SOIL AND WATER - APPENDIX I

GROUNDWATER MITIGATION PLAN

Groundwater Monitoring

This groundwater monitoring program was provided in Attachment 5 of the Project Design Refinements (DB2009r) submitted to the CEC by the applicant in June 2009. As proposed by the applicant, the following describes the groundwater mitigation plan to be incorporated if the use of site groundwater is approved by CEC for power plant operation.

Proposed Groundwater Monitoring Program

To provide for land owner protection and participation in evaluation of project impacts, a Fremont Valley Groundwater Monitoring Committee will be formed. The committee will include a representative from the following:

- California City
- Community of Cantil
- Rancho Seco
- Honda
- Beacon Solar LLC

The monitoring committee's function will be to implement and oversee the groundwater monitoring program and to verify that there are no unacceptable impacts to groundwater levels or quality in water supply wells adjacent to the BSEP.

Gather Historic Water Level and Water Quality Data

- ~~Secure access, if authorized by the land owner, for the purpose of monitoring of water levels and water quality for those water supply wells predicted by the numerical groundwater model to experience a change of 5~~5 ~~feet or more in its water level by comparison to the "No"non-Project condition at the end of construction and at the end of 5 years of operationover the term of the project (30 years).~~ Initially identify representative water supply wells in the potentially impacted area predicted by the groundwater model, and secure access to those wells to allow monitoring of groundwater levels and water quality. Wells shall be identified by comparison to the "No" Project and Project pumping simulations. The potentially impacted area shall be defined as the area model results project a water level change of 5 feet or more at the end of construction and after the first five years of operation. Wells identified in the potentially impacted area will be included in the monitoring network. Additional wells located outside the potentially impacted area ("background" wells) shall also be included in the monitoring network to discern between background trends and changes caused by Project pumping. A minimum of three wells representing background conditions shall be selected from outside the area indicated by the groundwater-flow model as having a water level change of 1 foot or less ~~more~~ at the end of construction and after the first five years of operation.

- Through the access agreement, obtain all historic water level and water quality data for each

water supply well identified by the model. Additionally, obtain well completion information, historic well performance data, including pumping and non-pumping water levels and pump specifications for each well to be monitored.

- Update the application for certification (AFC) water level and geochemical and water level database with all new information.

- Prepare time series graphs (i.e., trend plots) for water level and total dissolved solids (TDS) data, as information is available for each well.

- Perform statistical trend analysis using Mann-Kendall Trend Test and Sen's Slope Estimator for water levels and the TDS data. The Mann-Kendall Trend Test and the Sen's Slope Estimator are proposed to statistically analyze the data because they are the accepted non-parametric trend analysis methods for data that are not normally distributed. Use trend analysis to determine the significance of an apparent trend and to estimate the magnitude of that trend. Further, use adjacent well data to evaluate local affects from pumping in water level trends.

Establish Pre-Project Baseline Water Quality and Water Level Database

- To the extent possible, prior to project construction collect groundwater levels from the off-site and on-site wells to evaluate groundwater levels in the area of wells that could be impacted by project pumping as indicated by the model. Additionally, collect groundwater samples to provide baseline TDS data for both on-site and off-site wells. Analyze TDS samples using Standard Methods 2540C by a California Certified Analytical Laboratory.

- Map TDS data and groundwater levels within the Koehn Sub-basin from the groundwater data collected prior to construction. Update trend plots and statistical analyses, as data is available.

Groundwater Monitoring During Construction

- During construction, collect water levels on a quarterly basis for a period of one year or on a quarterly basis through the construction period, and collect TDS data at the end of the construction period and prior to site operations.

Groundwater Monitoring During Operation

- On a quarterly basis for the first five years, collect water level measurements from the wells and collect TDS data to evaluate operational influence from the project. Additionally, monitor quarterly operational parameters (i.e., pumping rate) of the water supply wells.

- After a period of five years, on a well-by-well basis, evaluate the data and determine if the sampling frequency and TDS sampling should be revised or eliminated.

- Subsequently, evaluate the data set every five years and determine if the sampling frequency and TDS sampling should be revised or eliminated.

Proposed Mitigation Options

Water Level Offset Mitigation Options

Based on the results of the statistical trend analyses, determine if the project pumping has induced a drawdown in the water supply at a level of ten feet or more below the baseline trend. If water levels have been lowered below pre-site operational trends, then implement any of the following options, as appropriate and considering the cost effectiveness of each option.

- Electrical cost reimbursement – If the pumping water level falls below a depth of 5 feet from an average of the baseline measurements, the well owner will be compensated for the additional electrical costs commensurate with the additional lift required to pump. The water level in the well will be assessed relative to the pumping rate during pre-site operational period.

- Pump lowering – In the event that groundwater is lowered and existing pumps are day lighted, pumps can be lowered to maintain production in the well.

- Deepening of wells – If the groundwater is lowered enough that there is insufficient water in the well and pump lowering is not an option, then wells can be deepened.

Groundwater Storage Mitigation Options

Maximum expected groundwater usage during BSEP operation is estimated to be no more than 153 acre feet per year (AFY) (excluding annual emergency allotment of 47 acre-feet). Initially, the applicant proposed to use 1,388 AFY of groundwater for power plant operation and provided options to offset that water consumption which included implementation of a partial ZLD and tamarisk removal program, which are described in the Project Design Refinements (DB 2009r).

The applicant now proposes to use recycled waste water for power plant cooling. The recycled wastewater will be provided by either Rosamond Community Services District or California City. Both option will provide approximately 1,400 AFY of recycled wastewater.

If the California City option is selected, existing residential on-site septic systems would be connected to the City sewer system. This connection to the City sewer system would reduce recharge to the City aquifer. The reduction in groundwater recharge would result from diversion of septic system recharge due to diversion of septic system discharge that would otherwise percolate into the groundwater basin. Model results show that a reduction in recharge to the CA City area influences water levels beneath the City.]

To minimize the potential impact of reduced recharge to the California City aquifer, ,the project owners shall provide funding to California City or BLM for the implementation of a tamarisk removal program to address infestation within and or upgradient of the City in the initial amount of $100,000 at the start of construction and $10,000 on the commercial operation date (COD) and for a period of 4 years thereafter on the anniversary of the COD~~shall develop in coordination with Bureau of Land Management and other stakeholders, a voluntary tamarisk removal program designed to offset the collection of return flows from conversion of individual septic disposal systems in California City for the project recycled water supply. This program will initially identify areas of tamarisk infestation, provide annual funding for tamarisk eradication and will be implemented in the Fremont Valley Groundwater Basin.~~

~~This payment shall be provided to remove a sufficient number of trees that would otherwise consume 1,400 AFY of groundwater. Assuming that each mature salt cedar tree consumes approximately 200 gallons of groundwater per day and the average mature salt cedar tree has a~~

~~canopy area of 176.7 square feet, 25.3 acres of salt cedar tree canopy would need to be removed.~~

The project owner shall provide to the CPM appropriate documentation (notes, diagrams, photographs and other records) on a quarterly basis that clearly demonstrates the results of the Tamarisk Removal Program. This documentation shall provide the mapped location, pre and post eradication photographs, a description of the aerial extent of salt cedar removed and an accounting of the funds spent.

BEFORE THE ENERGY RESOURCES CONSERVATION AND DEVELOPMENT COMMISSION OF THE STATE OF CALIFORNIA

APPLICATION FOR CERTIFICATION FOR THE BEACON SOLAR ENERGY PROJECT	DOCKET NO. 08-AFC-2

PROOF OF SERVICE
(Revised 2/8/10)

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Declaration of Service

I, Lois Navarrot, declare that on March 19, 2010, I served and filed copies of the attached **Beacon Solar Energy Project's Soil & Water – Appendix I.** 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: www.energy.ca.gov/sitingcases/beacon. The document has been sent to both 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 Service to All Other Parties

__X__ sent electronically to all email addresses on the Proof of Service list;

__X__ by personal delivery or by depositing in the United States mail at Sacramento, California with first-class postage thereon fully prepaid and addressed as provided on the Proof of Service List above to those addresses **NOT** marked "email preferred."

AND

For Filing with the Energy Commission

__X__ sending an original paper copy and one electronic copy, mailed and e-mailed respectively, to the address below **(preferred method)**;

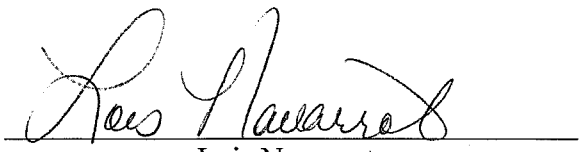
OR

_____ depositing in the mail an original and 12 paper copies as follow:

California Energy Commission
Attn: Docket No. 08-AFC-2
1516 Ninth Street, MS-4
Sacramento, CA 95814-5512

docket@energy.state.ca.us

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



Lois Navarrot