Enclosure

Review of Aquifer Exemptions in California
DRAFT Preliminary Findings

[Transmitted via email on May 11, 2012 from David Albright, Manager, Ground Water Office, USEPA Region 9 to Rob Habel, DOGGR with cc to Tim Kustic, DOGGR]

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Introduction

The California Division of Oil and Gas, in 1991 to also include Geothermal Resources (DOGGR) requested aquifer exemptions as part of the "Application for Primacy in the Regulation of Class II Injection Wells Under Section 1425 of the Safe Drinking Water Act" (the primacy application) dated April 1981. The specific exemptions requested are described in Appendix B of the primacy application.

Descriptions of the Exempt Aquifers

The Primacy Application

The aquifer exemptions requested by DOGGR in the April 1981 primacy application fall into three categories. These categories were not specifically proposed by DOGGR; they are used in this paper for organizational clarity only. The three categories are as follows:

Category 1.

The hydrocarbon producing aquifers shown in Volumes I and II of "California Oil and Gas Fields" (the report), published by the California Division of Oil and Gas (dated 1973 and 1974, respectively) were included with the primacy application. The formations or portions thereof that were requested to be exempt are described and depicted as the shaded portions on the maps and cross sections of the report. The report's "Introduction" further describes these shaded areas as the producing zones.

Category 2.

For the oil and gas fields discovered after December 1973, a separate list of the thirty-seven (37) formations requested to be exempt were included in Appendix B, Table 2 of the primacy application. It should be noted that several of these formations/zones are named as "confidential". The primacy application did not include any maps of these 37 formations, only the location of the discovery well, and the range of depths of the producing intervals. However, some of these fields/formations (25 of the 37) are depicted in Volume III of the report, dated 1981. Volume III is an updated version of the Northern California portion of Volume I, and appears to have been published after DOGGR submitted their April 1981 primacy application, but prior to EPA's granting of primacy in 1982.

Category 3.

Non-hydrocarbon producing aquifers requested for exemption were listed in Appendix B, Table 1 of the primacy application. The list includes 87 formations/zones in various fields in Districts 1-6, and each of the field boundaries are depicted on the maps included in Appendix B, following Table 1.

Additional Comment

The current DOGGR website provides a hyperlink to the April 1981 primacy application. The website also contains a statement suggesting that the approved aquifer exemptions are those contained in the 1981 primacy application.

The Memorandum of Agreement (MOA)

Aquifer exemptions were formally approved by EPA as discussed in Section H and described in Attachment 2 of the "Underground Injection Control Program Memorandum of Agreement Between California Division of Oil and Gas and the United States Environmental Protection Agency Region 9" (the MOA) signed by DOGGR and EPA in September 1982, as part of the Class II UIC primacy approval process. This MOA is referenced in 40 CFR Part 147 as one of the official program documents associated with EPA's approval of the California Class II UIC program. The MOA documents which aquifers EPA exempted (refer to the copy of Attachment 2 of the MOA, attached).

Analysis

EPA has completed a review, based on the records we have, of the aquifer exemption determination process that was conducted, in order to clarify and confirm which aquifers were exempted.

Category 1.

The 1981 primacy application requested the exemption of all the oil and gas producing formations included in Volume I and II of the report. Volume I includes the oil and gas fields of North and East Central California, dated 1973. Volume I has been updated since 1973, the most current version is dated 1998. Volume II includes South, Central Coastal and Offshore California, dated 1974. Volume II has also been updated, the most current version is dated 1991.

Attachment 2 of the MOA states that "all oil and gas producing aquifers identified in Volumes I, II and III" of the report are exempt (see attached). Section H. of the MOA formally incorporated Attachment 2 into the MOA. As noted, Volume III is an updated version of the Northern California portion of Volume I, and is dated 1981. Although the month in 1981 is not specified, it is presumed to have been issued post April 1981, the

date of the primacy application. Volume III has also been updated, the most current version is dated 1998.

For the Category 1 formations in the MOA, EPA exempted all oil and gas producing zones that were included in the report, as follows: 1) 1973 version of Volume I; 2) 1974 version of Volume II; and 3) 1981 version of Volume III. As requested by DOGGR, the exempt portions of the aquifer are described and depicted as the shaded portions on the maps and cross sections of the report.

Category 2.

The MOA does not specifically name the 37 formations/zones from the post 1973 oil/gas producing fields proposed for exemption by DOGGR in their 1981 application (on Table 2). However, our current review noted that 25 of the 37 formations are included in the 1981 version of Volume III, thus the designated portions of those 25 producing formations are exempt. The 12 remaining formations were not included in any of the three volumes of the report (as of 1982, when EPA granted primacy and approved aquifer exemptions), thus they are presumed non exempt. However, ten (10) of the fields and their associated formations are depicted in updated versions of the report; either the 1998 version of Volume I, or the updated version of Volume II, dated 1991. The two (2) remaining formations are listed in the 1981 primacy application as "confidential" in the Harlan Ranch Gas and Howell's Pt. Gas fields, respectively, but are not included in any volumes of the report. The 12 formations are:

Field	Formation
Yowlumne	Stevens
Rio Viejo	Stevens
Turk Anticline	Temblor
Carneros Creek	Wygal
Moorpark West	Sespe
Temblor Hills	Agua
Temblor Hills	Pt. of Rocks
Careaga Canyon	Monterey
Cal Canal	Stevens
Westhaven	Temblor
Harlan Ranch Gas	Confidential
Howell's Point Gas	Confidential

Category 3.

Attachment 2 of the MOA (attached) lists 20 (of the 87 originally proposed non-hydrocarbon producing formations from Table 1 of the primacy application) formations/zones in various fields in Districts 2-6 as exempt. One additional non-hydrocarbon producing formation, not proposed for exemption in Table 1 of the primacy application (and presumed to have been proposed separately) is confirmed as exempt on Attachment 2 of the MOA. Thus, EPA approved a total of 21 aquifer exemptions for non-hydrocarbon producing formations - 20 of the 87 originally requested, plus one additional formation not identified in the primacy application. The additional exempt formation is the "Santa Margarita Formation, Poso Field, District 4. Attachment 3 of the MOA lists 11 of the 87 originally proposed non-hydrocarbon producing formations/zones as not exempt.

The remaining 56 formations (of the 87 proposed in Table 1 of the primacy application) were not exempted by EPA. Based on the information contained in EPA's administrative records, it appears that most, if not all of these formations were determined to be non-USDWs and thus did not require exemption. DOGGR submitted a letter, dated March 1982, which provided TDS values for all 87 of the non-hydrocarbon producing formations proposed for exemption in the primacy application. Fifty-three (53) of those formations are listed in the March 1982 letter as having TDS levels greater than 10,000 ppm.

It is unclear why the remaining three formations from Table 2 of the primacy application (that had TDS values below 10,000 ppm) were not exempted by EPA. However, those three formations (Etchegoin Fm, Strand Field, District 4; Mokulemne Fm, Union Island Gas Field, District 6; and Capay Fm, River Break Gas Field, District 6) are not included in Attachment 2 of the MOA, and are therefore not exempt.

Additional Findings

- Section H. of the MOA formally incorporated Attachments 2 and 3 into the MOA. Section H. also clarifies that the 11 aquifers in Attachment 3 "proposed for exemption in the 1425 demonstration and not exempted will be phased out within 18 months of the effective date of this Agreement (the MOA)". Since the MOA was signed in late September 1982, those 11 formations were not exempt as of April 1984.

- Section H. of the MOA also states the following: "Aquifers exempted by the Division and EPA under this Agreement shall only be applicable for the injection of fluids related to Class II activities defined in 40 CFR 146.05 (b).

Summary

Category 1.

All of the shaded portions of the oil and gas producing aquifers included in Volumes I, II and III of the report, dated 1973, 1974 and 1981 respectively, are exempt.

Category 2.

25 of the 37 formations within the post 1973 fields included on Table 2 of the primacy application and depicted in Volume III of the report dated 1981 are exempt.

12 of the formations within the post 1973 fields included on Table 2 of the primacy application and not depicted in versions of the report incorporated in the MOA, are not exempt. Ten (10) of these 12 fields are depicted in subsequent versions of the report. The two remaining fields with "confidential" formation designations are found on the DOGGR website as producing fields, even though they are not depicted in any subsequent versions of the report.

Category 3

21 non-hydrocarbon producing formations are exempt:

[20 of the 87 originally proposed non-hydrocarbon producing zones, and

1 additional non-hydrocarbon producing zone, the Santa Margarita Fm Poso Field]

All of the remaining non-hydrocarbon producing formations included in Table 1 of the primacy application were not exempted by EPA. Most (53) of these formations appear to have not been exempted because it was demonstrated that they are not USDWs (TDS levels > 10,000 ppm).

Suggested Next Steps:

- DOGGR to review and comment on this document and provide any other relevant documents/materials for EPA consideration.

- Recommend DOGGR consider modifying current website regarding aquifer exemptions.

- If warranted, DOGGR to identify any additional aquifers, or portions of aquifers that they request EPA consider for exemption.