UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105-3901

Mr. Jason Marshall
Acting State Oil and Gas Supervisor
Department of Conservation
Division of Oil, Gas, and Geothermal Resources (DOGGR)
801 K Street, MS 20-20
Sacramento, California 95814

RE: Aquifer Exemption Application - Portion of Upper Tulare Formation Asphalto Oil Field, McKittrick Area, Kern County

Dear Mr. Marshall,

EPA has reviewed the Division of Oil, Gas, and Geothermal Resources (DOGGR) June 22, 2009 proposal to designate a portion of the Tulare formation as an exempted aquifer, pursuant to a request from Occidental of Elk Hills, Inc. Occidental operates an existing Class II Underground Injection Control (UIC) project in the Lower Tulare zone of the Asphalto Oil Field and proposes to expand UIC water disposal to include the Upper Tulare. Based on the information you provided, EPA approves the proposed aquifer exemption, as described below.

In compliance with provisions of the Safe Drinking Water Act, as amended, (42 USC 300f-300j-9, commonly known as the SDWA) and attendant regulations incorporated by the U.S. Environmental Protection Agency under Title 40 of the Code of Federal Regulations (CFR), EPA hereby approves an exemption of the aquifer located within the following administrative boundaries of the Asphalto Field:

Portion of the E/2 E/2 E/2 of Section 21, T30S/R22E
SE/4 and portions of S/2 NE/4, S/2 NW/4, and SW/4 of Section 22, T30S/R22E
Portion of S/2 of Section 23, T30S/R22E
NW/4 and S/2 of Section 25, T30S/R22E
N/2, SE/4, and portion of NE/4 SW/4 of Section 26, T30S/R22E
Portions of NW/4 and NE/4 of Section 27, T30S/R22E
N/2 NW/4 and E/2 of Section 36, T30S/R22E
N/2 and SW/4 of Section 31, T30S/R23E
NE/4 of Section 1, T31S/R22E
NW/4 of Section 6, T31S/R23E

Printed on Recycled Paper

The aquifer being exempted is the portion of the Upper Tulare formation that is found below the overlying, confining Basal Alluvial Clay layer. The Basal Alluvial Clay layer divides the unconfined Upper Tulare Air sands from the confined Upper Tulare Saturated sands. The average depth of the exempted aquifer is approximately 380 ft below ground surface (below the base of the Basal Alluvial Clay) to the point where its salinity exceeds 10,000 ppm TDS, or approximately 780 ft below ground surface.

EPA finds that the portion of the Tulare Aquifer delineated above meets the exemption criteria in 40 CFR § 146.4(a) and (c):

a) It does not currently serve as a source of drinking water, and

c) The total dissolved solids (TDS) content of the groundwater is more than 3,000 and less than 10,000 milligrams/liter (mg/l) and it is not reasonably expected to supply a public water system.

EPA concurs with DOGGR's commitment to restrict Class II injection to zones below the confining alluvial clay in the Tulare formation, as described in DOGGR's response to comments from the California Regional Water Quality Control Board – Central Valley Region, and in the proposed application submitted to EPA.

With this approval, the California UIC Class II Primacy program is hereby revised to reflect this additional exempted aquifer.

Signed this 31st day of July, 2009.

Alexis Strauss
Director, Water Division

cc: Shelton R. Gray, Ca. Central Valley Regional Water Quality Control Board, Senior Engineering Geologist
Michael Stettner, Ca. DOGGR UIC Program Manager, Sacramento
Randy Adams, Ca. DOGGR District 4, Deputy Supervisor
Burt Ellison, Ca. DOGGR District 4, Associate O&G Engineer

NATURAL RESOURCES AGENCY ARNOLD SCHWARZENEGGER, GOVERNOR

DEPARTMENT OF CONSERVATION

DIVISION OF OIL, GAS AND GEOTHERMAL RESOURCES

801 K STREET • MS 20-20 • SACRAMENTO, CALIFORNIA 95814

PHONE 916 / 445-9686 • FAX 916 / 323-0424 • TDD 916 / 324-2555 • WEBSITE conservation.ca.gov

June 22, 2009

Mr. George Robin
Water Management Division
U.S. Environmental Protection Agency
Region 9
75 Hawthorne Street
San Francisco, CA 94105

Dear Mr. Robin:

TULARE AQUIFER EXEMPTION APPLICATION, ASPHALTO OIL FIELD
McKITTRICK AREA, KERN COUNTY

The Division of Oil, Gas, and Geothermal Resources (DOGGR) proposes to designate the Tulare aquifer within the administrative boundaries of the Asphalto oil field as an exempted aquifer. After public notice and opportunity for a public hearing, it has been determined that the Tulare aquifer in the Asphalto oil field qualifies for an aquifer exemption, pursuant to 40 CFR 146.4, on the following grounds:

1. The West Kern Water District (WKWD), the local water agency in the McKittrick area, has declared that the Tulare aquifer does not currently serve as a source of drinking water and will not reasonably be expected to supply a public water system.
2. The Tulare aquifer exemption area is completely surrounded by oil fields in which all or part of this formation has been exempted based on commercial oil production and is being used for disposal of naturally saline Class II wastewater.
3. Geologic and hydrogeologic continuity exists in the Tulare Formation between the designated aquifer exemption area and the surrounding fields in which the Tulare formation already is an exempted aquifer.
4. There are no known domestic or agricultural water wells in the designated Tulare aquifer exemption area.
5. Tulare groundwater contains high concentrations of total dissolved solids (TDS), chloride, sulfate, and boron.
6. The designated beneficial uses of groundwater in the project area are municipal, agricultural, and industrial. However, the poor groundwater quality of the Tulare groundwater renders it unusable for domestic or agricultural usage because it

exceeds California Title 22 secondary drinking water standards for TDS, chloride, and sulfate concentrations as well as recommended guidelines for boron in agricultural use.

7. Numerous Tulare intervals in the Asphalto field contain sub-commercial quantities of petroleum, which adversely affect the potential beneficial uses of this groundwater.
8. The Tulare aquifer exemption area is located in a remote and sparsely populated area of Kern County.
9. Land in the proposed Tulare aquifer exemption area is zoned as agricultural but is not irrigated or farmed. The primary use of land in the project area is related to oilfield operations.
10. Domestic and industrial water in the Tulare aquifer exemption area is supplied from the California Aqueduct or the Buena Vista Water Storage District well field near Tupman, located about 15 miles to the east of the project area.
11. According to its 1997 *Groundwater Management Plan*, the WKWD believed that: 1) Its water supplies were adequate to meet peak daily demands and future needs; and 2) despite potential shortages in deliveries, it did not need to pursue additional sources of water.
12. An evaluation of the economic feasibility of treating the McKittrick area groundwater for use as drinking water concluded that treating this groundwater would cost 10 to 70 times the current potable water-treatment cost. The U.S. Environmental Protection Agency criteria for designating Tulare groundwater as Class III, defined as groundwater not a source of drinking water, were met because the total annual system cost per area household to treat Tulare groundwater a) exceeded 0.4 percent of the median annual household income; b) was more than 100 percent of the current water rate; and c) was greater than the 90th percentile economic untreatability threshold of $379.14.
13. The water needs in the Tulare aquifer exemption area are adequately served by existing and future sources. The remoteness of this area of Kern County and its sparse population also make it unlikely that Tulare water could be economically treated and delivered beyond the 250-square-mile area serviced by the WKWD.
14. The Tulare aquifer has low-resource value or beneficial uses except for its use in the petroleum industry for Class II UIC injection operations.

The Tulare Formation is basically divided into two layers by the Amnicola shale, which acts as reservoir cap rock in the adjacent Railroad Gap oil field. From a hydrogeologic standpoint, the Tulare Formation can be divided into two zones. The shallow, unsaturated zone is identified as the Tulare Air Sand, which is separated from the deeper saturated zone by a clay layer approximately 50 to 75 feet thick. The saturated sands are found in both the Tulare and the Amnicola sand.

The applicant, Occidental of Elk Hills, Inc., proposed that the Tulare aquifer exemption area includes both the Tulare Air Sand and Saturated Sands so that Class II injection can be permitted in these zones. However, according to the definition of an aquifer in 40 CFR 146.3, an aquifer must be capable of yielding a significant amount of water to a well or spring. Since the unsaturated Tulare formation is not capable of yielding a significant amount of water, it should not be classified as an aquifer. The Central Valley Regional Water Quality Control Board (RWQCB) review of the application addressed this as a concern and declared an aquifer exemption is not required or appropriate for the Tulare Air Sand. The RWQCB also raised concerns that injection into the unsaturated Upper Tulare zones could result in injection fluid migrating upward into the overlying alluvium and to the surface.

DOGGR concurs with the RWQCB assessment of the Tulare Air Sand and, therefore, does not include this portion of the Tulare formation as part of the aquifer exemption. Furthermore, DOGGR does not include the Amnicola sands as part of the aquifer exemption, since the total dissolved solids content of the groundwater is greater than 10,000 milligrams/liter and beyond the limit for being classified as a underground source of drinking water.

In conclusion, DOGGR defines the exempted Tulare aquifer in the Asphalto oil field as that portion of the saturated zone that lies below the Tulare Air Sand and above Amnicola sand. The upper limit is further defined as a well-defined clay layer below the Tulare Air Sand. No injection will be approved above this clay layer.

DOGGR submits its approval of the above-defined Tulare aquifer exemption in the Asphalto oil field for your review and concurrence. If you have any questions, please feel free to contact Michael Stettner at (916) 323-1781.

Sincerely,

Hal Bopp
State Oil and Gas Supervisor

Enclosure

cc: Randy Adams, Deputy Supervisor, Bakersfield
Burt Ellison, Association Oil and Gas Engineer, Bakersfield
Michael Stettner, UIC Program Manager, Sacramento

OIL, GAS & GEOTHERMAL

DEPARTMENT OF CONSERVATION

DIVISION OF OIL, GAS AND GEOTHERMAL RESOURCES

4800 Stockdale Highway • Suite 417 • BAKERSFIELD, CALIFORNIA 93309

PHONE 661 / 322-4031 • **FAX** 661 / 861-0279 • **WEB SITE** conservation.ca.gov/dog

TO: State of California
Regional Water Quality Control Board
1685 E. Street
Fresno, CA 93706

FROM: **Department of Conservation – Division of Oil, Gas, and Geothermal Resources**
4800 Stockdale Highway, Suite 417
Bakersfield, California 93309

DATE: April 27, 2009

SUBJECT: Notice of Intent to Issue an Underground Injection Control (UIC) Aquifer Exemption, Upper Tulare Zone, Asphalto field, Kern County
Portion of the E/2 E/2 E/2 of Section 21, T30S, R22E, SE/4 and portions of S/2 NE/4, and S/2 NW/4, and SW/4 of Section 22, T30S, R22E, Portion of S/2 of Section 23, T30S, R22E, NW/4 and S/2 of Section 25, T30S, R22E, N/2, SE/4, and portion of NE/4 SW/4 of Section 26, T30S, R22E, Portions of NW/4 and NE/4 of Section 27, T30S, R22E, N/2 NW/4 and E/2 of Section 36, T30S, R22E, N/2 and SW/4 of Section 31, T30S, R23E, NE/4 of Section 1, T31S, R22E, NW/4 of Section 6, T31S, R23E.

Attached is a summary of an application from Occidental of Elk Hills, Inc. for an **Aquifer Exemption** in the **Upper Tulare sands** in the Asphalto field and a **"Notice of Intent to issue an Aquifer Exemption"** in the same zone. If the Aquifer exemption is approved by the U.S. Environmental Protection Agency (USEPA), OEHI plans to inject a maximum of 35,000 b/d of produced waste water into the Upper and Lower Tulare sands. Additional details are as follows:

1) The Upper Tulare zone is **not exempt** and is considered an underground source of drinking water. Prior to injection, an "Aquifer Exemption" must be granted by the U. S. Environmental Protection Agency. Please see the attached "Notice of Intent to issue an Aquifer Exemption" for additional details.

2) A map is attached showing the "Aquifer Exemption" area which includes the entire Asphalto field.

3) A representative injectate and injection zone analysis is attached.

4) If in the future, there is any evidence of fluid migration out of the permitted zone as a result of this project, the operator shall cease injection immediately and commence remedial action.

Additional supportive data are available for your inspection at this office. Please submit in writing any comments you may have on this project or "Aquifer Exemption" to this office within 30 calendar days from the date of this letter.

Sincerely,

Burton R. Ellison

Burton R. Ellison
Associate Oil and Gas Engineer
Division of Oil, Gas, and Geothermal Resources

Cc: West Kern Water District
Kern County Water Agency
State Water Resources Control Board
Kern County Planning Department
Bureau of Land Management
Occidental of Elk Hills, Inc
Donna Thompson, San Joaquin Energy Consultants, Inc.

OIL, GAS & GEOTHERMAL

DEPARTMENT OF CONSERVATION

DIVISION OF OIL, GAS AND GEOTHERMAL RESOURCES

4800 STOCKDALE HIGHWAY • SUITE 417 • BAKERSFIELD, CALIFORNIA 93309

PHONE 661 / 322-4031 • **FAX** 661 / 861-0279 • **WEBSITE** conservation.ca.gov

April 27, 2009

AGENCY NOTICE OF INTENT TO ISSUE AN UNDERGROUND INJECTION CONTROL (UIC) AQUIFER EXEMPTION

Purpose of Notice

The California Division of Oil, Gas, and Geothermal Resources (DOGGR) is soliciting public comments on its proposal to issue a revision to the DOGGR Underground Injection Control Program (UIC) for Class II wells. This revision constitutes a minor aquifer exemption for the Tulare zone in the Asphalto field, Kern County. The proposed aquifer exemption is in conjunction with an existing Class II UIC project in the Lower Tulare zone operated by Occidental of Elk Hills, Inc. (OEHI). With the approval of the requested aquifer exemption, OEHI would expand the existing UIC water disposal project/wells to include the Upper Tulare in the Asphalto field.

The zone that DOGGR is proposing to exempt is an underground source of drinking water (USDW) and described as follows: 1) the Upper Tulare sands that contain ground water testing less than 10,000 mg/l total dissolved solids which occur at this location within the subsurface interval ranging approximately from 580 feet (average depth to ground water) to 780 feet below ground surface (bgs); and 2) The Tulare Air sands that exists above groundwater ; and 3) The proposed "Aquifer Exemption" area includes the entire Asphalto oil field lying within the administrative boundaries and is described as follows:
Portion of the E/2 E/2 E/2 of Section 21, T30S, R22E
SE/4 and portions of S/2 NE/4, and S/2 NW/4, and SW/4 of Section 22, T30S, R22E
Portion of S/2 of Section 23, T30S, R22E
NW/4 and S/2 of Section 25, T30S, R22E
N/2, SE/4, and portion of NE/4 SW/4 of Section 26, T30S, R22E
Portions of NW/4 and NE/4 of Section 27, T30S, R22E
N/2 NW/4 and E/2 of Section 36, T30S, R22E
N/2 and SW/4 of Section 31, T30S, R23E
NE/4 of Section 1, T31S, R22E
NW/4 of Section 6, T31S, R23E.

Background

Based on West Kern Water District's assessment that the Tulare aquifer "does not currently serve as a source of drinking water, and it would not reasonably be expected to supply a public system in the project area", DOGGR has determined the zone meets the criteria for aquifer exemption pursuant to 40 CFR §146.4: The zone does not currently serve as a source of drinking water and will not in the future serve as a source of drinking water because: the total dissolved solids content of the water within the zone is more than 3,000 milligrams per liter (mg/l) and less than 10,000 mg/l and it is not reasonably expected to supply a public water system. Therefore, a preliminary determination has been made to approve the request.

Requests for Additional Information and Public Comments

Requests for further information may be directed to Mr. Burton Ellison, DOGGR ; 4800 Stockdale Hwy., Suite 417; Bakersfield, CA 93309; phone (661) 322-4031. Public comments will be accepted, in writing, at the DOGGR office in Bakersfield, attention to Mr. Burton Ellison; 4800 Stockdale Hwy., Suite 417; Bakersfield, CA 93309. Comments on this zone exemption should be submitted to DOGGR no later than 30 calendar days from publication of this notice. A request for a public hearing must be made in writing and should state the nature of any issues to be proposed for discussion at the hearing. A PUBLIC HEARING WILL BE HELD ONLY IF SIGNIFICANT INTEREST IS SHOWN.

Final Decision and Appeal Process

A final decision to issue, modify, or deny the aquifer exemption will be made after all comments have been reviewed and the request has been submitted to the USEPA Administrator for final determination under 40 CFR 144.7 (b) (3). Notice of the decision will then be sent to each person who has either requested such notice or has submitted written comments.

If issued, the aquifer exemption shall become effective immediately, provided that there were no comments requesting a substantial change to the final decision. If substantial changes were requested or were incorporated into the final aquifer exemption, the final aquifer exemption will become effective thirty (30) days after issuance.

Within thirty (30) days from the date of issuance (before the final aquifer exemption becomes effective), any person who filed comments, participated in a public hearing, or took issue with any changes to the aquifer exemption may petition the EPA Director to review the decision. Persons interested in appealing the final aquifer exemption decision should refer to 40 CFR §§ 124.15 and 124.20 for the appeal process procedural requirements.

OCCIDENTAL OF ELK HILLS, INC.
TULARE AQUIFER EXEMPTION APPLICATION
ASPHALTO FIELD

EXECUTIVE SUMMARY

Occidental of Elk Hills, Inc., (OEHI) is requesting an aquifer exemption for the Tulare Formation within the administrative limits of the Asphalto field. The proposed Tulare aquifer exemption area includes both the Tulare Air Sand and the Tulare Saturated Sands for the purpose of allowing Class II Underground Injection Control (UIC) operations.

This Tulare aquifer exemption is requested on the following grounds:

A) It does not currently serve as a source of drinking water, and

B) It cannot now and will not in the future serve as a source of drinking water because:

1) It is situated at a depth or location which makes recovery of water for drinking water purposes economically or technologically impractical; and

2) It is so contaminated that it would be economical or technologically impractical to render that water fit for human consumption.

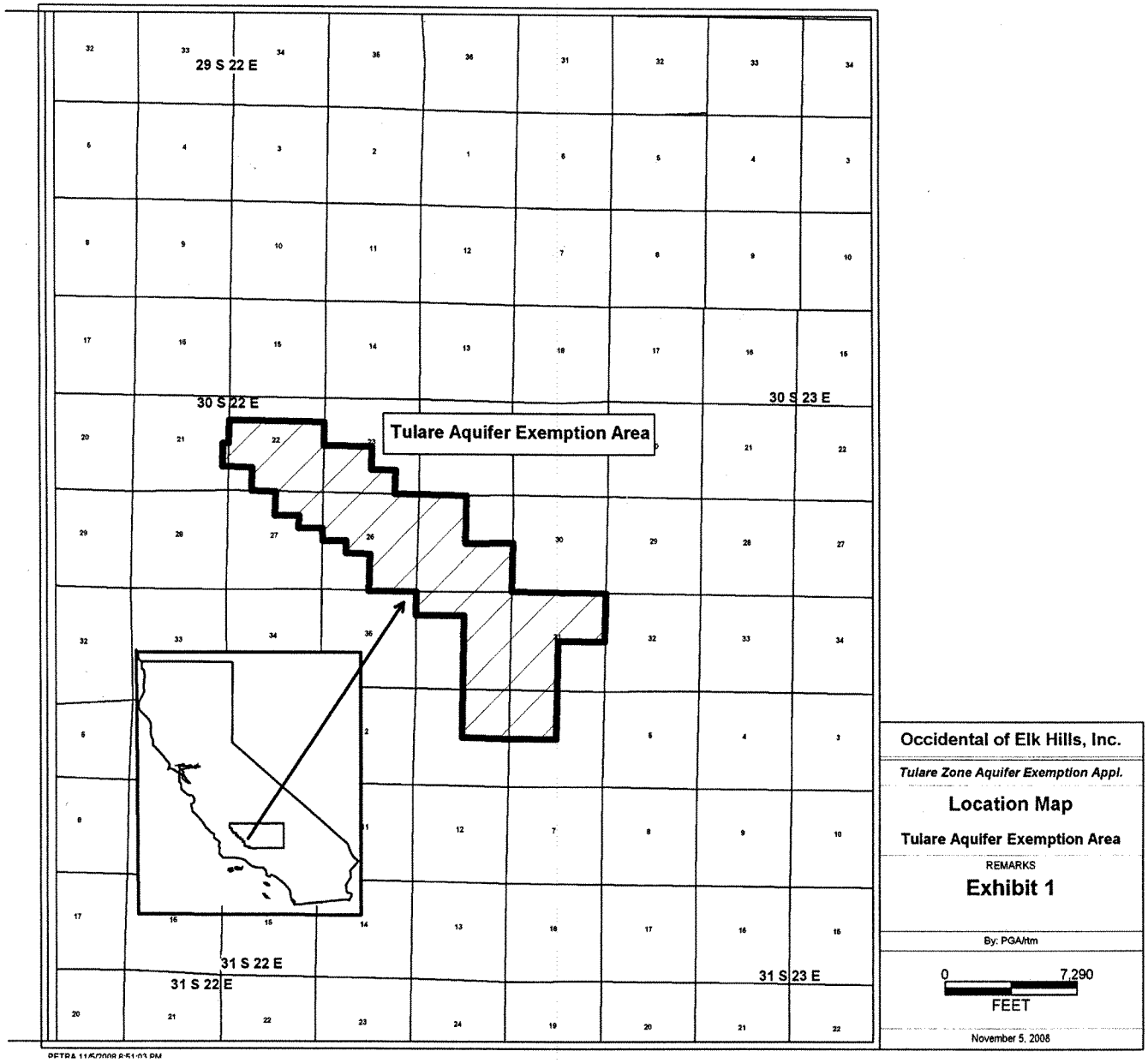
C) The total dissolved solids (TDS) content of the groundwater is more than 3,000 and less than 10,000 milligrams/liter (mg/l) and it is not reasonably expected to supply a public water system.

The following reasons support an aquifer exemption of the Tulare Formation in the project area.

1. The West Kern Water District (WKWD), the local water agency in the McKittrick area, has declared that the Tulare aquifer does not currently serve as a source of drinking water and will not reasonably be expected to supply a public water system.
2. The proposed Tulare aquifer exemption area is completely surrounded by oil fields in which all or part of this formation has been exempted based on commercial oil production and is being used for disposal of naturally saline Class II wastewater.
3. Geologic and hydrogeologic continuity exists in the Tulare Formation between the proposed aquifer exemption area and the surrounding fields in which the Tulare already is an exempted aquifer.
4. There are no known domestic or agricultural water wells in the proposed Tulare aquifer exemption area.
5. Tulare groundwater contains high concentrations of total dissolved solids (TDS), chloride, sulfate, and boron.
6. The designated beneficial uses of groundwater in the project area are municipal (MUN), agricultural (AGR), and industrial (IND). However, the poor groundwater quality of Tulare groundwater renders it unusable for domestic or agricultural usage because it exceeds

California Title 22 secondary drinking water standards for TDS, chloride, and sulfate concentrations as well as recommended guidelines for boron in agricultural use.

7. Numerous Tulare intervals in the Asphalto field contain sub-commercial quantities of petroleum, which adversely affect the potential beneficial uses of this groundwater.
8. Past and current Class II injection operations in the project area have contributed to groundwater degradation in the proposed Tulare aquifer exemption area. Naturally saline produced water disposed in Tulare zones has TDS concentrations in excess of 17,000 mg/l as well as high chloride, sulfate, and boron concentrations.
9. Sumps in the project area are used to percolate highly saline produced water and contribute to degradation of shallow groundwater.
10. The proposed Tulare aquifer exemption area is located in a remote and sparsely populated area of Kern County.
11. Land in the proposed Tulare aquifer exemption area is zoned as agricultural but is not irrigated or farmed. The primary use of land in the project area is related to oilfield operations.
12. Domestic and industrial water in the proposed Tulare aquifer exemption area is supplied by water from the California Aqueduct or the Buena Vista Water Storage District (BVWSD) wellfield near Tupman, located about 15 miles to the east of the project area.
13. According to its 1997 *Groundwater Management Plan*, the WKWD believed that: 1) its water supplies were adequate to meet peak daily demands and future needs; and 2) despite potential shortages in SWP deliveries, it did not need to pursue additional sources of water.
14. An evaluation of the economic feasibility of treating the McKittrick area groundwater for use as drinking water concluded that treating this groundwater would cost 10 to 70 times the current potable water treatment cost. The Environmental Protection Agency (EPA) criteria for designating Tulare groundwater as Class III, defined as groundwater not a source of drinking water, were met because the total annual system cost per area household to treat Tulare groundwater: a) exceeded 0.4% of the median annual household income; b) was more than 100% of the current water rate; and c) was greater than the ninetieth percentile economic untreatability threshold of $379.14.
15. The water needs in the proposed Tulare aquifer exemption area are adequately served by existing and future sources. The remoteness of this area of Kern County and its sparse population also make it unlikely that Tulare water could be economically treated and delivered beyond the 250-square mile area serviced by the WKWD.
16. The Tulare groundwater has low resource value or beneficial uses except for its use in the petroleum industry for Class II UIC injection operations.



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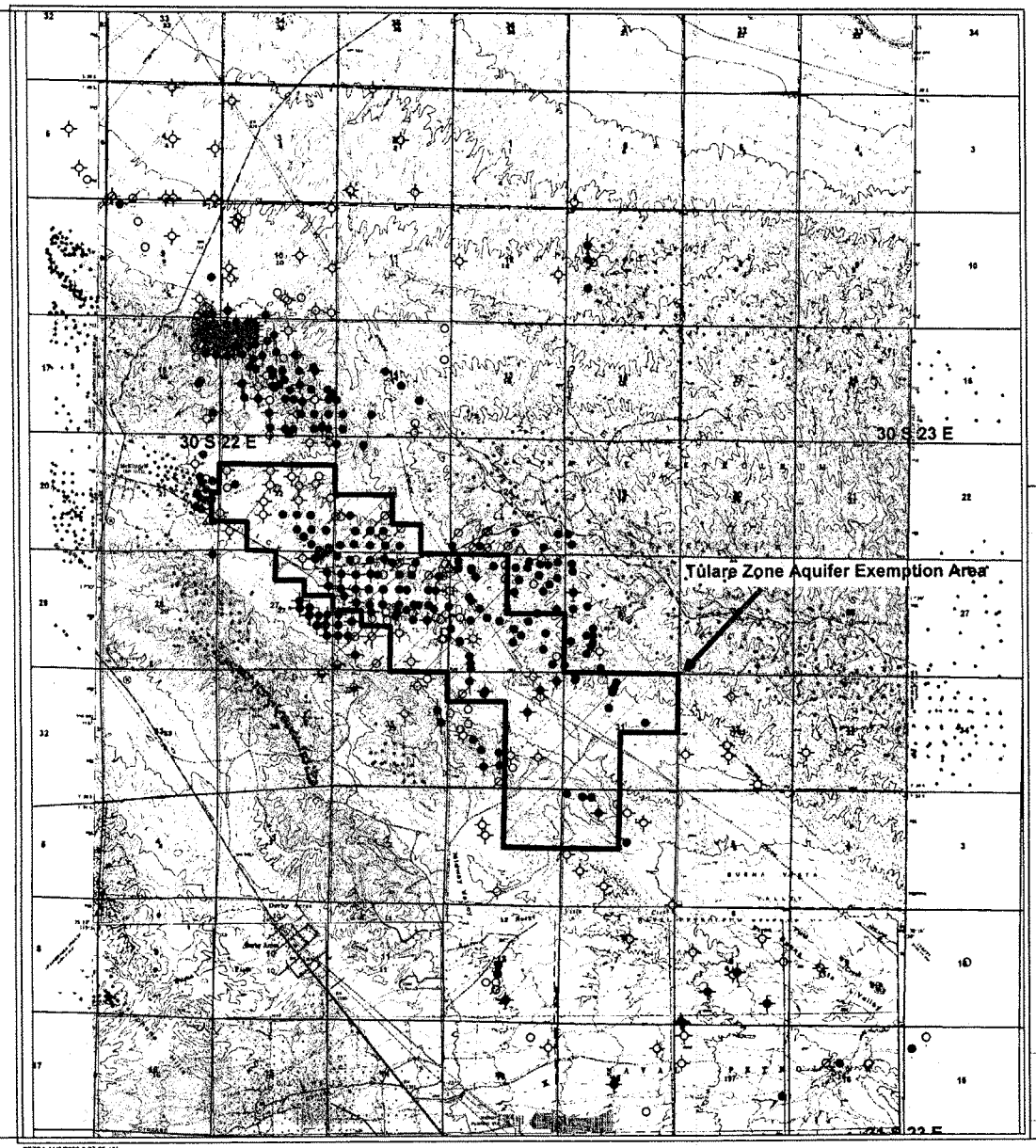


Occidental of Elk Hills, Inc.

Tulare Zone Aquifer Exemption Appl.

Topographic Map

Tulare Aquifer Exemption Area

WELL SYMBOLS

- Location
- Oil Well
- Dry Hole, With Show of Oil
- Suspended Oil Well
- Gas Well
- Plugged and Abandoned
- Dry Hole
- Steam Injector
- Injection Well
- Observation Well
- Service Well
- Abandoned Injector
- Drilled Water-Input Well
- Converted Water-Input Well
- Drilled Gas-Input Well
- Abandoned Water Injector
- Suspended Oil Well
- Abandoned Service

REMARKS

Exhibit 2

By: PGA/rbn

0 4,943 9,886
FEET

November 6, 2008

ED_001000_00010760-00013

ZALCO LABORATORIES, INC.
Analytical and Consulting Service

4309 Armour Avenue
Bakersfield, CA 93308

(661) 395-0539
FAX (661) 395-3069

MAR - 6 2008

Upper Tulare Zone

Occidental of Elk Hills
P O Box 1001
Tupman,CA 93276

Laboratory No: 0802326-001
Date Received: 2/25/2008
Date Reported: 2/29/2008

Attention: Eduardo Morales

Sample Identification: Tulare Formation Water 45 WD - 23Z
Sampled by: Date: 2/25/2008 Time: 11:30
Report Notes:

GEOCHEM ANALYSIS

pH..... 8.4
Electrical Conductivity (EC)..... 7.17
(millimhos/cm @ 25 C)

Specific Gravity @ 60 F.. 1.0030
Resistivity..... 1.4
(ohm meters @ 25 C)

Constituents	mg/L	meq/L	Reacting %
Calcium, Ca	120	6	3.50
Magnesium, Mg	160	13	7.59
Sodium, Na	1300	57	33.29
Potassium, K	500	13	7.59
Iron, Fe	3.2	0.17	0.10
Alkalinity as:			0.00
Hydroxide, OH	0	0	0.00
Carbonate, CO3	21	0.69	0.40
Bicarbonate, HCO3	440	7.3	4.26
Chloride, Cl	1600	45	26.28
Sulfate, SO4	1400	29	16.94
Sulfide, S	< 1.0	0.062	0.04
Totals (Sum)	5300	171	
Boron, B	19		
Total Dissolved Solids, (Gravimetric)	5000		
Calculated Hardness, CaCO3	990		
Total Alkalinity, CaCO3	460		
Sodium Chloride, (total)	4500		

Cation/Anion Balance, %	4.2	Primary Salinity	80.4
Sodium, Na (Calculated), mg/L	1188.88	Secondary Salinity	5.74
Langelier Scale Index	1.78	Total Salinity	86.14
Stiff/Davis Stability Index	1.73		
		Primary Alkalinity	0
		Secondary Alkalinity	16.46
		Total Alkalinity	16.46

Laboratory Authorization

Injection Fluid

ED_001000_00010760-00015

)ccidental of Elk Hills, Inc.
.O. Box 309
upman, CA 93276

Project: Water Samples
Project Number: [none]
Project Manager: Phil Westendorf

Reported: 04/27/2007 15:20

Water Analysis (General Chemistry)

CL Sample ID: 0704362-02 | **Client Sample Name:** 07097 Asphalt 23Z (03200004), 4/13/2007 9:25:00AM, P. Westendorf

Constituent	Result	Units	PQL	MDL	Method	Prep Date	Run Date/Time	Analyst	Instrument ID	Dilution	QC Batch ID	MB Bias	Lab Quals
otal Recoverable Calcium	130	mg/L	1.0		EPA-200.7	04/18/07	04/18/07 16:12	EMC	PE-OP1	10	BQD0945	ND	A01
otal Recoverable Magnesium	58	mg/L	0.50		EPA-200.7	04/18/07	04/18/07 16:12	EMC	PE-OP1	10	BQD0945	ND	A01
otal Recoverable Sodium	5900	mg/L	5.0		EPA-200.7	04/18/07	04/19/07 11:55	EMC	PE-OP1	10	BQD0945	ND	A01
otal Recoverable Potassium	80	mg/L	10		EPA-200.7	04/18/07	04/18/07 16:12	EMC	PE-OP1	10	BQD0945	ND	A01
otal Alkalinity as CaCO3	2500	mg/L	40		EPA-310.1	04/17/07	04/17/07 14:35	MAR	BDB	16	BQD0994	ND	A01
hloride	9000	mg/L	25		EPA-300.0	04/22/07	04/23/07 07:48	LMB	IC2	50	BQD1135	ND	A01
ulfate	ND	mg/L	50		EPA-300.0	04/22/07	04/23/07 07:48	LMB	IC2	50	BQD1135	ND	A01
lardness as CaCO3	570	mg/L	5.0		Calc	04/17/07	04/24/07 15:37	TMS	Calc	1	BQD0835	ND	
esistivity	0.41	Ohmmeter	0.010		Calc	04/17/07	04/24/07 15:37	TMS	Calc	1	BQD0835	ND	
H	7.26	pH Units	0.05		EPA-150.1	04/16/07	04/16/07 11:45	JSM	B360	1	BQD0896		
lectrical Conductivity @ 25 C	24100	umhos/cm	1.00		EPA-120.1	04/16/07	04/16/07 12:35	JSM	CND-3	1	BQD0899		
otal Dissolved Solids @ 180 C	17000	mg/L	1000		EPA-160.1	04/17/07	04/17/07 15:00	VEL	MANUAL	100	BQD1458	ND	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

)ccidental of Elk Hills, Inc.
?.O. Box 309
'upman, CA 93276

Project: Water Samples
Project Number: [none]
Project Manager: Phil Westendorf

Reported: 04/27/2007 15:20

Water Analysis (Metals)

3CL Sample ID: 0704362-02 | **Client Sample Name:** 07097 Asphalt 23Z (03200004), 4/13/2007 9:25:00AM, P. Westendorf

Constituent	Result	Units	PQL	MDL	Method	Prep Date	Run Date/Time	Analyst	Instrument ID	Dilution	QC Batch ID	MB Bias	Lab Quals
'otal Recoverable Boron	69000	ug/L	1000		EPA-200.7	04/18/07	04/18/07 16:12	EMC	PE-OP1	10	BQD0945	ND	A01
'otal Recoverable Iron	830	ug/L	500		EPA-200.7	04/18/07	04/18/07 16:12	EMC	PE-OP1	10	BQD0945	ND	A01

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

ED_001000_00010760-00016

OIL, GAS & GEOTHERMAL

DEPARTMENT OF CONSERVATION

DIVISION OF OIL, GAS AND GEOTHERMAL RESOURCES

4800 STOCKDALE HIGHWAY • SUITE 417 • BAKERSFIELD, CALIFORNIA 93309

PHONE 661 / 322-4031 • **FAX** 661 / 861-0279 • **WEBSITE** conservation.ca.gov

June 9, 2009

Shelton R. Gray
California Regional Water Quality Control Board
1685 E Street
Fresno, CA 93706

Re: Response to Comments – Application from Occidental of Elk Hills, Inc. (OEHI) for an Aquifer Exemption, Asphalto Oil Field, Kern County

Dear Mr. Gray:

Thank you for submitting comments regarding the above referenced application for an Aquifer Exemption in the Upper Tulare zone in the Asphalto Oil Field. The Division of Oil, Gas, and Geothermal Resources (DOGGR) appreciates the time staff has taken to analyze the application and to prepare such well thought out comments. The concerns submitted by the Central Valley Regional Water Quality Control Board (Central Valley Water Board) are shared by DOGGR. The following responses to the submitted comments will show that DOGGR's Underground Injection Control (UIC) program for Class II injection wells will, at the project level, satisfy each concern.

Response to Comments

RWQCB Comment 1) The DOGGR is requesting an aquifer exemption extending to the surface which would include the unsaturated Upper Tulare Formation and overlying dry alluvium to the surface. Based on the definition of "aquifer" in 40CFR Section 146.3, Central Valley Water Board staff is concerned that an "aquifer" exemption for the unsaturated is inappropriate portion of the Tulare Formation in the Asphalto Oil Field.

DOGGR Response to Comment 1)
According to the definition of an aquifer in 40CFR Section 146.3, an aquifer must be capable of yielding a significant amount of water to a well or spring. Since the unsaturated Upper Tulare formation is not capable of yielding a significant amount of water, it can not be classified as an aquifer. DOGGR is also concerned that an aquifer exemption may not be required or appropriate for the unsaturated Tulare formation. The applicant included the unsaturated portion of the Tulare in anticipation of future project expansion to allow injection into the unsaturated Tulare. OEHI's current water disposal project is approved for the saturated portions of the Tulare zone and does not include the unsaturated Tulare. Injection into the unsaturated Tulare would require project expansion approval following the Division's UIC project approval process as well as a zone exemption granted by the U.S. Environmental Protection Agency (USEPA).

RWQCB Comment 2) Three operators in the Asphalto Oil Field have waste discharge requirements regulating discharge of oilfield production waste water to unlined surface impoundments at a combined rate of about 3,000 barrels per day. OEHI has proposed to inject a maximum of 35,000 barrels per day of waste water into the Upper and Lower Tulare Formation. Approval of an aquifer exemption to the surface and subsequent approval of injection wells in the unsaturated upper Tulare would open the entire Tulare Formation and overlying alluvium to the surface in the Asphalto Oil Field to potential waste water disposal.

DOGGR Response to Comment 2)
Any future UIC project approval by DOGGR for unsaturated Tulare zone injection would require the presence of a competent and continuous capping clay to prevent surface breakout. Injection would be below the capping clay and never be allowed to extend to the surface.

RWQCB Comment 3) A hydrogeologic investigation report received by Central Valley Water Board staff in 2003 identified a laterally extensive confining zone in the unsaturated upper Tulare Formation. As shown on the attached cross-section (Figure 2-3), the confining zone is at a depth ranging from about 300 to 365 feet bgs in well 33X and the confining zone extends two miles southeast to a depth of about 365 to 430 feet bgs in the La Paloma #2 well. The well locations are shown on the attached cross-section index map (Figure 2-2). The confining zone is also identified in the *Confining Zone Investigation* report prepared for La Paloma Generating Company LLC by Kennedy/Jenks Consultants in 2002.

During a telephone conversation with DOGGR staff on 4 May 2009, it was stated that after approval of the aquifer exemption by the USEPA, OEHI may request the CDOGGR to authorize wastewater injection in the unsaturated interval of the Upper Tulare Formation. Future injection disposal projects proposed for the unsaturated Tulare Formation need to be restricted by DOGGR to Tulare Formation sands below the confining zone identified in the previous paragraph and depicted on the attached cross-section.

DOGGR Response to Comment 3)
DOGGR agrees with the Central Valley Water Board that unsaturated Tulare zone injection needs to be restricted to the Tulare below a confining layer. It is current DOGGR policy to require a confining layer for all injection projects. The confining clay identified at a depth ranging from 300 to 365 feet bgs in well 33X represents the best uppermost confining layer and DOGGR will limit future injection of waste water into the Tulare below this clay layer.

RWQCB Comment 4) Not withstanding the fact that OEHI currently has injection wells constructed in the saturated Upper Tulare, it is more appropriate to confine injection projects in the Tulare Formation below the Amnicola Shale and in deeper formations, where injection is currently permitted.

DOGGR Response to Comment 4)
In general, deeper injection is best. However, injection projects with a larger injection interval result in larger storage capacity and therefore lower injection pressures. The inclusion of the Tulare above the Amnicola Shale will result in higher injection rates and volumes needed to satisfy the increasing waste water disposal needs associated with increased oil and gas production in the project area. Injection into the Tulare above the Amnicola Shale is environmentally advantageous to existing alternative disposal methods.

RWQCB Comment 5) Groundwater in the Tulare Formation in Asphalto Oil Field has beneficial uses designated in the *Water Quality Control Plan for the Tulare Lake Basin – Second Edition, 2004* (Basin Plan). These beneficial uses include municipal and domestic supply (MUN), agricultural supply (AGR) and industrial service supply (IND). However, the poor quality groundwater meets the Basin Plan exception criteria. In part, two of the four exception criteria are: (a) the TDS must exceed 3,000 mg/L (5,000 micromhos per centimeter for EC) and the aquifer cannot be reasonably expected to supply a public water system, and that (b) the aquifer has been exempted administratively pursuant to 40CFR, Section 146.4 for the purpose of underground injection of fluids associated with the production of hydrocarbons or geothermal energy. Only one of the four criteria needs to be met.

DOGGR Response to Comment 5)
Based on the detailed information in the *Tulare Aquifer Exemption Application, Asphalto Field* submitted by OEHI, and on West Kern Water District's assessment that the Tulare aquifer "does not currently serve as a source of drinking water, and it would not reasonably be expected to supply a public system in the project area", **DOGGR** concurs that the zone meets the criteria for aquifer exemption pursuant to 40 CFR §146.4: The zone does not currently serve as a source of drinking water and will not in the future serve as a source of drinking water because: the total dissolved solids content of the water within the zone is more than 3,000 milligrams per liter (mg/l) and less than 10,000 mg/l and it is not reasonably expected to supply a public water system. Similarly, DOGGR concurs with the Central Valley Water Board that the Tulare zone qualifies for a beneficial use exemption. Final determination that the Tulare Aquifer qualifies for a zone exemption is the responsibility of the USEPA.

RWQCB Comment 6) Central Valley Water Board staff concurs with DOGGR and WKWD findings that the saturated interval of the Tulare Formation does not currently serve as a source of drinking water and most likely would not in the future. The TDS concentration within the saturated interval is greater than 3,000 mg/L and it is not reasonably expected to supply a public water system due to the costly treatment needed to produce drinking water that would meet current regulatory criteria.

DOGGR Response to Comment 6)
See response to comment 5

In conclusion, DOGGR, WKWD, and the Central Valley Water Board concur with the findings of OEHI that the Tulare zone in the Asphalto Field qualifies for a zone exemption. Furthermore, DOGGR agrees with Central Valley Water Board that injection into the unsaturated Tulare Zone should be restricted to zones below a confining clay. Barring any unresolved concerns from the Central Valley Water Board, the next step in the process is for DOGGR to forward a formal Aquifer Exemption request to the USEPA.

Once again, DOGGR appreciates Central Valley Water Board's comments. If you should have any question, please contact Burton Ellison at bellison@consrv.ca.gov or (661) 334-3674.

Sincerely,

Randy Adams

Randy Adams
District Supervisor

Cc: George Robin, USEPA
Alan E. White, OEHI
Michael Stettner, DOGGR HQ
Donna Thompson, consultant for OEHI

Linda S. Adams
Secretary for Environmental Protection

California Regional Water Quality Control Board
Central Valley Region
Karl E. Longley, ScD, P.E., Chair

1685 E Street, Fresno, California 93706
(559) 445-5116 • Fax (559) 445-5910
http://www.waterboards.ca.gov/centralvalley

Arnold Schwarzenegger
Governor

26 May 2009

Burton R. Ellison
California Division of Oil, Gas, and Geothermal Resources
4800 Stockdale Highway, Suite 417
Bakersfield, CA 93309

COMMENTS – APPLICATION FROM OCCIDENTAL OF ELK HILLS, INCORPORATED FOR AN AQUIFER EXEMPTION, ASPHALTO OIL FIELD, KERN COUNTY

The CDOGGR issued a Notice of Intent to Issue an Aquifer Exemption (NOI) dated 27 April 2009 requesting comments from the Central Valley Regional Water Quality Control Board (Central Valley Water Board) staff concerning a proposed aquifer exemption request in the Asphalto Oil Field in Kern County. Attached was a summary of an application from Occidental of Elk Hills, Incorporated (OEHI), requesting an Aquifer Exemption for the Upper Tulare Sands within the administrative boundary of Asphalto Oil Field. OEHI requested the aquifer exemption to allow Class II injection operations since the Upper Tulare zone is not exempt. Based on water quality, the United Stated Environmental Protection Agency (USEPA) considers groundwater in the Upper Tulare Formation in Asphalto Oil Field an underground source of drinking water. The project is a proposal to revise the CDOGGR Underground Injection Control Program for Class II wells in Asphalto Oil Field.

The revision would exempt the aquifer designation by the USEPA for the Upper Tulare Formation sands that contain groundwater with less than 10,000 and greater than 3,000 milligrams per liter (mg/L) total dissolved solids (TDS) within the depth interval ranging from approximately 580 to 780 feet below ground surface (bgs); and, the Tulare air sands that exist above groundwater to the surface within the entire Asphalto Oil Field. The CDOGGR has determined the Upper Tulare Formation within the designated area meets the criteria for an aquifer exemption pursuant to 40 Code of Federal Regulations (40CFR) Section 146.4. If the exemption is approved by the USEPA, then OEHI proposes to inject a maximum of 35,000 barrels per day of oilfield production wastewater into the Upper and Lower Tulare Formation.

In Asphalto Oil Field, the Upper Tulare Formation extends vertically from the Amnicola Shale to an indistinguishable thin veneer of alluvium near the surface. Only the lower part of the Upper Tulare Formation is saturated. Maps and cross-sections prepared by OEHI indicate the saturated Upper Tulare Formation ranges from depths of 480 to 850 feet bgs.

OEHI is currently permitted by the CDOGGR to inject wastewater into three Class II disposal wells completed in the Lower Tulare Formation below the Amnicola Shale. The wastewater has TDS, chloride, and boron concentrations of 17,000, 9,000, and 69 mg/L, respectively. OEHI has four additional inactive Class II disposal wells completed in both the Lower Tulare Formation and the saturated interval of the Upper Tulare Formation. Injection disposal in these wells is not allowed unless the aquifer exemption request is approved by the USEPA.

A sample was collected from one of these wells in the saturated Upper Tulare Formation at a depth of 730 feet bgs. The laboratory reported the TDS, chloride, and boron concentrations were 5,000, 1,600, and 19 mg/L, respectively.

The CDOGGR has determined that the proposed aquifer exemption zone does not currently serve as a source of drinking water and will not in the future, since the TDS concentration within the zone is more than 3,000 mg/L, and it is not reasonably expected to supply a public water system. The West Kern Water District (WKWD) has determined that the Tulare aquifer in the project area does not serve as a source of drinking water and is not reasonably expected to supply a public system. Potable water in the area is provided by WKWD.

Staff Comments

1) The CDOGGR is requesting an aquifer exemption extending to the surface which would include the unsaturated Upper Tulare Formation and overlying dry alluvium to the surface. Based on the definition of "aquifer" in 40CFR Section 146.3, Central Valley Water Board staff is concerned that an "aquifer" exemption is inappropriate for the unsaturated portion of the Tulare Formation in the Asphalto Oil Field.

2) Three operators in the Asphalto Oil Field have waste discharge requirements regulating the discharge of oilfield production wastewater to unlined surface impoundments at a combined rate of about 3,000 barrels per day. OEHI has proposed to inject a maximum of 35,000 barrels per day of wastewater into the Upper and Lower Tulare Formation. Approval of an aquifer exemption to the surface and subsequent approval of injection wells in the unsaturated upper Tulare would open the entire Tulare Formation and overlying alluvium to the surface in the Asphalto Oil Field to potential wastewater disposal.

3) A hydrogeologic investigation report received by Central Valley Water Board staff in 2003 identified a laterally extensive confining zone in the unsaturated upper Tulare Formation. As shown on the attached cross-section (Figure 2-3), the confining zone is at a depth ranging from about 300 to 365 feet bgs in well 33X and the confining zone extends two miles southeast to a depth of about 365 to 430 feet bgs in the La Paloma #2 well. The well locations are shown on the attached cross-section index map (Figure 2-2). The confining zone is also identified in the *Confining Zone Investigation* report prepared for La Paloma Generating Company LLC by Kennedy/Jenks Consultants in 2002.

   During a telephone conversation with CDOGGR staff on 4 May 2009, it was stated that after approval of the aquifer exemption by the USEPA, OEHI may request the CDOGGR to authorize wastewater injection in the unsaturated interval of the Upper Tulare Formation. Future injection disposal projects proposed for the unsaturated Tulare Formation need to be restricted by the CDOGGR to Tulare Formation sands below the confining zone identified in the previous paragraph and depicted on the attached cross-section.

4) Not withstanding the fact the OEHI currently has injection wells constructed in the saturated Upper Tulare, it is more appropriate to confine injection projects in the Tulare Formation below the Amnicola Shale and in deeper formations, where injection is currently permitted.

5) Groundwater in the Tulare Formation in Asphalto Oil Field has beneficial uses designated in the *Water Quality Control Plan for the Tulare Lake Basin – Second Edition, 2004* (Basin Plan). These beneficial uses include municipal and domestic supply (MUN), agricultural supply (AGR) and industrial service supply (IND). However, the poor quality groundwater meets the Basin Plan exception criteria. In part, two of the four exception criteria are: (a) the TDS must exceed 3,000 mg/L (5,000 micromhos per centimeter for EC) and the aquifer cannot be reasonably expected to supply a public water system, and that (b) the aquifer has been exempted administratively pursuant to 40CFR, Section 146.4 for the purpose of underground injection of fluids associated with the production of hydrocarbons or geothermal energy. Only one of the four criteria needs to be met.

6) Central Valley Water Board staff concurs with CDOGGR and WKWD findings that the saturated interval of the Tulare Formation does not currently serve as a source of drinking water and most likely would not in the future. The TDS concentration within the saturated interval is greater than 3,000 mg/L and it is not reasonably expected to supply a public water system due to the costly treatment needed to produce drinking water that would meet current regulatory criteria.

If you have any questions, please contact Douglas Wachtell at dwachtell@waterboards.ca.gov or (559) 445-5114.

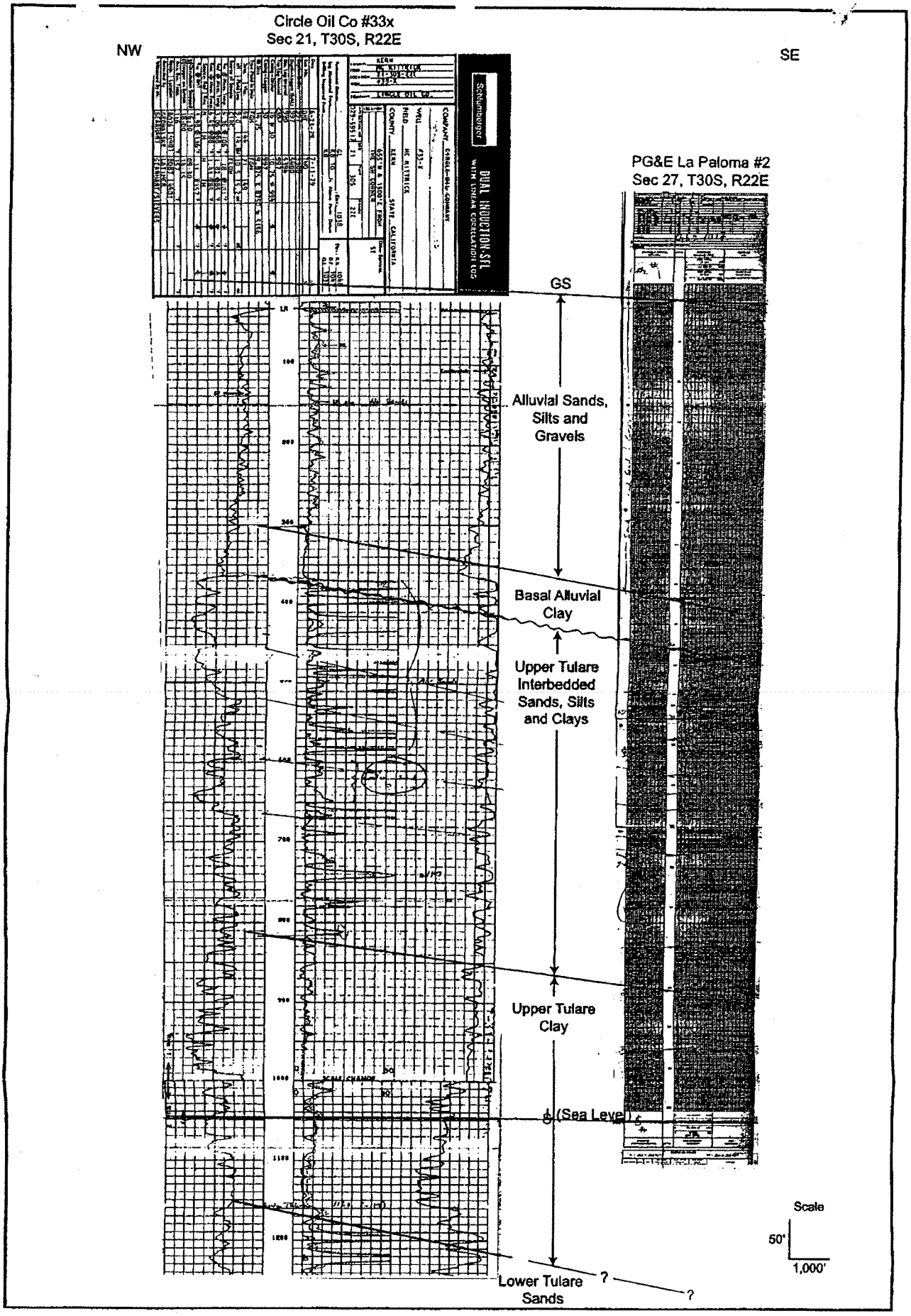
Shelton R. Gray

SHELTON R. GRAY
Senior Engineering Geologist

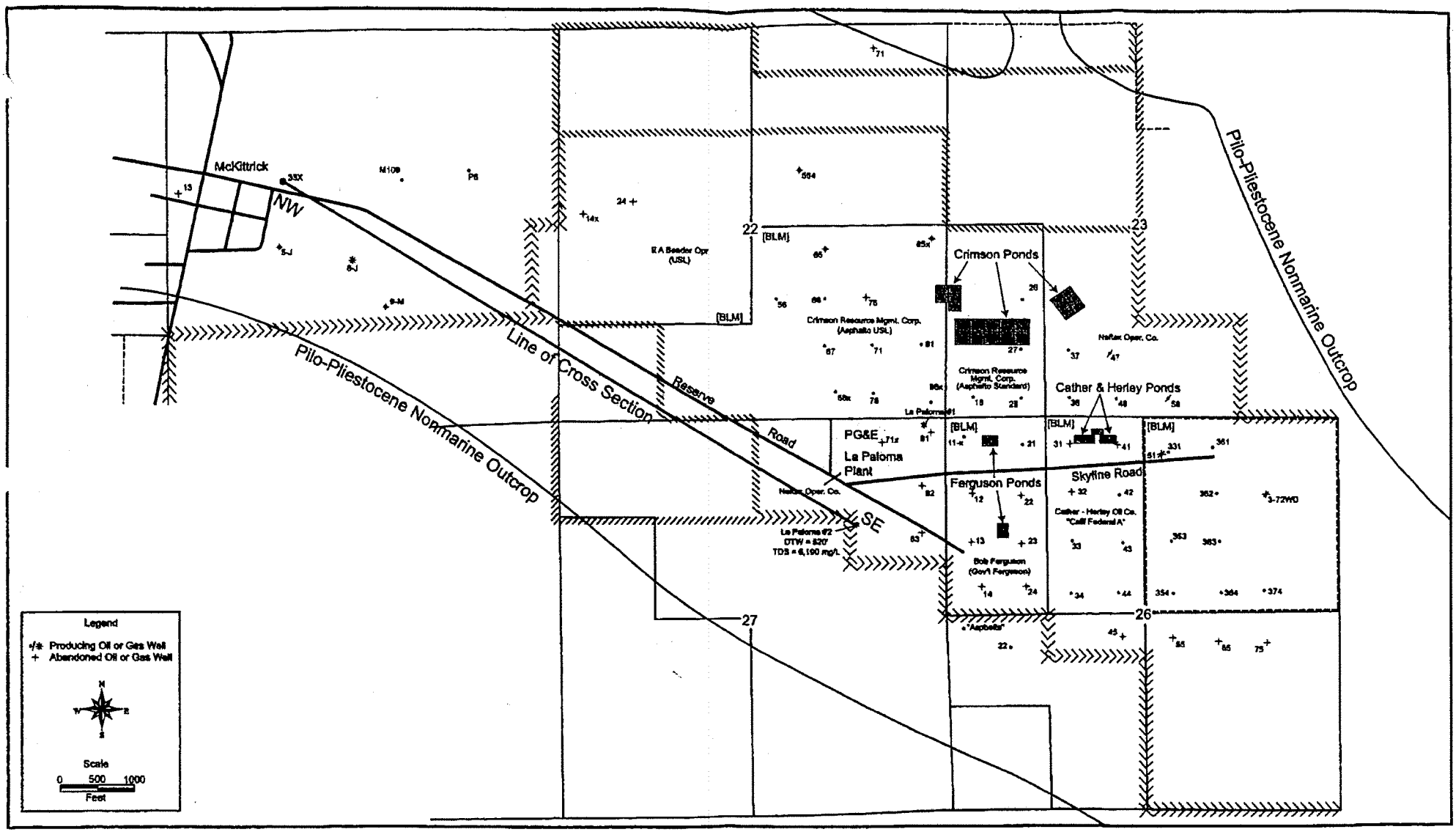
Douglas L. Wachtell

DOUGLAS L. WACHTELL
Engineering Geologist
PG No. 6689

Attachments



Generation Date: 11/21/03	Figure 2-3. McKittrick Valley hydrogeologic cross-section.	Geomega



Generation Date: 11/21/03

Figure 2-2. Cross section index map.

Geomega

California Regional Water Quality Control Board
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Karl E. Longley, ScD, PE, Chair

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FAX COVER SHEET

To: Burton R. Ellison

From: Doug Wachtell

Re: Comments concerning Asphalto Aquifer Exemption Request

Pages including cover: 6

☑ Urgent ☑ For Review ☐ Please Comment ☑ Please Reply ☐ Please Recycle

Comments:

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4800 STOCKDALE HWY 417
BAKERSFIELD, CA 93309

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MAR 11 2009
DIVISION OF OIL & GAS
BAKERSFIELD

--

STATE OF CALIFORNIA
COUNTY OF KERN

I AM A CITIZEN OF THE UNITED STATES AND A RESIDENT OF THE COUNTY AFORESAID: I AM OVER THE AGE OF EIGHTEEN YEARS, AND NOT A PARTY TO OR INTERESTED IN THE ABOVE ENTITLED MATTER. I AM THE ASSISTANT PRINCIPAL CLERK OF THE PRINTER OF THE BAKERSFIELD CALIFORNIAN, A NEWSPAPER OF GENERAL CIRCULATION, PRINTED AND PUBLISHED DAILY IN THE CITY OF BAKERSFIELD COUNTY OF KERN,

AND WHICH NEWSPAPER HAS BEEN ADJUDGED A NEWSPAPER OF GENERAL CIRCULATION BY THE SUPERIOR COURT OF THE COUNTY OF KERN, STATE OF CALIFORNIA, UNDER DATE OF FEBRUARY 5, 1952, CASE NUMBER 57610; THAT THE NOTICE, OF WHICH THE ANNEXED IS A PRINTED COPY, HAS BEEN PUBLISHED IN EACH REGULAR AND ENTIRE ISSUE OF SAID NEWSPAPER
AND NOT IN ANY SUPPLEMENT THEREOF ON THE FOLLOWING DATES, TO WIT: 3/1/09
3/2/09
3/3/09

ALL IN YEAR 2009

I CERTIFY (OR DECLARE) UNDER PENALTY OF PERJURY THAT THE FOREGOING IS TRUE AND CORRECT.

Cathy Wynne

DATED AT BAKERSFIELD CALIFORNIA

3-3-09

Solicitor I.D.: 0

First Text
LEGAL NOTICEThe State Oil and Gas Superv

Ad Number 11222558

LEGAL NOTICE
The State Oil and Gas Supervisor received an application from Occidental of Elk Hills, Inc. (OEHI) for an "Aquifer Exemption" in the Tulare zone in the Asphalto field, Kern County. The proposed "Aquifer Exemption" area includes the entire Asphalto oil field lying within the administrative boundaries and is described as follows:
Portion of the E/2 E/2 E/2 of Section 21, T30S, R22E
SE/4 and portions of S/2 NE/4, and S/2 NW/4, and SW/4 of Section 22, T30S, R22E
Portion of S/2 of Section 23, T30S, R22E
NW/4 and S/2 of Section 25, T30S, R22E
N/2, SE/4, and portion of NE/4 SW/4 of Section 26, T30S, R22E
Portions of NW/4 and NE/4 of Section 27, T30S, R22E
N/2 NW/4 and E/2 of Section 36, T30S, R22E
N/2 and SW/4 of Section 31, T30S, R23E
NE/4 of Section 1, T31S, R22E
NW/4 of Section 6, T31S, R23E
By U.S. Environmental Protection Agency definition, the Upper Tulare zone in this area is considered an underground source of drinking water (USDW). Before injection can occur in this part of the Tulare zone, an "Aquifer Exemption" must be obtained from the U.S. Environmental Protection Agency. The purpose of this notice is to solicit public comments on the proposed aquifer exemption in the Tulare zone. Interested parties can obtain a description of the proposed aquifer exemption and, and the administrative process the Supervisor must follow to analyze OEHI's application. Contact Burton Ellison at the Division of Oil, Gas, and Geothermal Resources, 4800 Stockdale Hwy., Suite 417, Bakersfield, CA. 93309, ph# (661) 322-4031. Comments on this project should be submitted to this office no later than 30 calendar days from publication of this notice.
March 1, 2, 3, 2009 (11222558)

Ad ID 11222558 Date 02/27/2009 Time 11:10 AM

LEGAL NOTICE

The State Oil and Gas Supervisor received an application from Occidental of Elk Hills, Inc. (OEHI) for an "Aquifer Exemption" in the Tulare zone in the Asphalto field, Kern County. The proposed "Aquifer Exemption" area includes the entire Asphalto oil field lying within the administrative boundaries and is described as follows:

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Portion of S/2 of Section 23, T30S, R22E
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Portions of NW/4 and NE/4 of Section 27, T30S, R22E
N/2 NW/4 and E/2 of Section 36, T30S, R22E
N/2 and SW/4 of Section 31, T30S, R23E
NE/4 of Section 1, T31S, R22E
NW/4 of Section 6, T31S, R23E

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March 1, 2, 3, 2009 (11222558)

2009 FEB 27 AM 11:01

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DEPARTMENT OF CONSERVATION

DIVISION OF OIL, GAS AND GEOTHERMAL RESOURCES

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PHONE 661 / 322-4031 • **FAX** 661 / 861-0279 • **WEBSITE** conservation.ca.gov

February 26, 2009

ACCOUNT ON FILE

Legal Notice

(Must run for three consecutive days and include a Sunday)

The State Oil and Gas Supervisor received an application from Occidental of Elk Hills, Inc. (OEHI) for an "Aquifer Exemption" in the Tulare zone in the Asphalto field, Kern County. The proposed "Aquifer Exemption" area includes the entire Asphalto oil field lying within the administrative boundaries and is described as follows:
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NE/4 of Section 1, T31S, R22E
NW/4 of Section 6, T31S, R23E
By U.S. Environmental Protection Agency definition, the Upper Tulare zone in this area is considered an underground source of drinking water (USDW). Before injection can occur in this part of the Tulare zone, an "Aquifer Exemption" must be obtained from the U.S. Environmental Protection Agency. The purpose of this notice is to solicit public comments on the proposed aquifer exemption and application in the Tulare zone. Interested parties can obtain a description of the proposed aquifer exemption and, and the administrative process the Supervisor must follow to analyze OEHI's application. Contact Burton Ellison at the Division of Oil, Gas, and Geothermal Resources, 4800 Stockdale Hwy., Suite 417, Bakersfield, CA. 93309, ph# (661) 322-4031. Comments on this project should be submitted to this office no later than 30 calendar days from publication of this notice.

F:\UIC\LEGAL NOTICE

DEPARTMENT OF CONSERVATION

DIVISION OF OIL, GAS AND GEOTHERMAL RESOURCES

4800 STOCKDALE HIGHWAY • SUITE 417 • BAKERSFIELD, CALIFORNIA 93309

PHONE 661 / 322-4031 • **FAX** 661 / 861-0279 • **WEBSITE** conservation.ca.gov

February 26, 2009

ACCOUNT ON FILE

Legal Notice

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F:\UIC\LEGAL NOTICE

FAX

To: Burt Ellison
Company:
Fax: 8610279
Phone:

From:
Fax:
Phone: 7304
E-mail: cwynne@bakersfield.com

NOTES:

Hi, Burt;
The cost to run this notice on Mar. 1, 2, and 3 is $389.64. Thank you.

2009 FEB 27 AM 11:07

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Assistant General Manager
Operations Manager

E. Dawn Cole
Assistant General Manager
Human Resources Director

Sanjay "Sunny" Kapoor
Director of Finance

September 29, 2008

Mr. David Mitchell, Senior Oil and Gas Engineer
Division of Oil, Gas and Geothermal Resources
4800 Stockdale Highway, Suite 417
Bakersfield, CA 93309

RE: Occidental of Elk Hills, Inc. Request to Allow Class II UIC Injection Operations Within West Kern Water District Service Area

Dear Mr. Mitchell,

On July 8, 2008 San Joaquin Energy Consultants (SJEC) on behalf of Occidental of Elk Hills, Inc., (OEHI) contacted West Kern Water District (WKWD), stating they were in the process of preparing an application for an aquifer exemption for the Tulare Formation in the Asphalto field, Railroad Gap field, and selected areas of Kern County to allow Class II UIC Injection Operations, within the WKWD service area.

SJEC requested WKWD provide the Division of Oil, Gas and Geothermal Resources a letter stating the Tulare aquifer does not currently serve as a source of drinking water, and it would not reasonably be expected to supply a public water system within the project area.

WKWD Staff and the District's consulting hydrogeologist have reviewed water quality data and various reports provided by SJEC within the project area and concluded the Tulare aquifer does not currently serve as a source of drinking water, and it would not reasonably be expected to supply a public water system in the project area. WKWD has the authority to serve water to municipalities within this project area but does not own or lease any land that would provide the opportunity for such water wells to be constructed, nor are there such activities planned by WKWD.

At the regular Board meeting of September 23, 2008 the West Kern Water District Board of Directors authorized Staff to issue a letter to the Division of Oil, Gas and Geothermal Resources stating the Tulare aquifer does not currently serve as a source of drinking water, and it would not reasonably be expected to supply a public water system in the project area.

West Kern Water District · 800 Kern St., P. O. Box 1105 · Taft, California 93268-1105 · 661 763-3151 · FAX 661 765-4271

Should you require further correspondence regarding this subject please contact JD Bramlet, Assistant General Manager/Operations Manager at (661) 763-3151.

Best Regards,

Jerry W. Pearson
General Manager

Enclosure

cc: Mr. David Albright, Manager
U. S. Environmental Protection Agency, Region IX

Mr. Shelton R. Gray, Senior Engineering Geologist
California Regional Water Quality Control Board

Ms. Tam M. Doduc, Chair
State Water Resources Control Board

Mr. Stan Stearns
Occidental of Elk Hills, Inc.

Ms. Donna M. Thompson
San Joaquin Energy Consultants, Inc.

West Kern Water District file

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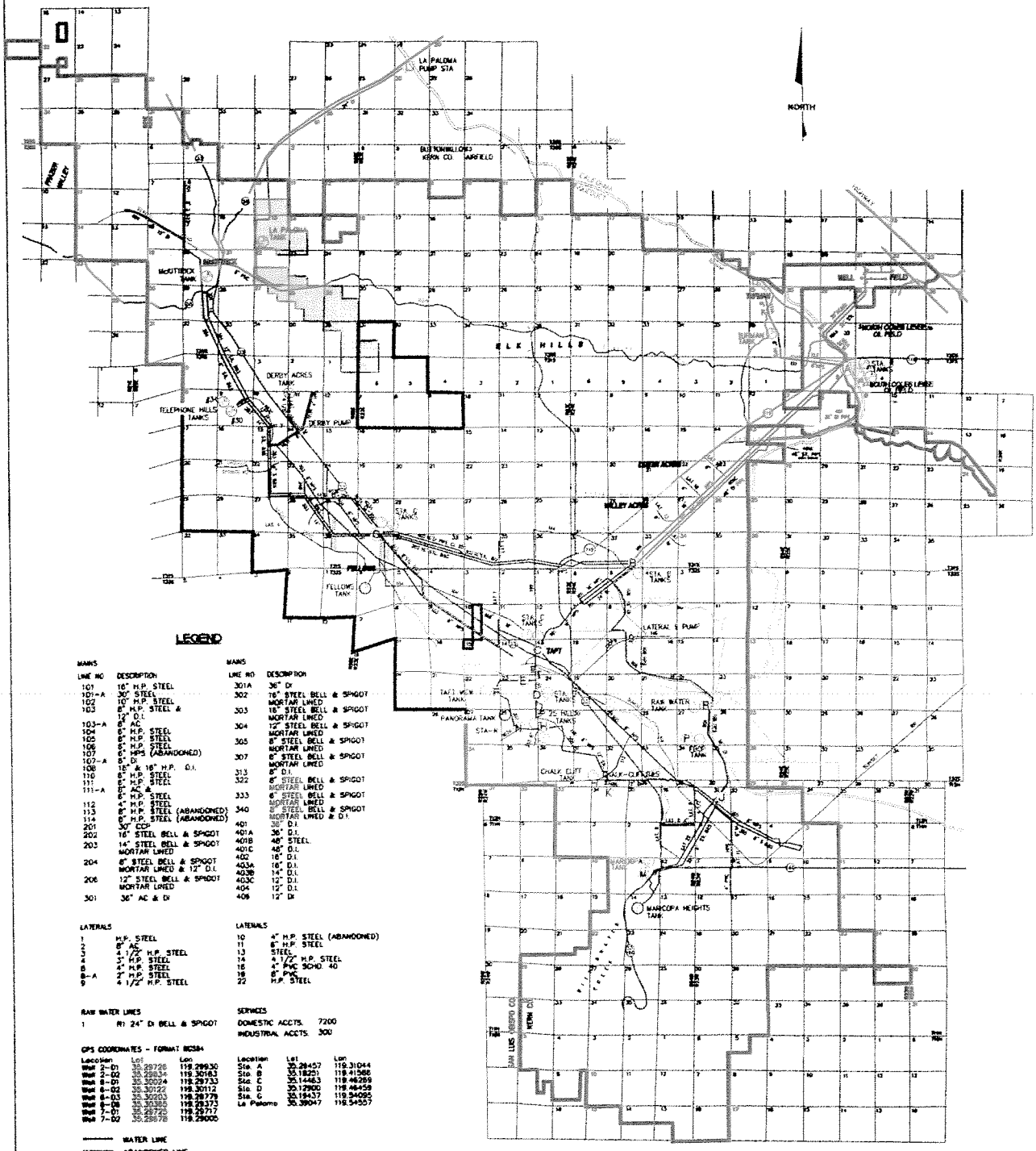

LEGEND

MAINS

LINE NO	DESCRIPTION
101	16" H.P. STEEL
101-A	30" STEEL
102	10" H.P. STEEL
103	8" H.P. STEEL & 12" D.I.
103-A	8" AC
104	6" H.P. STEEL
105	6" H.P. STEEL
106	6" H.P. STEEL
107	6" HPS (ABANDONED)
107-A	6" DI
108	18" & 16" H.P. D.I.
110	8" H.P. STEEL
111	6" H.P. STEEL
111-A	6" AC &
112	6" H.P. STEEL
113	4" H.P. STEEL
114	8" H.P. STEEL (ABANDONED)
201	8" H.P. STEEL (ABANDONED)
202	30" CCP
203	16" STEEL BELL & SPIGOT
204	14" STEEL BELL & SPIGOT MORTAR LINED
206	8" STEEL BELL & SPIGOT MORTAR LINED & 12" D.I.
301	12" STEEL BELL & SPIGOT MORTAR LINED
	36" AC & DI

MAINS

LINE NO	DESCRIPTION
301A	36" DI
302	16" STEEL BELL & SPIGOT MORTAR LINED
303	18" STEEL BELL & SPIGOT MORTAR LINED
304	12" STEEL BELL & SPIGOT MORTAR LINED
305	8" STEEL BELL & SPIGOT MORTAR LINED
307	8" STEEL BELL & SPIGOT MORTAR LINED
313	8" D.I.
322	8" STEEL BELL & SPIGOT MORTAR LINED
333	6" STEEL BELL & SPIGOT MORTAR LINED
340	8" STEEL BELL & SPIGOT MORTAR LINED & D.I.
401	36" D.I.
401A	36" D.I.
401B	48" STEEL
401C	48" D.I.
402	16" D.I.
403A	16" D.I.
403B	14" D.I.
403C	12" D.I.
404	12" D.I.
406	12" DI

LATERALS

1	H.P. STEEL
2	8" AC
3	4-1/2" H.P. STEEL
4	3" H.P. STEEL
5	4" H.P. STEEL
5-A	2" H.P. STEEL
9	4 1/2" H.P. STEEL

LATERALS

10	4" H.P. STEEL (ABANDONED)
11	6" H.P. STEEL
13	STEEL
14	4 1/2" H.P. STEEL
16	4" PVC SCHD. 40
18	6" PVC
22	H.P. STEEL

RAW WATER LINES

1	R1 24" DI BELL & SPIGOT

SERVICES

DOMESTIC ACCTS. 7200
INDUSTRIAL ACCTS. 300

GPS COORDINATES - FORMAT NCSS4

Location	Lat	Lon
Well 2-01	35.29726	119.29930
Well 2-02	35.29634	119.30183
Well 5-01	35.30024	119.29733
Well 6-02	35.30122	119.30117
Well 6-03	35.30003	119.28779
Well 6-06	35.30385	119.28373
Well 7-01	35.29725	119.29717
Well 7-02	35.29678	119.29005

Location	Lat	Lon
Sta. A	35.28457	119.31044
Sta. B	35.18251	119.41388
Sta. C	35.14463	119.46269
Sta. D	35.12900	119.46459
Sta. G	35.18437	119.34095
La Paloma	35.39047	119.54557

WATER LINE
ABANDONED LINE
EXISTING WKWD BOUNDARY
PUMP STATION
TANK

WEST KERN WATER DISTRICT FACILITIES MAP

DWG FILENAME: Facilities	DRAWN BY: WLB
DATE: 6/8/99	SCALE: NOT TO SCALE

westKern water district
P.O. Box 1105 · Taft, CA 93268-1105
661 763-3151 · FAX 661 765-4271

REV. NO.	DATE	DESCRIPTION	DRAWN BY	CHK'D BY
1	6/8/99	DISTRIBUTION SYSTEM	WLB	TT
2	10/18/99	DISTRIBUTION SYSTEM	WLB	TT
3	9/12/00	DISTRIBUTION SYSTEM	ZCC	FJ
4	1/7/02	LA PALOMA	ZCC	TT
5	7/15/02	ELK HILLS ANNEXATION	DCJ	TT
6	12/15/08	SUNRISE SYSTEM IMPROVEMENTS	DCJ	TT

SHEET 1 OF 1
JOB NO.: N/A

D. COLE — PROJECT MGR.
T. TURLEY — DRAWN BY

STATE WATER RESOURCES CONTROL BOARD

RESOLUTION NO. 88-63

ADOPTION OF POLICY ENTITLED "SOURCES OF DRINKING WATER"

WHEREAS

1. California Water Code Section 13140 provides that the State Board shall formulate and adopt State Policy for Water Quality Control; and,

2. California Water Code Section 13240 provides that Water Quality Plans "shall conform" to any State Policy for Water Quality Control; and,

3. The Regional Boards can conform the Water Quality Control Plans to this policy by amending the plans to incorporate the policy; and,

4. The State Board must approve any conforming amendments pursuant to Water Code Section 13245; and,

5. "Sources of drinking water" shall be defined in the Water Quality Control Plans as those water bodies with beneficial uses designated as suitable, or potentially suitable, for municipal or domestic water supply (MUN); and,

6. The Water Quality Control Plans do not provide sufficient detail in the description of water bodies designated MUN to judge clearly what is, or is not, a source of drinking water for various purposes.

THEREFORE BE IT RESOLVED:

All surface and ground waters of the State are considered to be suitable, or potentially suitable, for municipal or domestic water supply and should be so designated by the Regional Boards[1] with the exception of:

1. <u>Surface and ground waters where</u>:

   a. The total dissolved solids (TDS) exceed 3,000 mg/L (5,000 uS/cm, electrical conductivity) and it is not reasonably expected by Regional Boards to supply a public water system, or

   b. There is contamination, either by natural processes or by human activity (unrelated to the specific pollution incident), that cannot reasonably be treated for domestic use using either Best Management Practices or best economically achievable treatment practices, or

c. The water source does not provide sufficient water to supply a single well capable of producing an average, sustained yield of 200 gallons per day.

2. Surface Waters Where:

a. The water is in systems designed or modified to collect or treat municipal or industrial wastewaters, process waters, mining wastewaters, or storm water runoff, provided that the discharge from such systems is monitored to assure compliance with all relevant water quality objectives as required by the Regional Boards; or,

b. The water is in systems designed or modified for the primary purpose of conveying or holding agricultural drainage waters, provided that the discharge from such systems is monitored to assure compliance with all relevant water quality objectives as required by the Regional Boards.

3. Ground water where:

The aquifer is regulated as a geothermal energy producing source or has been exempted administratively pursuant to 40 Code of Federal Regulations, Section 146.4 for the purpose of underground injection of fluids associated with the production of hydrocarbon or geothermal energy, provided that these fluids do not constitute a hazardous waste under 40 CFR, Section 261.3.

4. Regional Board Authority to Amend Use Designations:

Any body of water which has a current specific designation previously assigned to it by a Regional Board in Water Quality Control Plans may retain that designation at the Regional Board's discretion. Where a body of water is not currently designated as MUN but, in the opinion of a Regional Board, is presently or potentially suitable for MUN, the Regional Board shall include MUN in the beneficial use designation.

The Regional Boards shall also assure that the beneficial uses of municipal and domestic supply are designated for protection wherever those uses are presently being attained, and assure that any changes in beneficial use designations for waters of the State are consistent with all applicable regulations adopted by the Environmental Protection Agency.

The Regional Boards shall review and revise the Water Quality Control Plans to incorporate this policy.

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1 This policy does not affect any determination of what is a potential source of drinking water for the limited purposes of maintaining a surface impoundment after June 30, 1988, pursuant to Section 25208.4 of the Health and Safety Code.

CERTIFICATION

The undersigned, Administrative assistant to the Board, does hereby certify that the foregoing is a full, true, and correct copy of a policy duly and regularly adopted at a meeting of the State Water Resources Control Board held on May 19, 1988.

\s\
Maureen Marché
Administrative Assistant to the Board