
State Water Resources Control Board

December 19, 2017

Kenneth A. Harris Jr., State Oil & Gas Supervisor
Department of Conservation
Division of Oil, Gas & Geothermal Resources
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FINAL CONCURRENCE ON THE AQUIFER EXEMPTION PROPOSAL, GREENVILLE SANDS MEMBER, CIERBO FORMATION, LIVERMORE OIL FIELD, ALAMEDA COUNTY

Dear Mr. Harris:

State Water Resources Control Board (State Water Board) staff, in consultation with San Francisco Bay Regional Water Quality Control Board staff (collectively Water Boards staff), have reviewed the aquifer exemption proposal provided on June 24, 2016 by the Division of Oil, Gas and Geothermal Resources (DOGGR) for the expansion of the aquifer exemption for the Greenville Sands Member (Greenville Sands) of the Cierbo Formation in the Livermore Oil Field. Water Boards staff assessed whether the proposal meets the criteria set forth in California Public Resources Code (PRC) section (§) 3131 and § 146.4 of Title 40 of the Code of Federal Regulations (CFR) and considered comments received during the public comment process. Based on this review, State Water Board staff concur with the exemption proposal. In conjunction with the evaluation of current and future underground injection control (UIC) projects in the proposed exempted area, DOGGR and Water Boards staff will consider incorporating conditions, described below, into project approvals.

Public Comment Process

On November 15, 2016, State Water Board staff preliminarily concurred with the exemption proposal pending the State's public comment process. On December 9, 2016, DOGGR published notice of the exemption proposal and opened a public comment period. DOGGR and State Water Board staff held a joint public hearing to receive comments on the exemption proposal on January 11, 2017. The comment period closed on January 25, 2017. DOGGR and State Water Board staff have reviewed and responded in writing to the comments received during the comment period and public hearing.

State and Federal Exemption Criteria

As required by PRC § 3131(a)(1) and 40 CFR §146.4(a), the portion of the Greenville Sands proposed for exemption does not currently serve as a source of drinking water. No water supply wells were identified within the proposed area as being completed within the Greenville Sands. Water supply wells identified in proximity to the proposed area are all completed in shallower formations. At least 1,500 feet of vertical separation exists between the bottom of the identified water supply wells and the top of the Greenville Sands within the proposed area.

Consistent with 40 CFR §146.4(c), the portion of the aquifer at issue contains groundwater with concentrations of total dissolved solids between 3,000 and 10,000 milligrams per liter and is not reasonably expected to supply a public water system due to the presence of hydrocarbons in the proposed exempted area and the availability of higher quality groundwater in shallower geologic zones that is easier to access and sustainable.

As per PRC § 3131(a)(2), the injected fluids are not expected to affect the quality of water that is, or may reasonably be, used for any beneficial use because (1) the groundwater contained in the area of the Greenville Sands proposed for exemption is not expected to be put to beneficial use (for the reasons described above) and (2) the injected fluids are expected to remain in the proposed exempted area.

A detailed technical review has demonstrated that, due to a combination of geologic conditions and hydraulic controls, the containment requirement of PRC § 3131(a)(3) has been satisfied. The proposed exempted area is delineated by geologic features and the lateral extent of the oil-water contact. The geologic features that form the lateral containment boundaries include the Greenville Fault along the eastern and northeastern boundary and the Main Fault along the southern boundary. The faults are sealing, as demonstrated by the presence of oil-saturated formations on the oilfield side of the fault and non-saturated formations across the fault. The proposed exempted area is overlain by the Upper Cierbo and Neroly Formations, which contain up to 85 percent low permeability siltstone, claystone, and shale. The geologic feature that underlies the aquifer considered for exemption includes a layer of sandy siltstone and silty shale that ranges in thickness from 25 to 50 feet at the base of the Greenville Sands. Injected fluids in the proposed exempted area are expected to be contained hydraulically, both vertically and laterally, due to the inward hydraulic gradient created by oilfield dewatering activities.

Conditions on UIC Projects

Approval of UIC projects involves a joint review by DOGGR and Water Boards staff. DOGGR and Water Boards staff will consider incorporating conditions into approvals of injection projects in the proposed exempted area. Potential conditions include, but are not limited to, requiring monitoring to confirm that injected fluids remain in the proposed exempted area. If a monitoring requirement is incorporated in a UIC project approval, the operator must submit a work plan to the State Water Board for consideration.

If you have any questions regarding this matter, please contact Mr. John Borkovich at (916) 341-5779 or john.borkovich@waterboards.ca.gov.

Sincerely,



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Chief Deputy Director

cc: Bruce H. Wolfe
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