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TN #:	200370
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Description:	N/A
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DEPARTMENT OF CONSERVATION

Managing California's Working Lands

Division of Oil, Gas, & Geothermal Resources

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April 29, 2013

Occidental of Elk Hills Inc.
Mr. Chad Jones
10800 Stockdale Hwy
Bakersfield, CA 93311

Dear Mr. Jones:

We have made an initial review of your CO2/WAG (Phase 1) Injection Project application and we would like to request some additional information for us to get a better understanding of your proposed injection project.

Kindly provide us the following information:

1. A summary of the results of the 2005 CO2 Pilot Study – we are interested in knowing of any issues with respect to well and pipeline corrosion; extent of the CO2 injection front; and basic information such as CO2 injection and water injection rates, residual oil saturation, CO2 vertical & areal sweep efficiencies.

2. A more detailed plan for CO2 corrosion mitigation, prevention and monitoring and CO2 injection safety plan – your application just gives a summary of the corrosion mitigation, monitoring and maintenance plan while it does not include any CO2 injection safety plan. We understand that CO2 can be hazardous in high-enough concentrations and highly corrosive in the presence of water (i.e., carbonic acid). Please include discussion on the corrosion mitigation plans for injectors as well as production wells which will be similarly exposed to the corrosive effects of carbonic acid.

3. Expected swept area/volume with time – the injection process as generally described in the application indicates a gradual "sweep" of the oil reservoir with time. Please describe in more detail the timelines that this process is expected to ensue. We are interested to know the following:

   a. When is the requested area expected to be completely swept and the next phase (phase 2) planned for implementation?

   b. How many MMSCF of CO2 is expected to be sequestered in the requested area/volume for this phase 1 project after this time?

   c. Is the CO2 expected to remain in solution when the full sweep is achieved for this requested area/volume?

4. Plans for project wells – we are interested to know what your plans are for those project area wells (Phase 1) after the full sweep is achieved.

5. The current permitted waterflood volume is pegged at 140,000 barrels of water per day. This project as applied is anticipating a maximum of 150,000 barrels of water per day. Please explain the increase.

6. Overpressuring of zones – the documentation submitted indicates that the following B intervals (underlined) are overpressured from the original average pressures by 11-20%:

	Avg. Gross Interval (Ft)	Avg. Porosity (%)	Avg. Perm (K md)	Original Avg. Temp (F)	Original Avg. Press (PSIG)	Current Avg. Temp (F)	Current Avg. Press (PSIG)
B-Sand	175	18	13	215	3200	215	2600
UBA1-3	140	16	64	215	3210	215	3200
UBB1	75	18	85	215	3210	215	3600
UBB2	46	17	48	215	3230	215	3600
UBB3	100	16	40	215	3240	215	3800
UBB4	38	16	25	215	3250	215	3900
LMBB	115	15	26	215	3280	215	3800

Please explain the reasons why these overpressures are currently occurring. Also, please include your plans on preventing any detrimental effects to the wells and to the formation from such overpressure considering the risks of fracturing the zone and subsequent possible migration of fluids out of the zone. Please include monitoring data if these are available.

We understand that this proposed CO2-WAG project is closely dependent on the nearby HECA project for its CO2 requirements. We would appreciate any updated information as to the expected timeline of this CO2-WAG project considering the recent changes and approval timelines of the HECA project.

Please email or call if you have any questions.

Sincerely,

Robert S Habel

Robert S. Habel
Chief Deputy

cc: Burton Ellison, Bakersfield District Office
Jerry Salera, UIC Program Manager