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## State Water Resources Control Board

February 4, 2019

Kenneth A. Harris Jr., State Oil & Gas Supervisor  
Department of Conservation  
Division of Oil, Gas & Geothermal Resources  
801 K Street, MS 18-05  
Sacramento, CA 95814-3530  
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### **FINAL CONCURRENCE ON THE VOLUME II AQUIFER EXEMPTION PROPOSAL, CHANAC FORMATION, EDISON OIL FIELD, KERN COUNTY**

Dear Mr. Harris:

State Water Resources Control Board staff, in consultation with Central Valley Regional Water Quality Control Board staff (collectively Water Boards staff), have reviewed the Volume II aquifer exemption proposal provided on December 6, 2016 by the Division of Oil, Gas and Geothermal Resources (DOGGR) to the expand the existing aquifer exemption for the Chanac Formation within the Edison 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.

#### **Public Comment Process**

On July 3, 2018, State Water Board staff preliminarily concurred with the exemption proposal pending the State's public comment process. On September 14, 2018, 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 October 18, 2018. The comment period closed on October 18, 2018. DOGGR and State Water Board staff have reviewed and responded in writing to the comments received during the comment period and public hearing.

#### **Concurrence with Limitation on Underground Injection Control (UIC) Projects**

State Water Board staff concur with the exemption proposal; however to ensure injected fluids do not affect the quality of water that is, or may reasonably be, used for any beneficial use, the following limitation shall be incorporated in UIC project approvals:

- Injected fluids must be of similar or better quality than the existing groundwater in the proposed exempted area, as determined by Water Boards staff in collaboration with DOGGR.

In conjunction with the evaluation of current and future UIC projects in the proposed exempted area, DOGGR and Water Boards staff will consider incorporating conditions, described below, into project approvals.

### **State and Federal Exemption Criteria**

As required by PRC § 3131(a)(1) and 40 CFR § 146.4(a), the proposed exempted area does not currently serve as a source of drinking water. One active drinking water well was identified in Section 26 as being completed within the Chanac Formation. A capture zone analysis was performed for the well, and the area within the capture zone was removed from the proposed exempted area (as shown on the enclosed map). Additional water wells were identified within the proposed exempted area but are completed in the shallower Kern River formation, which is geologically and hydraulically isolated from the deeper Chanac Formation. At least 25 feet of vertical separation exists between the bottom of the water supply wells and the confining layer at the top of the upper Chanac Formation oil sands.

Consistent with 40 CFR § 146.4(b)(1), the proposed exempted area will not in the future serve as a source of drinking water because it is hydrocarbon producing or contains hydrocarbons that are expected to be commercially producible. In addition, 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 injected fluids will be of similar or better quality than the existing groundwater in the proposed exempted area, and (2) the injected fluids are expected to remain in the proposed exempted area.

The requirement of PRC § 3131(a)(3) is also satisfied because the injected fluids are expected to remain within the proposed exempted area due to a combination of geologic conditions and operational controls. Vertical containment is provided by the overlying, 15 to 50 feet thick lower permeability shale above the Chanac oil sands and by the underlying, 10 to 80 feet thick lower permeability silt and shale of the lower Chanac and upper Santa Margarita Formations.

Lateral containment for the proposed exempted area is provided by faults along the east-northeastern and west-northwestern boundaries and by an inward hydraulic gradient from current production. The containing nature of the faults is demonstrated by the separation of areas of known commercial hydrocarbons, differences in the oil-water contact across the fault, and geophysical log interpretations. The inward hydraulic gradient is interpreted from material balance calculations that indicate the withdrawal of fluids is greater than the volume of fluids injected within productive areas of the Chanac Formation.

### **Conditions on UIC Projects**

Approval of UIC projects involves a joint review by DOGGR and Water Boards staff. DOGGR and Water Boards staff may incorporate conditions into approval letters, as appropriate. Potential conditions include, but are not limited to, the following:


1. In cases where injection is proposed near the capture zone excluded from the proposed exempted area in Section 26, limiting injectate volumes and pressure, including

potentially limiting injection activities to cyclic steam, to assure injected fluids do not migrate into the non-exempt area;

2. In cases where injection is proposed into the expanded exempt area where production has not been established (such as the north side of expanded exempt area), verifying the presence of commercially producible hydrocarbons and demonstrating an inward hydraulic gradient; and
3. Requiring monitoring, which may include water quality testing, to confirm injected fluids remain in the proposed exempted area, including the area adjacent to the capture zone in Section 26. If a monitoring requirement is incorporated in a project approval, the operator must submit a plan to the Central Valley Regional Water Quality Control 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](mailto:john.borkovich@waterboards.ca.gov).

Sincerely,

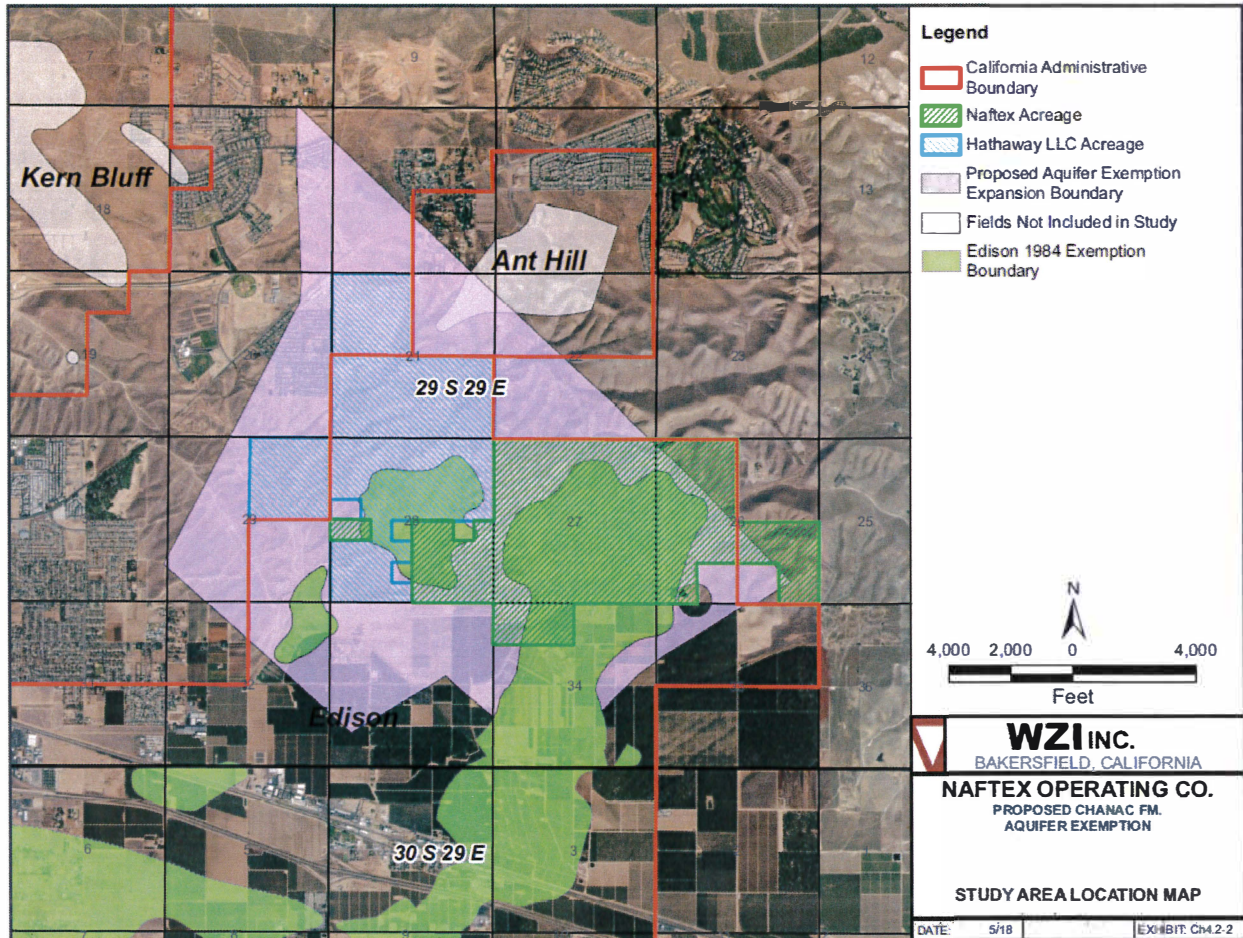


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Chief Deputy Director

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# Enclosure



Study Area Location Map (Figure Ch 4.2-2), Division of Oil, Gas and Geothermal Resources Aquifer Exemption Study, Chanac Productive Interval, Kern County, California, November 2016, Revised June 2018.