

**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

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DATE _____
RECD. Jul 20 2009

**RESPONSE TO REQUEST FOR PREDICTIVE SENSITIVITY
GROUNDWATER ANALYSIS**

From: Stein, Kenneth [Kenneth.Stein@nexteraenergy.com]

Sent: Thursday, July 16, 2009 4:51 PM

To: Eric Solorio

Cc: Head, Sara; Flack, Mike; 'Casey Weaver'; Busa, Scott; Russell, Meg; 'Jane Luckhardt'; Sophie Rowlands

Attachments: Table 4 - Predictive Sensitivity Analysis (Groundwater Model) 7-15.pdf

Eric -

At the BSEP PSA Workshop on July 1, 2009, John Fio, hydrogeologist and CEC Staff consultant requested that an additional scenario be added to the predictive sensitivity analyses that were developed from the calibrated numerical groundwater model. The requested scenario was to assume zero recharge to the groundwater system and to predict the maximum drawdown at selected wells within the model domain. As we understand, the intent of this scenario was to understand the contribution to the recovery of the groundwater levels within the basin that might occur as water is released solely from storage. Under this scenario, no water would enter the model from recharge to the groundwater basin, and recovery would be solely due to movement of water within the basin. This in essence equates to water moving within the groundwater basin to infill areas where significant cones of depression had developed during periods of agricultural pumping. This scenario was performed and the results of the analysis of maximum drawdown are provided on Table 4 (attached).

The results of the analysis show significant difference from the "base" or calibrated results, and also by comparison to the other parameters that were varied in the sensitivity analysis. We would like to note that the numerical groundwater model was calibrated to a recharge estimate of 15,000 acre-feet per year. And while this is an estimate, it falls within the range of values that were provided by prior investigators for the Koehn Sub-basin.

While the scenario was intended to assess the contribution of storage on water level recovery, it cannot be overlooked that water is entering the groundwater basin through recharge. The water level data in wells around the project site are either recovering or a generally stable. This strongly suggests that recharge to the groundwater basin is significant in its contribution to the recovery of water levels around the project site. If recharge was not essentially constant over long periods of time, water levels away from the large cone of depression would be declining as water moves to fill the depression caused by past agricultural pumping. If water were solely moving from storage, without contribution from recharge, groundwater levels would show a decline in areas outside the depressions. While there is certainly some component of infilling from water moving within the groundwater basin, the water level data would suggest its contribution is not significant.

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Table 4. Maximum Impact at Key Wells in Predictive Sensitivity Analysis

Well	Distance to Well 63	Zero Recharge*	Base	Maximum Impact (ft) With Well 63 Pumping						
				K Times 2	K Times 0.5	Sy Times 2	Sy Times 0.5	No Canthill Fault	No Zone 7	Return Flow
Pumping Well 63	0.0	33.4	24.5	16.3	34.6	20.2	26.6	15.7	22.1	24.0
31S37E08C001M	0.6	30.0	21.4	14.8	28.5	16.9	23.6	12.6	19.4	21.0
31S37E05M01	0.9	31.6	20.5	14.2	27.1	16.1	22.7	12.1	18.8	20.1
Pumping Well 48	1.0	28.3	21.2	14.8	27.7	16.6	23.5	12.0	19.2	20.8
31S37E10A01	1.9	-11.0	2.9	2.4	4.8	1.6	4.2	8.4	2.8	2.9
30S37E34H02	2.7	24.1	11.4	8.5	14.0	8.2	13.1	6.4	11.8	11.2
31S37E14L01	3.0	-11.7	2.6	2.2	3.9	1.3	3.8	7.7	2.5	2.5
30S37E27H002M	3.4	24.3	9.3	7.1	11.2	6.5	10.8	5.3	9.6	9.2
31S37E30F001M	3.6	-2.0	2.0	0.5	2.7	0.8	3.4	6.6	1.8	2.0
Well 24	4.1	-7.9	2.0	2.0	3.1	1.0	2.9	5.1	2.0	1.9
31S38E06E001M	4.2	-9.4	1.9	2.0	3.0	1.0	2.7	4.7	1.9	1.8
30S37E36G001M	4.3	15.1	7.3	5.8	8.6	4.9	8.5	4.2	7.5	7.2
31S37E33H001M	4.5	9.5	0.6	0.3	1.0	0.1	1.6	2.1	0.6	0.6
31S37E35N001M	5.3	9.8	0.5	0.3	0.8	0.1	1.6	1.9	0.5	0.6
30S37E24J001M	5.4	11.8	5.4	4.4	6.4	3.5	6.5	3.1	5.6	5.4
30S38E32D03	5.6	-10.9	1.3	1.7	1.9	0.6	1.8	2.9	1.3	1.2
30S38E19K01	5.9	9.1	4.5	3.7	5.2	2.9	5.4	2.5	4.7	4.5
30S38E03K002M	10.2	6.3	1.7	1.8	1.6	0.9	2.2	0.8	1.7	1.6
30S38E24F001M	10.2	-6.3	0.3	1.2	0.1	0.1	0.6	0.5	0.3	0.2
29S39E32E001M	13.6	13.5	1.3	1.9	1.0	0.5	2.0	0.6	1.4	1.3
30S39E08A001M	13.7	4.5	0.4	1.2	0.2	0.1	0.9	0.5	0.4	0.3
29S39N29N01	13.9	14.8	1.3	1.9	1.0	0.5	2.0	0.6	1.4	1.3
29S39E33K001M	14.9	8.5	0.4	1.3	0.3	0.1	1.1	0.5	0.4	0.4
29S39E28H001M	15.8	18.1	1.1	1.9	0.7	0.4	1.9	0.5	1.2	1.1

Notes:

Impact is the change in head caused by pumping Well 63. Since water levels are rising, impacts are simply less rise in the future

Distance is in miles

Base run is the calibrated model

K is hydraulic conductivity

Sy is specific yield

Return Flow simulates an added 30% of pumping which is then returned as recharge with a lag time of 10 year.

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PROOF OF SERVICE
(Revised 4/28/09)

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Declaration of Service

I, Shawn Prentiss, declare that on July 20, 2009, I served and filed copies of the following:

1. Responses to Select Cure Comments at CEC's Request
2. Responses to Air Quality Questions from Workshop
3. Response to Request Regarding BSEP Subsurface Investigations
4. Response to Request for Predictive Sensitivity Groundwater Analysis
5. Response to Rerouted Wash Information Request from Workshop.

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

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

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.

For Filing with the Energy Commission

sending an original paper copy mailed, to the address below;

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.

/s/

Shawn Prentiss