nearest residence****, which are more representative of offsite population risks.*

Ref: Health Risk Assessment Guidance for Analyzing Cancer Risks
from Mobile Source Diesel Emissions, SCAQMD, 8/03.
Ref: HARP Users Manual, Version 1.4f, Appendix K, 12/2003.
Ref: OEHHA, Air Toxics Hot Spots Program Risk Assessment Guidelines, 8/03, 8.2.2, p. 8-4.
Ref: CARB/OEHHA Consolidated Risk Value Table, 2/2011.

Air Quality Modeling Files (CD-ROM)

Provided Separately