

**DATE** MAY 14 2010

**RECD.** MAY 14 2010

May 14, 2010

Alan Solomon Project Manager California Energy Commission 1516 Ninth Street Sacramento, CA 95814

RE: Blythe Solar Power Project, Docket No. 09-AFC-6
Responses to Questions from the April 28, 29 and May 7, 2010 CEC Workshops
Technical Areas: Worker Safety/Hazardous Materials

Dear Mr. Solomon:

Attached please find the following response to questions generated at the April 28, 29, and May 7, 2010 CEC Workshops for the Blythe Solar Power Project. Additional responses to follow.

If you have any questions on this submittal, please feel free to contact me directly.

Sincerely,

Alice Harron

Senior Director, Development

# BLYTHE SOLAR POWER PROJECT (09-AFC-6) APRIL 28, 29 & May 7, 2010 CEC WORKSHOP REQUESTS

Date: May 14, 2010

At the Staff Assessment Workshops on April 28-29, 2010, several requests for information were made by Dr. Alvin Greenberg to clarify his analysis on Worker Safety and Hazardous Materials. In addition, several items were requested at the Soil & Water Workshop on May 7, 2010. The following materials are provided to address these requests.

**Technical Areas: Worker Safety and Hazardous Materials** 

#### **WORKSHOP REQUEST-4**

# Information Required:

Submit an update to HAZ-MAT Appendix A to provide all chemicals planned to be stored onsite as well as maximum quantities for each chemical.

#### Response:

Please see attached TABLE 5.6-3 revised for an updated list of the hazardous materials likely to be used at the Blythe Solar Power Project based on the current understanding of the project design and process requirements.

Table 5.6-3R Summary of Special Handling Precautions for Large Quantity Hazardous Materials (Rev.1) \*

Hazardous Material and CAS No. <sup>1</sup>	Relative Toxicity <sup>2</sup> and Hazard Class <sup>3</sup>	RQ <sup>4</sup> pounds (kg)	Permissible Exposure Limit (PEL)	Storage Description; Capacity	Storage Practices and Special Handling Precautions
Sulfuric Acid, 29.5% solution CAS No. 7664-93-9	High toxicity; Hazard class – Corrosive, water reactive	1,000 lbs	PEL: 1 milligram per cubic meter (mg/m³)	Contained in batteries; 2,000 gal total inventory	Isolated from incompatible chemicals and secondary containment
Carbon Dioxide CAS No. 124-38-9	Low toxicity; Hazard class – Nonflammable gas	Not Applicable	TLV: 5,000 ppm (9,000 mg/m <sup>3</sup> ) TWA	Carbon steel tank; 15 tons maximum onsite inventory	Carbon steel tank with crash posts
Therminol VP-1 Biphenyl (26.5%) CAS No. 92-52-4 Diphenyl ether (73.5%) CAS No. 101-84-8	Moderate toxicity, Hazard class – Irritant; Combustible Liquid (Class III- B)	Biphenyl = 100 lbs (45.4 kg)  Diphenyl ether = Not applicable	Biphenyl = PEL: 0.2 milliliters per cubic meter (ml/m³) (8-hr TWA) TLV: 0.2 ml/m³ (1 mg/m³) (8-hr TWA)  Diphenyl ether = TLV: 1 ml/m³ (8-hr TWA) TLV: 2 ml/m³ (15-min TWA) PEL: 1 ml/m³ (7 mg/m³) (15-min TWA)	1.3 million gal in system, no additional onsite storage	Continuous monitoring of pressure in piping network; routine inspections (sight, sound, smell) by operations staff; isolation valves throughout piping network to minimize fluid loss in the event of a leak; prompt clean up and repair
Lube Oil CAS No. 64741-97-5	Low toxicity Hazard class – NA	Not applicable	TLV: (oil mist, mineral) 5 mg/m <sup>3</sup> (ACGIH 2001)	Carbon steel tanks, 10,000 gallons in equipment and piping, additional maintenance inventory of up to 550 gallons in 55-gallon steel drums	Secondary containment area for each tank and for maintenance inventory

Table 5.6-3R Summary of Special Handling Precautions for Large Quantity Hazardous Materials (Rev.1) \*

Hazardous Material and CAS No.1	Relative Toxicity <sup>2</sup> and Hazard Class <sup>3</sup>	RQ⁴ pounds (kg)	Permissible Exposure Limit (PEL)	Storage Description; Capacity	Storage Practices and Special Handling Precautions
Mineral Insulating Oil CAS No. 8042-47-5	Low toxicity Hazard class – NA	Not applicable	None established	Carbon steel transformers; total onsite inventory of 36,000 gallons	Used only in transformers, secondary containment for each transformer
Diesel Fuel CAS No. 68476-34-6	Low toxicity; Hazard class – Combustible Liquid	Not applicable	PEL: none established TLV: 100 mg/m <sup>3</sup> (ACGIH)	Carbon steel tank (1,150 gallon [generator & fire water pump engine])	Stored only in fuel tank of emergency engine, secondary containment
Hydrogen	Low toxicity; Hazard class – Flammable gas	Not applicable	None Established	In generator cooling loop and "tube trailer"; piping system inventory 350 pounds; plus 650 lbs in storage trailer	Pressure safety tank, crash posts, pressure relief valves
Nitrogen CAS No. 7727-37-9	Low toxicity; Hazard class – Non-Flammable Gas	Not applicable	None established	Carbon steel tank; 7,500 lbs total inventory	Carbon steel tank with crash posts
Hydraulic fluid CAS No. 64741-89-5	Low to moderate toxicity; Hazard class – Class IIIB Combustible Liquid	Not applicable	TWA (oil mist): 5 mg/m <sup>3</sup> STEL: 10 mg/m <sup>3</sup>	Carbon steel tanks and sumps; 500 gallons in equipment, maintenance inventory of 110 gallons in 55- gallon steel drums	Found only in equipment with a small maintenance inventory; maintenance inventory stored within secondary containment
Welding gas Acetylene CAS No. 74-86-2	Moderate toxicity; Hazard class – Toxic	10,000 lbs	PEL: none established	Steel cylinders; 200 cubic feet each, 800 cubic feet total on site	Inventory management, isolated from incompatible chemicals

Table 5.6-3R Summary of Special Handling Precautions for Large Quantity Hazardous Materials (Rev.1) \*

Hazardous Material and CAS No. <sup>1</sup>	Relative Toxicity <sup>2</sup> and Hazard Class <sup>3</sup>	RQ⁴ pounds (kg)	Permissible Exposure Limit (PEL)	Storage Description; Capacity	Storage Practices and Special Handling Precautions
Welding gas Oxygen CAS No. 7782-44-7	Low toxicity; Hazard class – Oxidizer	Not applicable	PEL: none established	Steel cylinders; 200 cubic feet each, 800 cubic feet total on site	Inventory management, isolated from incompatible chemicals
Welding gas Argon CAS No. 7440-37-1	Low toxicity; Hazard class – Non-flammable Gas	Not applicable	PEL: none established	Steel cylinders; 200 cubic feet each, 800 cubic feet total on site	Inventory management
Activated Carbon CAS No. 7440-44-0	Non-toxic (when unsaturated), low to moderate toxicity when saturated, depending on the adsorbed material; Hazard class – combustible solid	Not Applicable	TWA (total particulate): 15 mg/m³ TWA (respirable fraction): 5 mg/m³ TLV (graphite, all forms except graphite fibers): 2 mg/m3 TWA	Used in two x 2,000-lb canisters, 4,000 lbs total inventory, no additional storage	No excess inventory stored on site, prompt disposal when spent
Calcium Hypochlorite 100% CAS No. 7778-54-3	Moderate toxicity; Hazard Class – Corrosive, Irritant	10 lbs	PEL: none established Acute oral toxicity (LD50): 850 mg/kg [Rat].	Minimal onsite storage for water treatment, not expected to exceed 50 lbs	Inventory management, isolated from incompatible chemicals
Water treatment chemical Sodium Carbonate (soda ash) CAS No. 497-19-8	Low toxicity; Hazard class – Irritant	Not Applicable	Not Applicable	10 tons	Stored in steel silos. Inventory management, isolated from incompatible chemicals

Table 5.6-3R Summary of Special Handling Precautions for Large Quantity Hazardous Materials (Rev.1) \*

Hazardous Material and CAS No. <sup>1</sup>	Relative Toxicity <sup>2</sup> and Hazard Class <sup>3</sup>	RQ <sup>4</sup> pounds (kg)	Permissible Exposure Limit (PEL)	Storage Description; Capacity	Storage Practices and Special Handling Precautions
Water treatment chemical Lime (calcium oxide) CAS No. 1305-78-8	Moderate toxicity; Hazard class - Irritant	Not Applicable	TLV: 2 mg/m³ as TWA;(ACGIH 2004). OSHA PEL: TWA 5 mg/m³ NIOSH IDLH: 25 mg/m³ See: 1305788	10 tons	Stored in steel silos. Inventory management, isolated from incompatible chemicals
Water treatment chemical Magnesium Chloride CAS No. 7786-30-3	Non-toxic; Hazard class – NA	Not Applicable	Not Applicable	500 gallons	Inventory management
Water treatment chemical Sodium Bisulfate (aka sodium hydrogen sulfate)	Low toxicity; Hazard class – Irritant	Not Applicable	Sodium bisulfate = PEL: none established: TLV: 5 mg/m <sup>3</sup> TWA	500 gallons	Inventory management, isolated from incompatible chemicals
Boiler water treatment chemical Ferric Sulfate (35% solution) CAS Number 10028- 22-5	Moderate toxicity; Hazard class - Irritant	1,000 lbs	TBD	10,000 gallons	Inventory management, isolated from incompatible chemicals and secondary containment

Table 5.6-3R Summary of Special Handling Precautions for Large Quantity Hazardous Materials (Rev.1) \*

Hazardous Material and CAS No. <sup>1</sup>	Relative Toxicity <sup>2</sup> and Hazard Class <sup>3</sup>	RQ <sup>4</sup> pounds (kg)	Permissible Exposure Limit (PEL)	Storage Description; Capacity	Storage Practices and Special Handling Precautions
Water treatment chemical NALCO Tri-Act 1800 or equivalent Cyclohexlyamine (5 – 10%) Monoehtanolamine (10 – 30%) Methoxyproplyamine (10 – 30%)	High toxicity; Hazard class – Corrosive, Class II Combustible liquid	Not Applicable	Cyclohexlyamine = TLV: 10 ppm (41 mg/m³)  Monoethanolamine = TLV: 3 ppm (7.5 mg/m³) TWA: 3 ppm (7.5 mg/m³) STEL: 6 ppm (15 mg/m³)  Methoxyproplyamine = TLV: 5 ppm TWA STEL: 15 ppm	Plastic totes, 2 x 400 gallons	Inventory management, isolated from incompatible chemicals and secondary containment
Water treatment chemical NALCO Elimin-Ox Carbohydazide (5 - 10%) or equivalent	Moderate toxicity; Hazard class – Sensitizer	Not Applicable	Carbohydazide = PEL: none established	Plastic totes, 2 x 400 gallons	Inventory management, isolated from incompatible chemicals and secondary containment
Water treatment chemical NALCO 3D Trasar 3DT185 Phosphoric Acid (60 -100%) or equivalent	High toxicity; Hazard class – Corrosive	Not Applicable	Phosphoric acid = PEL: 1 mg/m³ (TWA) TLV: 1 mg/m³ (TWA), STEL: 3 mg/m³	Plastic totes, 2 x 400 gallons	Inventory management, isolated from incompatible chemicals and secondary containment

Table 5.6-3R Summary of Special Handling Precautions for Large Quantity Hazardous Materials (Rev.1) \*

Hazardous Material and CAS No. <sup>1</sup>	Relative Toxicity <sup>2</sup> and Hazard Class <sup>3</sup>	RQ <sup>4</sup> pounds (kg)	Permissible Exposure Limit (PEL)	Storage Description; Capacity	Storage Practices and Special Handling Precautions
Water treatment chemical NALCO 3D Trasar 3DT177 or equivalent Phosphoric acid (30%)	Moderate toxicity; Hazard class – Irritant	Not Applicable	Phosphoric acid = PEL: 1 mg/m³ (TWA) TLV: 1 mg/m³ (TWA), STEL: 3 mg/m³	Plastic totes, 2 x 400 gallons	Inventory management, isolated from incompatible chemicals and secondary containment
Water treatment chemical NALCO 3D Trasar 3DT190 or equivalent	Low toxicity; Hazard class – Irritant	Not Applicable	None established for mixture	Plastic totes, 2 x 400 gallons	Inventory management, isolated from incompatible chemicals and secondary containment
Water treatment chemical NALCO Acti-Brom (R) 7342 or equivalent Sodium bromide	Low toxicity; Hazard class – Irritant	Not Applicable	Sodium bromide = PEL: none established	Plastic totes, 2 x 400 gallons	Inventory management, isolated from incompatible chemicals and secondary containment
Water treatment chemical NALCO pHreedom® 5200M or equivalent Sodium salt of phosphonomethylat ed diamine	Low to moderate toxicity; Hazard class – Irritant	Not Applicable	Sodium salt of phosphonomethylated diamine = PEL: none established	Plastic totes, 2 x 400 gallons	Inventory management, isolated from incompatible chemicals and secondary containment
Water treatment chemical NALCO PCL-1346	Low toxicity; Hazard class – Irritant	Not Applicable	None established for mixture	Plastic totes, 2 x 400 gallons	Inventory management, isolated from incompatible chemicals and secondary containment

Table 5.6-3R Summary of Special Handling Precautions for Large Quantity Hazardous Materials (Rev.1) \*

Hazardous Material and CAS No. <sup>1</sup>	Relative Toxicity <sup>2</sup> and Hazard Class <sup>3</sup>	RQ <sup>4</sup> pounds (kg)	Permissible Exposure Limit (PEL)	Storage Description; Capacity	Storage Practices and Special Handling Precautions
Water treatment chemical NALCO Permacare (R) PC-7408 Sodium bisulfate CAS No. 7631-90-5	Low toxicity; Hazard class – Irritant	5,000 lbs	Sodium bisulfate = PEL: none established: TLV: 5 mg/m <sup>3</sup> TWA	Plastic totes, 2 x 400 gallons	Inventory management, isolated from incompatible chemicals and secondary containment
Water treatment chemical NALCO BT-3000 or equivalent Sodium hydroxide CAS No. 1310-73-2 Sodium tripolyphosphate	High toxicity; Hazard class – Corrosive	Sodium Hydroxide 1,000 lbs	Sodium hydroxide = PEL: 2 mg/m³ Sodium tripolyphosphate = PEL: none established	Plastic totes, 2 x 400 gallons	Inventory management, isolated from incompatible chemicals and secondary containment
Boiler water treatment chemical, pH adjustment Sodium Hydroxide (50%) CAS Number 1310- 73-2	High toxicity; Hazard class – Corrosive	1,000 lbs	Sodium hydroxide = PEL: 2 mg/m <sup>3</sup>	10,000 gallons	Inventory management, isolated from incompatible chemicals and secondary containment

Table 5.6-3R Summary of Special Handling Precautions for Large Quantity Hazardous Materials (Rev.1) \*

Hazardous Material and CAS No. <sup>1</sup>	Relative Toxicity <sup>2</sup> and Hazard Class <sup>3</sup>	RQ <sup>4</sup> pounds (kg)	Permissible Exposure Limit (PEL)	Storage Description; Capacity	Storage Practices and Special Handling Precautions
Water treatment chemical NALCO 8338 or equivalent Sodium nitrite Sodium tolytriazole Sodium hydroxide	Moderate toxicity; Hazard class – Toxic	Not Applicable	Sodium nitrite = PEL: none established Sodium tolytriazole = PEL: none established Sodium hydroxide = PEL: 2 mg/m <sup>3</sup>	Plastic totes, 2 x 400 gallons	Inventory management, isolated from incompatible chemicals and secondary containment
Water treatment chemical 93%-98% sulfuric acid CAS No. 7664-93-9	High toxicity; Hazard class – Corrosive, water reactive	1,000 lbs	TLV: 0.2 mg/m <sup>3</sup> MAK: 0.1 mg/m <sup>3</sup> NIOSH REL: TWA 1 mg/m <sup>3</sup> NIOSH IDLH: 15 mg/m <sup>3</sup> OSHA PEL: 1 mg/m <sup>3</sup>	1,000 gallons	Inventory management, isolated from incompatible chemicals and secondary containment
Water treatment chemical Sodium Hypochlorite (13% solution) CAS No. 7689-52-9	High toxicity; Hazard class – Poison-B, Corrosive	100 lbs	Workplace Environmental Exposure Limit (WEEL) - STEL: 2 mg/m3 PEL: 0.5 ppm (TWA), STEL: 1 ppm as Chlorine TLV: 1 ppm (TWA), STEL: 3 ppm as Chlorine	1,000 gallons	Inventory management, isolated from incompatible chemicals

Table 5.6-3R Summary of Special Handling Precautions for Large Quantity Hazardous Materials (Rev.1) \*

Hazardous Material and CAS No. <sup>1</sup>	Relative Toxicity <sup>2</sup> and Hazard Class <sup>3</sup>	RQ⁴ pounds (kg)	Permissible Exposure Limit (PEL)	Storage Description; Capacity	Storage Practices and Special Handling Precautions
Oxygen Scavenger Reagent Acetic Acid 60% CAS No. 64-19-7 Iodine 20% CAS No. 7553-56-2 De-ionized water 20% CAS No. 7732-18-5	Moderate toxicity; Hazard Class – Corrosive, Irritant	5,000 lbs	PEL: 10 ppm TWA PEL: 0.1 ppm N/A	Minimal onsite storage for water treatment, not expected to exceed 50 lbs	Inventory management, isolated from incompatible chemicals
Boiler water treatment oxygen scavenger Carbohydrazide CAS No. 497-18-7	High toxicity; Hazard class – Irritant	Not applicable	Carbohydazide = PEL: none established	600 gallons	Inventory management, isolated from incompatible chemicals
Herbicide Roundup® or equivalent CAS No. 38641-94-0	Low toxicity; Hazard class – Irritant	Not applicable	Isopropylamine salt of glyphosphate = no specific occupational exposure has been established	No onsite storage, brought on site by licensed contractor, used immediately	No excess inventory stored on site
Soil stabilizer Active ingredient: acrylic or vinyl acetate polymer or equivalent CAS No. Active ingredient is 'Not Hazardous'	Non-toxic; Hazard class – NA	Not applicable	None established	No onsite storage, supplied in 55-gallon drums or 400-gallon totes, used immediately	No excess inventory stored on site

# Table 5.6-3R Summary of Special Handling Precautions for Large Quantity Hazardous Materials (Rev.1) \*

Hazardous Material and CAS No.1	Relative Toxicity <sup>2</sup> and Hazard Class <sup>3</sup>	RQ⁴ pounds (kg)	Permissible Exposure Limit (PEL)	Storage Description; Capacity	Storage Practices and Special Handling Precautions
---------------------------------	---	-----------------------	--	----------------------------------	---

<sup>\*</sup> This table has been developed based on the applicant's understanding of the proposed processes at the time of development. Continued engineering and process refinements may likely necessitate additions, deletions and/or substitutions of materials identified above.

<sup>&</sup>lt;sup>1</sup> CAS No. – Chemical Abstracts Service registry number. This number is unique for each chemical.

<sup>&</sup>lt;sup>2</sup> Low toxicity is used to describe materials with an NFPA Health rating of 0 or 1. Moderate toxicity is used describe materials with an NFPA rating of 2. High toxicity is used to describe materials with an NFPA rating of 3. Extreme toxicity is used to describe materials with an NFPA rating of 4.

<sup>&</sup>lt;sup>3</sup> NA denotes materials that do not meet the criteria for any hazard class defined in the 1997 Uniform Fire Code.

<sup>&</sup>lt;sup>4</sup> RQ - Reportable Quantity for hazardous substance as designated under section 102(a) defined under CERCLA. (To note: As previously discussed in the text, Table 5.6-3 includes those chemicals stored or used in excess of 55 gallons for liquids, 500 pounds for solids, and 200 cubic feet for compressed gases. These quantities coincide with the thresholds for reporting under California's HMBP requirements).

<sup>&</sup>lt;sup>5</sup> RQ - Reportable Quantity for extremely hazardous substance as designated under section 302(a)(2) defined under CERCLA.

# STATE OF CALIFORNIA ENERGY RESOURCES CONSERVATION AND DEVELOPMENT COMMISSION

In the Matter of:
APPLICATION FOR CERTIFICATION
for the BLYTHE SOLAR POWER PROJECT

Docket No. 09-AFC-6 PROOF OF SERVICE

(Revised 1/26/2010)

#### **APPLICANT**

Alice Harron Senior Director of Project Development 1625 Shattuck Avenue, Suite 270 Berkeley, CA 94709-1161 harron@solarmillenium.com

Elizabeth Ingram
Developer, Solar Millennium LLC
1625 Shattuck Avenue, Suite 270
Berkeley, CA 94709
ingram@solarmillennium.com

#### APPLICANT'S CONSULTANT

Carl Lindner
AECOM Project Manager
1220 Avenida Acaso
Camarillo, CA 93012
carl.lindner@aecom.com

Ram Ambatipudi Chevron Energy Solutions 150 E. Colorado Blvd., Ste 360 Pasadena, CA 91105 rambatipudi@chevron.com

#### **CO-COUNSEL FOR APPLICANT**

Scott Galati, Esq. Galati/Blek, LLP 455 Capitol Mall, Suite 350 Sacramento, CA 95814 sgalati@qb-llp.com Peter Weiner
Matthew Sanders
Paul, Hastings, Janofsky & Walker LLP
55 2nd Street, Suite 2400-3441
San Francisco, CA 94105
peterweiner@paulhastings.com
matthewsanders@paulhastings.com

#### **INTERESTED AGENCIES**

Holly L. Roberts, Project Manager Bureau of Land Management Palm Springs-South Coast Field Office 1201 Bird Center Drive Palm Springs, CA 92262 CAPSSolarPalen@blm.gov

California ISO e-recipient@caiso.com

#### **INTERVENORS**

California Unions for Reliable Energy (CURE) Tanya A. Gulesserian, Marc D. Joseph Adams Broadwell Joseph & Cardozo 601 Gateway Boulevard, Suite 1000 South San Francisco, CA 94080 tgulesserian@adamsbroadwell.com

#### **ENERGY COMMISSION**

Karen Douglas Chair and Presiding Member kldougla@energy.state.ca.us

Robert Weisenmiller Commissioner and Associate Member rweisenm@energy.state.ca.us

Raoul Renaud Hearing Officer rrenaud@energy.state.ca.us

Alan Solomon Project Manager asolomon@energy.state.ca.us

Lisa DeCarlo Staff Counsel Idecarlo@energy.state.ca.us

Public Adviser's Office publicadviser@energy.state.ca.us

# **DECLARATION OF SERVICE**

I, Carl Lindner, declare that on, May 14, 2010, I served and filed copies of the attached Blythe Solar Power Project Materials:

Responses to Questions from the April 28, 29 and May 7, 2010 CEC Workshops Technical Areas: Worker Safety/Hazardous Materials

The original document, filed with the Docket Unit, is accompanied by a copy of the most recent Proof of Service list, located on the web page for this project at:

# [http://www.energy.ca.gov/sitingcases/solar\_millennium\_blythe].

The document has been sent to the other parties in this proceeding (as shown on the Proof of Service list) and to the Commission's Docket Unit, in the following manner:

### (Check all that Apply)

For s	ervice to all other parties:
<u>X</u>	sent electronically to all email addresses on the Proof of Service list;
	by personal delivery or by overnight delivery service or depositing in the United States mail at <u>Camarillo</u> , <u>California</u> with postage or fees thereon fully prepaid and addressed as provided on the Proof of Service list above to those addresses <b>NOT</b> marked "email preferred."
AND	
For fi	ling with the Energy Commission:
_ <u>X</u> _	sending an original paper copy and one electronic copy, mailed and emailed respectively, to the address below (preferred method);
OR	
	_ depositing in the mail an original and 12 paper copies, along with 13 CDs, as follows:
	CALIFORNIA ENERGY COMMISSION Attn: Docket No. 09-AFC-6 1516 Ninth Street, MS-4 Sacramento, CA 95814-5512

I declare under penalty of perjury that the foregoing is true and correct.

docket@energy.state.ca.us

Carl E. Linghner