



BOARD OF SUPERVISORS  
AGENDA LETTER

Agenda Number:

Clerk of the Board of Supervisors  
105 E. Anapamu Street, Suite 407  
Santa Barbara, CA 93101  
(805) 568-2240

**Department Name:** Planning &  
Development  
**Department No.:** 053  
**For Agenda Of:** May 12, 2015  
**Placement:** Departmental  
**Estimated Time:** 45 minutes  
**Continued Item:** No  
**If Yes, date from:**  
**Vote Required:** N/A

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**TO:** Board of Supervisors  
**FROM:** Department Glenn Russell, Director of Planning & Development, 568-2085  
Director  
Contact Info: Kevin Drude, Deputy Director, Energy & Minerals Div., 568-2519  
**SUBJECT: Briefing on Oil and Gas Wastewater Injection Wells in Santa Barbara County**

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**County Counsel Concurrence**

As to form: Yes

**Auditor-Controller Concurrence**

As to form: N/A

**Other Concurrence:**

As to form: N/A

**Recommended Actions:**

That the Board of Supervisors:

1. Receive and file this report on the status of the ongoing United States Environmental Protection Agency investigation into oil and gas wastewater injection wells in California, which includes a discussion of injection wells in Santa Barbara County.
2. Determine that this report does not constitute a project under the California Environmental Quality Act (CEQA), pursuant to CEQA Guidelines Section 15378(b)(5) (Attachment 6).

**Issue Summary**

Approximately three years ago, the State Department of Oil and Gas and Geothermal Resources (DOGGR) notified the United States Environmental Protection Agency (U.S. EPA) that confusion regarding 30-year-old agreements between the State and federal governments regarding wastewater disposal wells led to the permitted injection of oil production wastewater into aquifers that potentially are, or could become, sources of drinking water. Wastewater disposal wells are used to dispose of water that is typically associated with conventional oil production by injecting it underground, frequently in the same geologic formation from which oil is produced. Enhanced oil recovery wells, such as cyclic steaming wells, are also regulated as wastewater injection wells.

Over the past eight months, DOGGR and the State Water Resources Control Board (SWRCB) have been working cooperatively with the U.S. EPA in systematically reviewing all statewide wastewater disposal and enhanced oil recovery wells to determine whether or not any pose a threat of contamination to any protected aquifers. DOGGR regulates over 50,000 oilfield injection wells throughout the State.

Where the risk of contamination exists, the State has ordered and continues to order wells to cease injection. As of early February 2015, the State has identified approximately 2,500 statewide wastewater disposal and enhanced oil recovery wells injecting into zones that have not been formally made exempt from protection as sources of drinking water, with 2,100 of those wells still active. Of these, there are approximately 140 active wastewater disposal wells statewide injecting into aquifers with water of sufficient quality to have potential drinking water use. None of these 140 wells are located in Santa Barbara County. To date, preliminary water sampling of select, high-risk groundwater aquifers statewide has not detected any contamination from oil production wastewater.

In Santa Barbara County, there are 219 wastewater disposal wells and 516 enhanced oil recovery wells. DOGGR has identified 11 wastewater disposal wells in Santa Barbara County for investigation, because they are injecting into aquifers that have not been formally made exempt from protection as sources of drinking water. However, based on preliminary investigation results, none of these wells are injecting into aquifers designated as underground sources of drinking water, as discussed later in this report. DOGGR is also processing applications from operators to allow continued operation of enhanced oil recovery wells in various oil fields throughout the County.

### **Regulatory Background and Statewide Investigation**

The Safe Drinking Water Act (SDWA) was enacted in 1974 to protect public health by regulating the nation's public drinking water and its sources. Pursuant to the SDWA, the U.S. EPA promulgated regulations creating the Underground Injection Control (UIC) Program with the purpose of protecting underground sources of drinking water. In 1981, the then-Division of Oil and Gas (DOG, the predecessor agency to DOGGR) applied to the U.S. EPA to become the primary enforcing agency for the UIC Program, and was granted authority over the program in 1983 in what is known as the Primacy Agreement.

As part of their new regulatory role, DOG proposed to exempt certain aquifers from regulation under the UIC program because the aquifers were not, and could never be considered potable aquifers. Exempted aquifers were generally either oil-bearing aquifers, or already in use for injecting wastewater. These aquifer designations were accepted by the U.S. EPA through a Memorandum of Agreement (MOA-1) in 1982. Existing wastewater injection aquifers that did not meet regulatory standards were ordered by DOG to be phased out over 18 months. A problem later arose when 11 aquifers that were ordered to be phased out were errantly included in the list of approved injection aquifers, and formalized in a second MOU-2 later in 1982. From the early 1980s on, DOG (hereinafter DOGGR) staff mistakenly permitted wastewater wells into aquifers incorrectly listed in MOU-2. Adding to the problem, the Regional Water Boards were to review all injection well projects prior to approval by DOGGR to ensure that wastewater disposal would not degrade State waters. However, that review process only occurred erratically, with the Regional Boards generally deferring to DOGGR to determine whether or not an aquifer was exempt. Approximately one half of the active wastewater disposal wells statewide are injecting into the 11 aquifers that were listed as *non-exempt* in MOU-1, but *exempt* in MOU-2. None of these 11 aquifers are located within Santa Barbara County.

In addition to the wells in those 11 aquifers, wells in other areas are under investigation for having been permitted outside of formally exempted zones. Until the 2010s, permitting decisions were completely delegated to the six DOGGR district offices, with DOGGR headquarters in Sacramento generally not reviewing these decisions. DOGGR headquarters also did not provide standardized guidance on identifying the injectable zone for exempt aquifers. The initial findings of the joint EPA, DOGGR, and SWRCB State-wide ongoing investigation have identified the following as the primary causal factors of the current situation:

- Border Confusion: Permits were granted for injection wells that fell outside the *productive limits* of a hydrocarbon-producing field, but inside the slightly larger *administrative* boundaries for that field.
- Expanding Productive Limits: With the advances in oil extraction technology such as directional drilling, the effective productive limits for many oil fields have greatly expanded since the field boundaries were first drawn in the 1970s. DOGGR staff in many cases believed that wastewater injection was permitted in the actual, present productive limits of a field, rather than applying the limits established by the 1983 Primacy Agreement. As an example, Attachment 1 is a figure from the DOGGR 1983 Primacy Agreement (the figure was developed in 1974) on which the polygons define the appropriate injection areas for the Cat Canyon field. Attachment 2, circa 1991, shows the change in the productive limits of the Cat Canyon field.
- Depth Confusion: While some injection wells were within the permitted injection polygons, they were nonetheless injecting above or below the exempt aquifer, into a non-exempt zone. It appears that in some cases DOGGR staff based their permitting decisions only on the surface target zones set forth in the 1983 Primacy Agreement, without consideration for the depth interval of the exempt aquifer.
- Partial Exemption: In some cases, DOGGR staff exempted portions of an aquifer based upon incorrect field and zone information.

DOGGR first became aware of this systemic problem in 2011 when their staff noticed a discrepancy between lists of exempted aquifers. The differences between MOU-1 and MOU-2 became apparent. DOGGR notified the U.S. EPA of the discrepancy in 2012 and began the process of identifying all of the wells injecting into a non-exempt zone and directed oil operators in those zones to start the process of applying for an aquifer exemption.

In 2014, the Central Valley Regional Water Quality Control Board independently discovered that injection had been permitted in aquifers designated as underground sources of drinking water in Kern County and notified DOGGR that there could be issues with groundwater contamination. Shortly thereafter, the Governor assembled an inter-agency team to assess and address any public health concerns.

Thus far, the State Water Board has evaluated just over 200 injection wells of highest concern in Kern County for potential risk to water supplies. In 2014, 11 injection wells in Kern County were ordered shut in, along with orders requiring oil producers to provide testing of injection well materials and nearby groundwater supply wells. In March 2015, DOGGR requested the closure of 12 additional wells in Kern County. Injection permits for 11 of those wells were voluntarily relinquished at DOGGR's request, and the 12<sup>th</sup> well was ordered shut in by DOGGR.

As an additional safeguard, DOGGR headquarters is now conducting a second review of all new or expanded permit applications for well injection prior to approval by the local district office to correct any permitting errors and to promote better permitting consistency across the State.

Finally, DOGGR, in conjunction with the U.S. EPA and the State Water Board, have imposed a compliance schedule to eliminate injection into non-exempt aquifers. Specifically, for non-exempt aquifers between 3,000 to 10,000 mg/L total dissolved solids (TDS), all injections must cease by February 15, 2017, unless an aquifer exemption is applied for by the State and approved by the U.S. EPA. For non-exempt aquifers less than 3,000 mg/L TDS, the deadline to stop injecting is October 15, 2015, or immediately where the injection is potentially impacting protected water supplies. During this process, DOGGR will continue to issue emergency stop orders for any injection well suspected of having the potential to impact water supply aquifers. A guidance document detailing the DOGGR and SWRCB Aquifer Exemption Process is included as Attachment 3.

### **Status of Oil and Gas Injection Wells in Santa Barbara County**

State regulatory authority of oil and gas operations in Santa Barbara County is the responsibility of DOGGR's District 3 office, located in the town of Orcutt. DOGGR and the County's Petroleum Office regulate the surface operations associated with the drilling and production of petroleum, including injection wells, while DOGGR maintains exclusive subsurface authority.

Santa Barbara County has 219 wastewater disposal wells, of which 66 are active, 38 are idle, 110 are plugged and abandoned, and 5 are currently in the DOGGR permitting process. In meetings with DOGGR, Energy and Minerals Division staff learned that of the 104 active or idle wastewater disposal wells, 11 wells are under investigation, not because they are suspected of causing contamination, but because they were drilled outside of the official boundaries set forth in the 1983 Primacy Agreement. Of those 11 wells, seven are active, three are idle and one is in the DOGGR permitting process. Many of these wells are former production wells that were converted into wastewater disposal wells. Attachment 4 of this report lists the injection wells, their field location, whether they are active or idle, and notes from DOGGR on each well indicating that none of the wells are or have the potential to impact a protected aquifer. A map showing the location of these wells is included as Attachment 5.

Although the 11 wells were developed outside of the 1983 boundaries, extensive research and testing was performed by DOGGR on each well. In each case, DOGGR found that the injection of the waste fluid was contained within a reservoir that was both above the 3,000 mg/L TDS threshold and was determined to have the appropriate structural integrity to prevent fluid migration to other zones or aquifers. All of the wastewater disposal wells in Santa Barbara County inject into oil and gas bearing zones, and no wells in Santa Barbara County inject material into aquifers that contain less than 3,000 mg/L TDS.

Cyclic steaming wells are also classified as Class II injection wells. Santa Barbara County has 516 cyclic steam wells, of which 240 are active, 216 are idle, and 60 more have been proposed to DOGGR. These cyclic steam wells are drilled into productive oil bearing zones have the same deadline for conformance with the U.S. EPA order to obtain an aquifer exemption by February 15, 2017.

Moving forward, the County Energy and Minerals Division, through the Petroleum Office, will continue to work cooperatively with the local DOGGR office as they process aquifer exemptions to comply with

U.S. EPA deadlines and continue to review applications for new waste water disposal and cyclic steaming wells.

**Fiscal and Facilities Impacts and Fiscal Analysis:**

Budgeted: Yes. These services currently are budgeted on page D-212 of the FY 2014-2016 Department's Adopted Budget, in the Permitting category for staffing and budgeted under Intergovernmental Review.

**Special Instructions:**

None.

**Attachments:**

- Attachment 1: Map of productive areas in the Cat Canyon field, 1983 Primacy Agreement
- Attachment 2: Expansion of productive areas in the Cat Canyon field, circa 1991
- Attachment 3: DOGGR and SWRCB Aquifer Exemption Process Guidance Document
- Attachment 4: Table of Wastewater Disposal Wells outside of exempted zones in Santa Barbara County
- Attachment 5: Map of Wastewater Disposal Wells outside of exempted zones in Santa Barbara County
- Attachment 6: CEQA Exemption

**Authored by:** Kevin Drude, Energy and Minerals Division Deputy Director