environmental
DEFENSE CENTER

June 20, 2019

ATTN: Aquifer Exemption
Department of Conservation
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Submitted electronically to comments@conservation.ca.gov

Re: Comments Opposing the Application by the Department of Conservation, Division of Oil, Gas, and Geothermal Resources for the Expansion of the Aquifer Exemption in the Sisquoc and Monterey Formations in the Cat Canyon Oil Field, Santa Barbara County, California

Dear Department of Conservation,

The following comments are submitted by the Environmental Defense Center ("EDC") on behalf of the Sierra Club, by and through the Los Padres Chapter ("Sierra Club"), the Santa Barbara County Action Network ("SBCAN"), and EDC in opposition to the Application for Aquifer Exemption in the Sisquoc and Monterey Formations of the Cat Canyon Oil Field in Santa Barbara County, California ("Application"). We request that the Department of Conservation, Division of Oil, Gas, and Geothermal Resources ("DOGGR") withdraw the Application to expand the boundaries of the existing aquifer exemption to cover thirty square miles or, in the alternative, place the Application on hold until the United States Geological Survey ("USGS") completes it study on possible groundwater contamination in the Cat Canyon oil field.

The Sierra Club, a national nonprofit organization with more than 400,000 members and supporters in California, is dedicated to exploring, enjoying, and protecting the wild places of the earth; to practicing and promoting the responsible use of the earth's ecosystems and resources; to educating and encouraging humanity to protect and restore the quality of the natural and human environment; and to using all lawful means to carry out these objectives. SBCAN is a countywide grassroots organization that works to promote social and economic justice, to preserve our environmental and agricultural resources, and to create sustainable communities. EDC is a non-profit, public interest law firm that protects and enhances the environment in Santa

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Barbara, Ventura, and San Luis Obispo Counties through education, advocacy and legal action. Our clients have members who live, visit, work, and recreate in the area and would be affected by the approval of the Application.

For the reasons set forth in detail below, the analysis in the Application is inadequate and fails to provide a sufficient basis to satisfy the United States Environmental Protection Agency's ("EPA") requirements under the Code of Federal Regulations, Section 146.4 or the State's requirements pursuant to Public Resources Code Section 3131(a) to exempt the aquifer under the Safe Drinking Water Act ("SDWA"). The most glaring deficiency in the Application is that neither DOGGR nor the State Water Resources Control Board ("SWRCB") can completely guarantee that the injected fluids and steam will not migrate upward into drinking water aquifers or waters with beneficial uses, thereby affecting the water quality in the Paso Robles and/or Careaga freshwater formations. Pub. Res. Code § 3131(a)(2)-(3). The Application is also deficient because:

- Operators in Cat Canyon oil field have been illegally injecting into non-exempt aquifers for years, thus improperly altering the baseline for native water quality.
- The Application does not consider the groundwater sampling results from the USGS study of groundwater quality under the Cat Canyon oil field. The study will begin in 2019 and it is entirely premature for the Application to proceed until this data is published and reviewed by DOGGR and SWRCB.
- Significantly expanding the current aquifer exemption boundary to cover thirty square miles could open the door for a massive expansion of oil and gas production in Santa Barbara County, which would curtail efforts to promote a clean, renewable energy future.
- No environmental review has been conducted on this Application. Environmental review is required prior to a decision to adequately evaluate the potential environmental impacts of the aquifer exemption, such as on water quality and biological resources, and assess alternatives to the action.

I. <u>The Existing Exemption Boundary in Cat Canyon Oil Field is Adequate and Must Not Be Expanded.</u>

In 1983, EPA granted California primacy[1] over underground injections associated with oil and gas production pursuant to Section 1425 of the SDWA.[2] As part of this process, EPA and DOGGR executed a Memorandum of Agreement ("MOA") dated September of 1982, which

[1] "Primary enforcement authority, often called primacy, refers to state, territory, or tribal responsibilities associated with implementing EPA approved UIC programs. A state, territory, or tribe with UIC primacy, or primary enforcement authority oversees the UIC program in that state, territory, or tribe." U.S. Environmental Protection Agency, *Primary Enforcement Authority for the Underground Injection Control Program*, available at: https://www.epa.gov/uic/primary-enforcement-authority-underground-injection-control-program.
[2] 48 Fed. Reg. 6336-01 (Feb. 11, 1983) (primacy approved pursuant to § 1425 of the SDWA). Section 1425 requires primacy applicants to demonstrate that the state's standards are effective in preventing endangerment to underground sources of drinking water, but the primacy program need not meet EPA's minimum requirements. U.S. Environmental Protection Agency, *Primary Enforcement Authority for the Underground Injection Control Program*, available at: https://www.epa.gov/uic/primary-enforcement-authority-underground-injection-control-program.

establishes the respective responsibilities of the two agencies in the administration of California's underground injection control program ("UIC").[3] The MOA requires that "…an aquifer exemption must be in effect prior to or concurrent with the issuance of a Class II permit for injection wells into that aquifer."[4] Upon granting California primacy, EPA designated an aquifer exemption for portions of the Sisquoc and Monterey Formations within the Cat Canyon Oil Field—the boundaries of which "were based on the information available at that time."[5]

Decades later, between 2011 and 2014, DOGGR discovered that 5,625 injection wells in 75 oil fields throughout California were illegally injecting into non-exempt aquifers, including aquifers underlying Cat Canyon oil field.[6] This grave error was due in part to (1) poor oversight of DOGGR regional offices, (2) "discrepancies and confusion concerning 30-year-old agreements…," and (3) misidentified boundaries on maps.[7] With regards to the first issue, the SWRCB and Regional Water Quality Control Boards ("RWQCB") were supposed to review all well permit applications approved by DOGGR under the terms of a 1983 interagency agreement.[8] The Water Boards' oversight was intended to ensure that wastewater disposal would not degrade state waters.[9] Nevertheless, "having other priorities and no dedicated staff or resources for an independent review, the Regional Boards generally deferred to DOGGR's determination of whether or not an aquifer was exempt without scrutinizing the applications."[10]

As to the second issue, after signing the MOA in 1982, DOGGR and EPA discovered years later that there had been two versions of the MOA.[11] The first version expressly designated eleven aquifers as non-exempt based on the fact that the aquifers were non-hydrocarbon producing and had a TDS concentration below 3,000 mg/l.[12] Nevertheless, these aquifers had been used for wastewater disposal and injection "for decades."[13] The second version of the MOA, however, erroneously exempted the eleven aquifers and from the early

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[3] *Underground Injection Control Program; Memorandum of Agreement Between California Division of Oil and Gas and the United States Environmental Protection Agency, Region 9* (September 1982), available at: https://www.conservation.ca.gov/dog/general_information/Documents/MOA_DOG_USEPA_UIC.PDF.
[4] *Id.* at 6-7.
[5] Department of Conservation, Division of Oil, Gas, and Geothermal Resources, *Statement of Basis for the Proposed Expansion of the Aquifer Exemption for the Sisquoc and Monterey Formations, Cat Canyon Oil Field* at 2, available at: ftp://ftp.consrv.ca.gov/pub/oil/Aquifer_Exemptions/County/Santa-Barbara/Cat-Canyon/Public-Comment-Period-Documents/Statement-of-Basis.pdf.
[6] *DOGGR's Renewal Plan: A New Era of Oil and Gas Regulation; Renewal Plan for Oil and Gas Regulation (2017 update)* at 9 (2017), available at: https://www.conservation.ca.gov/dog/Documents/renewal-plan2017-lrg.pdf.
[7] Letter from Matthew Rodriquez, Secretary California Environmental Protection Agency, to Cliff Rechtschaffen, Senior Advisor Office of the Governor and John Laird, Secretary California Natural Resources Agency at 1 (March 2, 2015), available at: https://sntr.senate.ca.gov/sites/sntr.senate.ca.gov/files/3_10_15_cal_epa_review_of_uic_program.pdf.
[8] *Id.*
[9] *Id.*
[10] *Id.*
[11] *Id.* at 2.
[12] *Id.*
[13] *Id.*

1980s until recently, DOGGR and EPA relied upon the list of exempt aquifers in the second MOA, thus allowing for decades of illicit injections into non-exempt aquifers.[14]

Finally, DOGGR's lack of oversight of its UIC program was due in part to the fact that "regional offices looked only at contour maps without also considering depth, and therefore permitted injections above or below an exempt aquifer; or issued permits based on a list of exempt aquifers without realizing that only a portion of the relevant aquifer was exempt." *Ctr. for Biological Diversity v. Dep't of Conservation*, 26 Cal.App.5th 161, 168 (Ct. App. 2018), *review denied* (Oct. 24, 2018). As a result of the aforementioned mistakes and errors, over 5,000 wells were injecting contaminated fluids and wastewater into aquifers that were not exempt from the federal protections under the SDWA.

To remedy these violations, EPA and DOGGR subsequently developed a corrective action plan, finalized in March of 2015, which prioritized injection wells that posed the greatest risk to drinking water sources and set forth a compliance schedule. The plan, however, did not require all wells to immediately cease illegal injections into non-exempt aquifers, only those wells that were potentially impacting public water supply wells. For many of the remaining wells, DOGGR allowed the injections to continue.[15]

DOGGR has relied on a few rationales for not ordering the immediate cessation of all injections, claiming that "immediately ceasing all injections into potentially nonexempt aquifers would be 'logistically difficult, as well as an inefficient use of agency resources' and, because due process entitles affected companies the right to appeal cessation orders, 'would undoubtedly invite widespread, vigorous opposition, thereby thwarting the intended immediacy and needlessly jeopardizing the entire objective.'" *Ctr. for Biological Diversity,* 26 Cal. App. 5th at 174. In reality, DOGGR took the discovery of thousands of illegal injection wells and turned it into an "opportunity" for oil operators. This approach is explicitly stated in the compliance plan, which "required that the Division reach out to operators with injection wells in non-exempt aquifers, providing them with an opportunity to prepare technical proposals to support exemption of those aquifers under State and federal law."[16] Thus, instead of addressing the agency's serious lack of oversight of the UIC program, DOGGR is working with operators to catalyze a massive expansion of aquifer exemptions throughout California.

Given this background, it was no surprise that "[i]n 2017, several operators of wells located in the Cat Canyon Oil Field jointly requested that the Division propose to the US EPA an expansion of the existing aquifer exemptions for the Sisquoc and Monterey Formations…."[17] A few of these operators, ERG Operating Company, LLC ("ERG"), Aera Energy, LLC ("Aera"),

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[14] *Id.*
[15] *See* 14 C.C.R. § 1779.1(a)(1)-(3).
[16] Renewal plan at 9.
[17] Department of Conservation, Division of Oil, Gas, and Geothermal Resources, *Statement of Basis for the Proposed Expansion of the Aquifer Exemption for the Sisquoc and Monterey Formations, Cat Canyon Oil Field* at 2, available at: ftp://ftp.consrv.ca.gov/pub/oil/Aquifer_Exemptions/County/Santa-Barbara/Cat-Canyon/Public-Comment-Period-Documents/Statement-of-Basis.pdf.

and PetroRock,[18] are also proposing three enhanced oil recovery projects in Cat Canyon, which are currently undergoing review by the County of Santa Barbara. If approved, over 700 new wells would be drilled and operated in the field over the next forty-plus years, tripling Santa Barbara County's current oil production.

The history of the existing aquifer exemption in Cat Canyon oil field, the years of illegal injections into non-exempt aquifers throughout the field, and DOGGR's poor oversight of the UIC program are directly pertinent to consideration of the proposed expansion. This history demonstrates that the operators' request to expand the existing exemption boundary in Cat Canyon oil field did not arise from necessity or science, but rather from DOGGR's massive error in identifying the boundaries of the original exemption area years ago. Much like DOGGR, oil operators in Cat Canyon saw the agency's mistake as an opportunity to significantly expand the existing boundary to cover thirty square miles. (Aquifer Exemption Study of Sisquoc and Monterey Formations, Cat Canyon Oil Field ("Application") at 3) Nevertheless, the Application must be withdrawn because insufficient evidence is provided to demonstrate compliance with the Federal and State criteria for exempting the aquifer from the SDWA, as discussed in-depth below.

II. Operators in Cat Canyon Have Been Illegally Injecting into Non-Exempt Aquifers for Years, Improperly Altering the Native Water Quality.

DOGGR has confirmed that oil and gas operators in Cat Canyon oil field and other fields in Santa Barbara County have illegally discharged contaminated wastewater into non-exempt freshwater aquifers.[19] The disposal of produced wastewater into aquifers outside of the existing exemption boundary has occurred repeatedly in Santa Barbara County in both the Cat Canyon and Lompoc oil fields, by multiple operators, at numerous leases and wells, and over extended periods of time.[20] The Table attached hereto as Exhibit A was produced by DOGGR on March 15, 2019 and identifies sixty-nine wells that have repeatedly been used to illegally inject into non-exempt aquifers, in violation of the SDWA.[21] The quantity and number of wastewater injections over this time period has not been disclosed.

Past illegal discharges of wastewater into aquifers in the County that have not been exempted from the protections under the SDWA may have resulted in the contamination of underground aquifers in the Santa Maria Groundwater Basin as well as other groundwater basins. The impact on groundwater quality from repeated injections of highly toxic pollutants into aquifers by oil and gas operators is likely irreversible and should have been disclosed in the Application.

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[18] PetroRock's leases are operated by Vaquero Energy. *About PetroRock,* available at: https://petrorock.com/about.aspx.
[19] Spreadsheet produced by DOGGR of illegal injections into non-exempt aquifers in Santa Barbara County ("Exhibit A").
[20] *Id.*
[21] *Id.*

The Application is deficient in failing to identify the duration and frequency of illicit injections into non-exempt aquifers under the field, the volume of wastewater and/or steam injected, and the chemicals and contaminants that have been injected into these aquifers illegally. The Application must also be deemed incomplete because the agencies did not sample the groundwater in the aquifers impacted by years of illicit injections. Without this groundwater data, potential contamination to these aquifers is unknown and undisclosed.

III. The Cat Canyon Aquifer Exemption Must be Denied Because the Application Does Not Satisfy the Federal or State Criteria.

Enacted in 1974, the SDWA protects sources of drinking water from contamination by the underground injection of waste by requiring, in relevant part, that underground injection must not endanger drinking water sources.[22] "Underground injection" is defined as "the subsurface emplacement of fluids by well injection; …."[23] "Underground injection endangers drinking water sources if such injection may result in the presence in underground water which supplies or can reasonably be expected to supply any public water system of any contaminant, and if the presence of such contaminant may result in such system's not complying with any national primary drinking water regulation or may otherwise adversely affect the health of persons."[24]

Under the SDWA, the duty to ensure that sources of drinking water will not be endangered by underground injection falls to the EPA. The agency, however, may give deference to states that have an approved UIC program.[25] Once a state has an approved UIC program, EPA and the state have separate roles and responsibilities for oversight. EPA promulgates regulations and guidance, and evaluates the state's program and reporting. The state is responsible for the day-to-day management of the program, including permitting, inspections, enforcement, collecting data, and reporting.

"Congress made it clear, however, that, despite the deference the EPA was to afford the states, the goal of protecting underground drinking water was to be preeminent." *Nat. Res. Def. Council, Inc. v. U.S. E.P.A.,* 824 F.2d 1258, 1269 (1st Cir. 1987). Moreover, the SDWA explicitly states that, "[n]othing in this section shall be construed to alter or affect the duty to assure that USDW will not be endangered by any underground injection."[26]

The legislative history of the SDWA indicates that "underground injection which endangers drinking water sources" must have broad applicability:

> It is the Committee's intent that the definition be liberally construed so as to effectuate the preventative and public health protective purposes of the bill. The Committee seeks to protect not only

[22] 42 U.S.C. § 300h(b)(1), (d)(2).
[23] *Id.* at § 300h(d)(1)(A).
[24] *Id.* at § 300h(d)(2).
[25] *Id.* at § 300h(a)-(b).
[26] 42 U.S.C. § 300h(b)(3)(C).

> currently-used sources of drinking water, but also potential drinking water sources for the future....
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> The Committee was concerned that its definition of "endangering drinking water sources" also be construed liberally. Injection which causes or increases contamination of such sources may fall within this definition even if the amount of contaminant which may enter the water source would not by itself cause the maximum allowable levels to be exceeded. The definition would be met if injected material were not completely contained in the well, and if it may enter either a present or potential drinking water source, and if it (or some form into which it might be converted) may pose a threat to human health or render the water source unfit for human consumption.[27]

Despite the broad protections for drinking water under the SDWA, EPA UIC regulations—not the SDWA—created the aquifer exemption process.[28] Promulgated in 1980, the EPA regulations allow for aquifers that meet certain criteria to be exempted from SDWA safeguards.[29] Here, the criteria are not satisfied, and the Application must be denied.

A. The Application Fails to Demonstrate that the Federal Criteria Pursuant to 40 C.F.R. Section 146.4 Has Been Met and Thus the Proposed Expansion Area Must Not Be Exempted.

Under Section 146.4 of Title 40 of the Code of Federal Regulations, to be an exempted aquifer, the aquifer at issue must not serve as a current source of drinking water, must not now or in the future serve as a source of drinking water, must not be reasonably expected to supply a public water system, and the TDS content of the groundwater must range from 3,000 to 10,000 mg/l.[30]

The Federal criteria for exempting an aquifer from the SDWA do not adequately protect drinking water sources from contamination resulting from underground injection, as evidenced by the State's interest in codifying more stringent standards in 2015. When the EPA regulations were first promulgated in 1980, oil and gas industry interests pushed back on EPA's exemption criteria and proposed revisions to the criteria to benefit the industry. Specifically, after issuing these regulations, the American Petroleum Institute ("API") filed a lawsuit against EPA, arguing that the underground source of drinking water ("USDW") definition was too broad and outside the intent of the SDWA.[31] API also argued that the criteria to exempt an aquifer from protection

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[27] H.R. Rep. No. 1185, 93d Cong., 2d Sess., *reprinted in* 1974 U.S. Code Cong. & Admin. News at 6484.
[28] 40 C.F.R. § 146.1, *et seq.*
[29] 40 C.F.R. § 146.4.
[30] *Id.* at (a)-(c).
[31] Clean Water Action and Clean Water Fund, *Aquifer Exemptions: A First-Ever Look at the Regulatory Program that Writes Off Drinking Water Resources for Oil, Gas and Uranium Profits* at 5 (January 2015), available at:

were "unduly stringent."[32] API recommended that EPA insert another criterion stating that an aquifer is eligible for an exemption if it "will not reasonably be expected to serve as a source of drinking water," compared with the EPA language which allowed exemptions only if the USDW could never be used as a source of drinking water.[33] EPA incorporated this flexibility in a fourth criterion with a reduced water quality threshold, which permitted an aquifer to be eligible for an exemption if it was between 3,000 and 10,000 mg/l TDS in addition to not being "reasonably expected to supply a public water system."[34] Ultimately, the lawsuit settled and EPA published revised final UIC regulations in 1982.[35]

Based on the foregoing, the criteria set forth in Section 146.4 is not based upon science, but rather the demands from the oil and gas industry that do not ensure adequate protection of groundwater resources. Even so, the Application does not satisfy the criteria set forth in Section 146.4 for the reasons below.

1. <u>The Application Does Not Set Forth the Grounds to Support the Operators' Claims that Thirty Square Miles in Cat Canyon "are Expected to be Commercially Producible," as Required under Section 146.4(b)(1).</u>

The Application justifies the proposed aquifer exemption expansion in part based upon Section 146.4(b)(1) pertaining to the expectation of future commercial hydrocarbon production. However, neither the Application nor the regulations provide guidance with regards to determining whether an aquifer is "commercially producible," which must be demonstrated under the Federal criteria. The Application must explain what is meant by "commercially producible," citing to all relevant legal authority and guidance documents. Moreover, the Application provides no evidence to support the conclusion that the area proposed to be exempted is "commercially producible." (Application at 155) The proposed expansion of the existing aquifer exemption in Cat Canyon oil field covers almost the entire field and some areas outside of the field's boundaries. If in fact the expansion area is "commercially producible," that determination must be supported with ample data and evidence. Currently, there is no information in the Application to support such a conclusion.

The question of whether future hydrocarbon production in the field will be "commercially producible" was also raised by the Central Coast RWQCB to SWRCB during initial correspondence with DOGGR.[36] RWQCB admitted that the agency "lack[s] the technical expertise to validate the accuracy of claims made in the application regarding portions of the

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https://www.cleanwateraction.org/sites/default/files/docs/publications/Aquifer%20Exemptions%20-%20Clean%20Water%20report%201.6.15.pdf.

[32] *Id.*

[33] *Id.*

[34] 40 C.F.R. § 146.4(a)-(c).

[35] Lynn W. Thorp and John Noel, *Aquifer Exemptions: Program Overview and Emerging Concerns*, 107 American Water Works Association at 54 (September 2015), available at: https://www.cleanwateraction.org/files/publications/AWWA%20journal%20article.pdf.

[36] Letter from John M. Robertson, Executive Officer CCRWQCB, to Jonathan Bishop, Chief Deputy Director SWRCB (April 3, 2018)("Exhibit B").

proposed AE expansion area that are expected to contain commercial producible quantities of hydrocarbons (i.e., areas where there is currently no well data showing the presence of hydrocarbons)."[37] For this reason, RWQCB decided to defer to DOGGR or EPA with regards to this criterion.[38] However, given that the Application provides no basis for finding that the aquifers "are expected to be commercially producible" and DOGGR's response to the Water Boards did not cite to any relevant information, the criteria at Section 146.4(b)(1) has not been satisfied.

2. The Application Does Not Adequately Assess Whether the Recovery of Drinking Water from the Exempted Area Would be "Economically or Technologically" Practical.

The Application provides a deficient response to the requirements under the Federal criteria under Section 146.4(b)(2)-(3). (Application at 155-157) Water in the Monterey and Sisquoc Formations may serve as a source of drinking water in the future due to technological advances in treating water, reduced groundwater recharge, and increased agricultural and domestic water demand. Advances in water treatment since the adoption of Section 146.4 in 1980 has rendered water treatment, such as utility-scale desalination, to be cost-effective, as evidenced by the City of Santa Barbara's Charles E. Meyer Desalination Plant. Over the past twenty years, the energy demand for desalination has decreased by 80%.[39] "[N]ew, more efficient desalination membranes, innovative thermal membranes or hybrid desalination technologies, and equipment improvements, are released every few years."[40] Furthermore, "[t]echnology advances are expected to reduce the cost of desalinated water by 20% in the next five years, and by up to 60% in the next 20 years …, making it a viable and cost-effective competitor for potable water production."[41]

The salinity of the water in certain portions of the Sisquoc and Monterey Formations approaches the salinity of seawater or 35,000 mg/L TDS.[42] However, as demonstrated above, seawater can be desalinated today and the cost of desalination is expected to decrease as the technology advances in the coming years. It is thus reasonable to find that future technology may be able to treat the salty water in the Sisquoc and Monterey Formations, and such treatment could become cost-effective.

Moreover, in the future, water that is currently undrinkable due to salinity will become important water supplies, according to the International Water Association.[43] "[C]hanging climate patterns, combined with population growth pressures and limited availability of new and inexpensive fresh water supplies, are shifting the water industry's attention – the world is

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[37] *Id.*
[38] *Id.*
[39] Nicolay Voutchkov, *International Water Association, Desalination – Past, Present and Future* (August 17, 2016), available at: https://iwa-network.org/desalination-past-present-future/.
[40] *Id.*
[41] *Id.*
[42] Jeff Kimber, DOGGR, *Sisquoc and Monterey Aquifer Exemption Expansion Public Presentation* (June 5, 2019).
[43] Nicolay Voutchkov, *International Water Association, Desalination – Past, Present and Future* (August 17, 2016), available at: https://iwa-network.org/desalination-past-present-future/.

looking to the ocean for fresh water."[44] Based on the analysis in the Application, it is premature to dismiss the possibility that the high TDS water in the Sisquoc and Monterey Formations may be used for drinking water in the future given advances in technology, reduced costs, and water demand.

Finally, the Application must not rely on the current freshwater supplies in the Paso Robles and Careaga Formations as grounds to conclude that high TDS groundwater located in the Sisquoc and Monterey Formations will never be drinking water supplies.[45] The quality and quantity of drinking water sources presently available in the Paso Robles and Careaga Formations are threatened by climate change and increasing water demand due to population growth in the area and agriculture. Climate change is resulting in higher temperatures, more severe droughts, and reduced freshwater supplies.[46] Higher temperatures increase water demand for agricultural operations, which rely on the Paso Robles and Careaga aquifers for irrigation and other uses. Reduced rainfall caused by climate change also intensifies agricultural water demand in the Cat Canyon area and reduces groundwater recharge in freshwater aquifers.

Expanding agricultural operations in and around Cat Canyon and a host of newly-permitted cannabis farms in northern Santa Barbara County are additional drains on the freshwater supply in the area.[47] As the population in northern Santa Barbara County continues to grow, more and more people will rely on the Paso Robles and Careaga Formations for drinking water. As a result of these factors, it is reasonable that in the future, the Paso Robles and Careaga Formations may become over-drafted and will no longer be a viable source of drinking water. In response, landowners, farmers, and towns will likely drill deeper wells into deeper aquifers with lower water quality, and aquifers such as in the Sisquoc and Monterey Formations could become increasingly important for drinking water and other beneficial uses, such as agriculture.

For the foregoing reasons, the Application does not demonstrate that the Sisquoc and Monterey Formations "cannot now and will not serve as a source of drinking water," as required under Section 146.4(b).

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[44] *Id.*
[45] Don Drysdale, Public Information Officer, Department of Conservation, and Jeff Kimber, Associate Oil and Gas Engineer, California Department of Conservation, Division of Oil, Gas, and Geothermal Resources, *Cat Canyon Aquifer Exemption Proposal Presentation* on YouTube at 15:37 and 22:26 (May 31, 2019), available at: https://www.youtube.com/watch?v=Z69X6z1bA00&feature=youtu.be.
[46] United Nations, *Water and Climate Change*, available at: https://www.unwater.org/water-facts/climate-change/.
[47] Giana Magnoli, *Santa Barbara County Pondering Changes to Laws Regulating Cannabis Industry*, Santa Barbara Independent online (April 3, 2019), available at: https://www.noozhawk.com/article/santa_barbara_county_pondering_changes_to_laws_regulating_cannabis_industry.

3. Groundwater Testing of Water Wells in and Around the Proposed Aquifer Exemption Must be Conducted and Considered in the Analysis in the Application.

The Application lacks sufficient documentation to demonstrate compliance with the criteria set forth under Section 146.4 given that no groundwater wells were tested as part of this Application process. The Application identifies 345 water wells within a one-mile radius of the proposed expansion area. (Application at 83-90) The majority of the identified water wells are screened within the Alluvium, Paso Robles, Careaga and Foxen Formations; however, two water wells are completed in the allegedly impermeable Upper Sisquoc Confining Layer. (Application at 106) The Application discusses the groundwater quality from "sampled water wells," but in fact no groundwater sampling was performed as part of this aquifer exemption process. (Application at 107) Rather, the "[a]nalytical data for groundwater supply wells were obtained from the numerous studies of the subject region that incorporate the study area (Martin, 1985), (Worts & Thomasson, 1951), (Muir, 1964), (Schadt, 2015), (Golden State Water Company, 2014), (Hutchinson, 1980), (California Department of Water Resources Board, 2004), (California Department of Water Resources Board, 2004), (County S. B., 2013)." (*Id.*)

Real-time groundwater sampling of water wells must be required prior to submitting the Application to EPA. Without this groundwater sampling data and a corresponding analysis in the Application, existing groundwater contamination in the field is unknown, and potential pathways for contamination are undocumented. If DOGGR or SWRCB are unable to collect groundwater samples due to landowner objections or other constraints, the agencies must place the Application on hold until the groundwater sampling results from the USGS study of the groundwater in Cat Canyon are released.

B. The Application Does Not Conform with the State Criteria for Exempting an Aquifer Pursuant to Public Resources Code Section 3131(a).

As compared to the Federal criteria, the criteria promulgated by the State of California is facially stronger and imposes stricter standards, requiring that "the injection of fluids will not affect the quality of water that is, or may reasonably be, used for any beneficial use," and that "[t]he injected fluid will remain in the aquifer or portion of the aquifer that would be exempted."[48] Beneficial uses "include, but are not limited to: domestic, municipal, agricultural and industrial supply; power generation; recreation; aesthetic enjoyment; navigation; and preservation and enhancement of fish, wildlife, and other aquatic resources or preserves."[49]

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[48] Pub. Res. Code § 3131(a)(2)-(3).
[49] Cal. Wat. Code § 13050(f).

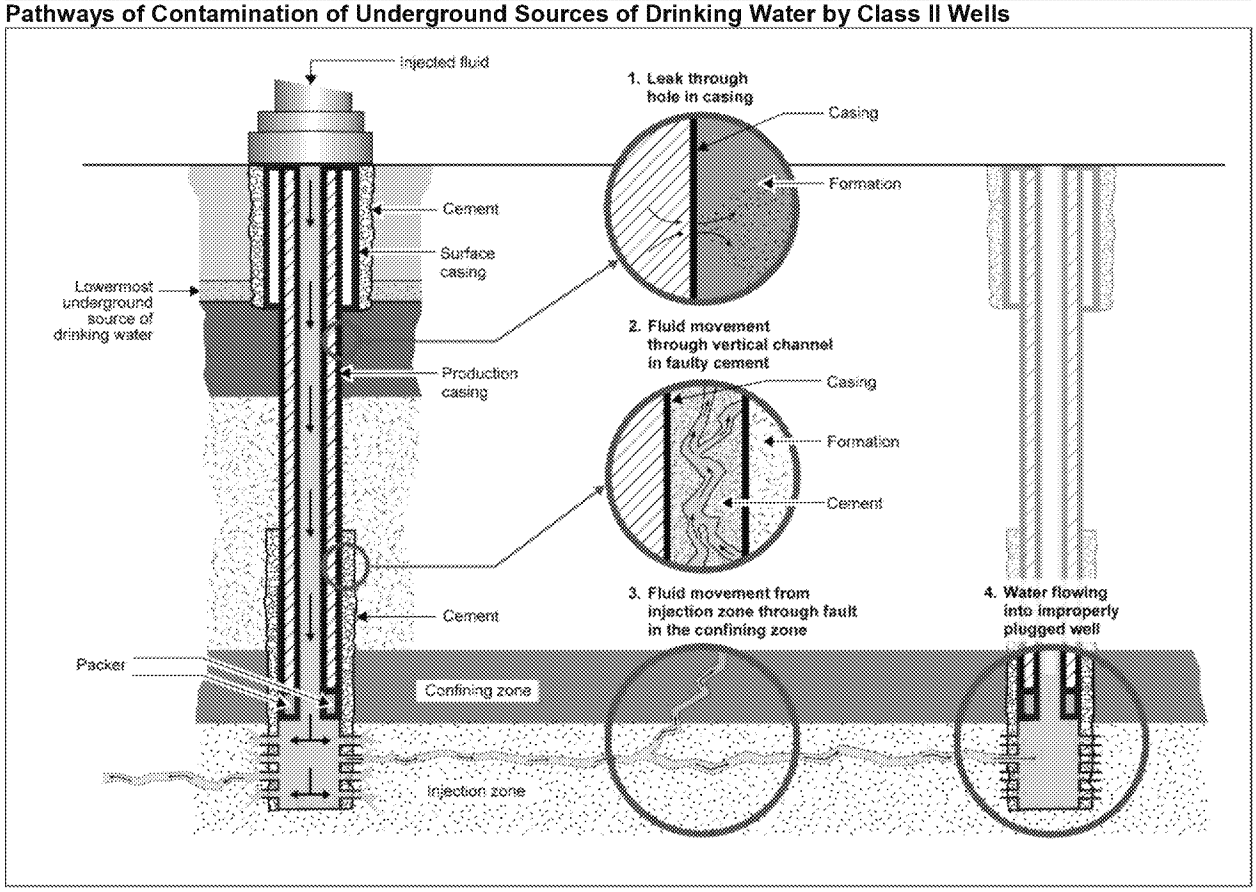
1. The Application Fails to Meet the Criteria under Section 146.4 of Title 40 of the Code of Federal Regulations and Thus Does Not Satisfy the State's Criteria under Section 3131(a)(1).

For the reasons set forth above, the Application does not meet the Federal criteria codified under Section 146.4 and thus must be denied.

2. The State Agencies Cannot Guarantee that the Injection of Fluids Will Not Affect the Quality of Water that is, or May Reasonably be, Used for Any Beneficial Use or that the Injected Fluid Will Remain in the Exempted Aquifer.

In an EPA guidance document titled, "Statement of Basis and Purpose: Underground Injection Control Regulations (Basis and Purpose)," EPA identified six major pathways that contaminants can take to enter USDWs.[50] The Figure below shows four of the six different pathways.

Pathways of Contamination of Underground Sources of Drinking Water by Class II Wells



Source: GAO analysis of EPA information. | GAO-14-555

[50] EPA, Office of Drinking Water, *Statement of Basis and Purpose: Underground Injection Control Regulations* (May 1980).

Other pathways that are not included in the Figure above include fluid movement from one part of a formation to another that contains an USDW and fluid injection into a drinking water source.[51]

a. The Natural Geologic Fracturing of the Sisquoc and Monterey Formations May Create Conduits for Contamination to Enter Drinking Water, Surface Water, or Water with Beneficial Uses.

The Monterey and Sisquoc Formations are sedimentary, naturally fractured bedrock formations.[52] The Application explicitly recognizes that the Monterey Formation is "one of the most important naturally fractured reservoirs in the United States." (Application at 69) Natural fractures within these Formations can form pathways that allow for fluid migration vertically or horizontally. However, the presence or absence of such pathways in these Formations has not been adequately studied or fully disclosed in the Application because, "[w]hile core data has been taken in the Monterey, it is not considered representative of the total formation properties due to the localized natural fracturing." (*Id.*) Since the Monterey Formation has "localized natural fracturing," the Formation is heterogeneous and thus the limited core data relied upon in the Application is representative of only a localized portion of the Formation. For this reason, core data taken from a portion(s) of the Monterey Formation cannot demonstrate whether fractures form pathways throughout the Formation. The Application must not misrepresent the core data to be representative of the entire exempted area when in fact the data is specific to the areas from which it was taken.

If fractures are present and connect through the Sisquoc and Monterey Formations, the fractures could enable the upward flow of injectate and other toxic fluids into drinking water aquifers. If fractures in these Formations connect to the Paso Robles, Careaga, alluvial Formations, or to surface waters, then oil production fluids and/or contaminated wastewater would have a pathway from the exempted area, through fractures, and into freshwater aquifers and/or surface waters. If injectate and other toxic fluids reach drinking water aquifers or waters with beneficial uses, the presence of these fluids would degrade these resources, potentially resulting in irreparable damage to the quality of the water supply.

For the foregoing reasons, the Application does not set forth the requisite information to conclude that injected fluids will be confined to the target area because the Application fails to adequately determine whether fractures exist in the Monterey and Sisquoc Formations that connect to the Paso Robles and Careaga Formations.

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[51] *Id.*
[52] W.P. Woodring and M.N. Bramlette, Department of the Interior, *Geology and Paleontology of the Santa Maria District California* at 23 and 119-121 (1950).

b. Geologic Faults in the Proposed Aquifer Exemption May Convey Toxic Oil Field Wastewater and Contaminated Injectate to Drinking Water Aquifers, Surface Waters, or Waters with Beneficial Uses.

The Sisquoc and Monterey Formations are dissected by faults, such as the Garey Fault, which connects the target Monterey and Sisquoc Formations to the Paso Robles and Careaga Formations, water-bearing alluvium, and surface waters. (Application at 94-97 and 99-104)[53] Faults can be sealed or unsealed, and if unsealed, the fault can act as conduits for the vertical flow of liquids. As explained by our expert Dr. Barry Keller, California-certified geologist and hydrogeologist, "many of the faults act to seal off blocks within the sedimentary sequence… [h]owever, the Application does not address the question of whether fault zones themselves may function as vertical conduits for fluid motion, which could allow injected fluids to migrate upward into the potable water aquifer units."[54] The Application does not disclose evidence confirming that all of the faults dissecting the proposed exemption area are sealed. To the contrary, the Application states that the Fugler Fault "is not sealing." (Application at 132) Unsealed faults in the exemption area may act as effective conduits to convey injectate from the Monterey and Sisquoc Formations to the drinking water sources.[55] In some cases, the vertical distance along the faults between drinking water supplies and the proposed exemption area is only 400 to 500 feet thick.[56] Produced water and/or other contaminants injected into the Sisquoc and Monterey can travel upward over 500 feet along unsealed faults. This is further confirmed by statements made by Dr. Keller that "[i]njected fluid would have hydraulic head equal to or greater than the land surface elevation, so if a conduit is available, the fluid would tend to travel upward."[57]

For the foregoing reasons, the Application is inadequate because the discussion does not identify all unsealed faults in the proposed exemption area and fails to adequately assess the serious risks to the quality of freshwater resources due to the potential for fluids to flow upward into freshwater aquifers along unsealed faults that dissect the proposed exemption areas.

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[53] *See also* Figures 5.1-4, 5.1-5, 5.1-6, 5.1-7a, 5.1-8, 5.1-9, 5.1-10, 5.1-11, 5.1-12, and 5.1-13.
[54] Letter from Hydrogeologist Dr. Barry Keller to Department of Conservation at 2 (June 19, 2019)("Exhibit C"); *See also* Application at 2.
[55] *Id.* at 2 – 3.
[56] Application at Figure 5.1-13 showing an approximately 400-foot separation between the Monterey Formation and the base of the Careaga Aquifer along the Garey Fault consisting of approximately 300 feet of Lower Sisquoc Confining Layer and 100 feet of Foxen Formation; *See also* Figure 5.1-6 showing an approximately 500-foot distance (as measured along a fault) between the proposed exempt portion of the Upper Sisquoc Formation and the Careaga Aquifer located near several water wells which are drilled into the Careaga, Foxen, and Upper Sisquoc Confining Layer; *See also* Figure 5.1-5 showing an approximate 500-foot vertical separation between the Upper Sisquoc proposed exemption and the Careaga as measured along a fault.
[57] Exhibit C at 2.

c. Earthquakes Can Exacerbate Fractures and Unseal Faults, Forming Pathways for Contamination to Reach Drinking Water Supplies or Waters of Beneficial Uses.

Cat Canyon and the surrounding area are "located in a geologically complex and seismically active region" with relatively frequent tectonic and seismic activity, including earthquakes.[58] Earthquakes measuring between 4.0 and 6.0 on the Richter Scale have occurred on and around numerous active faults located in and near Cat Canyon oil field.[59] The potential exists for local and regional faults to produce earthquakes measuring as high as 6.9 to 7.3 on the Richter Scale, causing significant ground shaking in Cat Canyon with the potential to damage oil and gas infrastructure including wells.[60]

Earthquakes can increase fracturing within sedimentary rock formations, such as those underlying Cat Canyon, creating new pathways for contamination to flow upward into above-lying freshwater aquifers. Seismic activity can also open up or unseal faults,[61] such as the Garey Fault located "less than approximately 100 feet to the northeast of the [ERG] Project site."[62] If a fault becomes unsealed, it could act as a pathway to convey polluted injectate into aquifers used for drinking and agricultural water or surface waters.[63]

Moreover, there may be a risk of increased seismic activity in the field if the three onshore oil projects are approved in Cat Canyon. At a public hearing on March 27, 2019 before the County Planning Commission, James Thurber, P.G., C.E.G., C.Hg, an Aspen consultant on the ERG project, testified that it is "hard to know" whether ERG's proposed tripling of injection volumes into disposal zones would increase the risk of induced seismicity in the field.[64]

Therefore, the Application must thoroughly evaluate the potential for seismic activity in and around the proposed exemption area and the corresponding impacts from an earthquake on the underlying geology, particularly the creation of pathways for contamination through unsealed faults or fractures.

d. Earthquakes May Crack Well Bores or Damage Well Casings, Forging Pathways for Toxic Fluids to Reach Drinking Water Aquifers, Waters with Beneficial Uses, or Surface Waters.

As explained above, Cat Canyon oil field is located in a geologically and seismically active area and thus the Application must also study the potential for earthquakes to damage well

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[58] Santa Barbara County Energy Division, *ERG West Cat Canyon Revitalization Plan Final Environmental Impact Report* at 4.6-7—4.6-8 (February 2019)("Exhibit D").
[59] *Id.*
[60] Exhibit C at 4.
[61] *Id.* at 2 - 5.
[62] Exhibit D.
[63] Exhibit C at 3-5.
[64] Testimony by James Thurber, P.G., C.E.G., C.Hg to the County of Santa Barbara Planning Commission on the ERG West Cat Canyon Revitalization Plan (March 27, 2019).

casings in active and abandoned wells, or destroy plugs in abandoned wells that were properly or improperly abandoned. A crack or breach in a well casing, seal, or plug after an earthquake could allow the well to become a conduit for contamination into drinking water aquifers and/or surface waters. "Potential conduits include the well casings themselves and unsealed annular spaces remaining from well installation."[65] This is especially true given that some groundwater wells are within a mere 400 vertical feet of the proposed exemption area (see e.g., Cross Sections B-B[1], C-C[1], and J-J[1], Application at 95-96 and 103), thus heightening the risk of injectate and other fluids flowing into and contaminating freshwater aquifers.

During the March 27, 2019 Planning Commission hearing on the ERG project, Chair Parke asked the consultant for the applicant, Mr. James Thurber, P.G., C.E.G., C.Hg, about the potential for contamination to travel into groundwater resources through "up-thrusts."[66] Mr. Thurber responded that "[t]he literature on these types of incidents where we get mingling of fluids in the wrong reservoirs, … the biggest risk is the borehole and the casing and the seals themselves."[67] Mr. Thurber's statements thus confirm the risks that well casings and well bores present to groundwater resources, acting as a conduit for contamination. Furthermore, Mr. Thurber stated that "[i]ndeed earthquakes have damaged wells. I'm familiar with water wells…where they couldn't get the pump out again…."[68]

The Application does not provide information about the active, idle, and abandoned wells in the exempted area, e.g., the number of wells, the year the well was drilled, recent inspections to confirm that the well is in good condition, etc. Without this information, the potential pathways that these wells may create remain unknown. The Application also does not sufficiently assess the potential for the upward migration of contaminants into freshwater aquifers if seismic activity cracks or damages a well casing, or unplugs a previously abandoned well. Given the risks to water quality from the impacts of seismic activity on the hundreds of active, idle, and abandoned wells in the field, the agencies cannot guarantee that the injected fluids will remain confined within the target aquifer.

e. Wells that Were Not Properly Abandoned or for Which DOGGR Does Not Have Seal Integrity Records May Act as Conduits for Injectate to Reach Freshwater Supplies.

Improperly abandoned wells in Cat Canyon oil field may act as conduits capable of transmitting injectate from the target formations into the Paso Robles Formation, the Careaga Formation, and/or alluvial Formations. The Application, however, does not disclose the risks to groundwater quality from improperly abandoned wells that could form pathways for contamination to travel upward. The threats to groundwater from improperly abandoned wells are discussed in the Final Environmental Impact Report ("FEIR") for the pending oil and gas

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[65] Exhibit C at 3.
[66] Testimony by James Thurber, P.G., C.E.G., C.Hg to the County of Santa Barbara Planning Commission on the ERG West Cat Canyon Revitalization Plan (March 27, 2019).
[67] *Id.*
[68] *Id.*

project in Cat Canyon proposed by ERG and the Draft Environmental Impact Report ("DEIR") for the project planned by Aera.[69] For example, Mitigation Measure SGW-5 for the ERG project requires the following:

> **Locate Abandoned Wells and Verify Abandonment Seals**. Due to the long history of drilling and number of inactive and abandoned wells in the West Cat Canyon Oil Field, and the potential for inadequately abandoned wells to provide a conduit for steam injection fluids or production fluids, the Owner/Applicant shall conduct a records search and surface geophysical surveys or other methods to locate abandoned wells and verify seal integrity. If necessary, additional well abandonment to install cement seals in compliance with DOGGR regulations and across all protected groundwater zones shall be implemented.[70]

Moreover, Mitigation Measure SGW-3 in the Aera DEIR explains that based on DOGGR records, "six wells did not have clear abandonment records…"[71] Specifically, the DEIR states that "[o]ne well (Victory 17) requires abandonment and five wells (Field Fee 1, 2, 6, 6A, and Victory 3) need additional evaluation due to missing data."[72] As part of the mitigation measure, Aera is required to complete an Area of Review study, which was initiated in 2017.[73] Moreover, "[d]epending on the results of the evaluation DOGGR may require that existing wells in the injection area of influence be repaired, plugged, and abandoned or re-abandoned…," and "[i]f necessary, additional well abandonment to install cement seals in compliance with DOGGR regulations and across all protect groundwater zones shall be implemented."[74]

The discovery of five wells without abandonment records and one well that requires abandonment happened only after Aera proposed to substantially expand oil and gas operations in East Cat Canyon, highlighting the need to conduct a review of abandoned wells in the field prior to a decision on the proposed exemption. Mitigation Measure SGW-3 also demonstrates a serious lack of monitoring and record-keeping by DOGGR, which is another reason to complete a thorough review of all abandoned wells throughout the oil field as part of the aquifer exemption process.

The analysis in the Application omits any mention of the six wells that lack clear abandonment records within Aera's proposed project site in the field. It must be noted, however, that the information in the Aera DEIR solely pertains to the proposed project site and thus does not account for *all* wells throughout the field that may have been improperly abandoned or lack abandonment records. The Application must disclose whether any efforts were taken to locate abandoned wells throughout the field and verify abandonment seals, as is required for both ERG

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[69] Santa Barbara County Energy Division, *ERG West Cat Canyon Revitalization Plan Final Environmental Impact Report* at 4.9-28 (February 2019)("Exhibit E"); Santa Barbara County Energy Division, *AERA East Cat Canyon Oil Field Redevelopment Plan Draft Environmental Impact Report* at 4.9-26 (November 2018)("Exhibit F").
[70] Exhibit E.
[71] Exhibit F.
[72] *Id.*
[73] *Id.*
[74] *Id.*

and Aera's respective projects. There is no evidence in the Application that indicates such a review has been conducted. If not, the Application cannot proceed forward until this study has been completed and it is confirmed that all abandoned wells have seal integrity.

f. Wells That Were Previously Sealed or Plugged with Reactive Aggregate Concrete May Form Conduits to Convey Polluted Wastewater to Freshwater Aquifers.

There is documented evidence throughout Santa Barbara County that concrete made from reactive aggregate[75] deteriorates when exposed to alkalinity.[76] For example, numerous bridges in Santa Barbara County constructed with reactive aggregate have been damaged and replaced as a result.[77] The Santa Barbara Mission was rebuilt with reactive aggregate and had to be repaired shortly thereafter.[78] Abandoned or active wells that were sealed with this type of concrete, or abandoned wells plugged with this concrete, have an increased risk of failure over time as a result of the concrete used. If the concrete used in the wells breaks down, additional pathways of contamination could form, allowing fluids to escape upward through well bores into drinking water aquifers. The Application does not evaluate whether the numerous active, idle, or abandoned wells in or near the exemption expansion area were constructed using concrete with reactive aggregate. In failing to conduct this assessment, the Application cannot definitively conclude that injected fluids will not enter freshwater aquifers through wells constructed or abandoned using concrete containing reactive aggregate.

3. The Presence of Two Wells in the Upper Sisquoc Confining Layer Suggests that the Layer is Permeable and that Injected Fluids May Be Able to Migrate Upward from the Exempted Aquifer through the Confining Layer.

Two water wells (CC197 and CC225) are completed in the Upper Sisquoc Confining Layer, suggesting that these two wells may produce water from the Upper Sisquoc Confining

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[75] Reactive aggregate is "aggregate containing substances capable of reacting chemically with the products of solution or hydration of the portland cement in concrete or mortar under ordinary conditions of exposure; in some cases causes harmful expansion, cracking, or staining." Farlex, *The Free Dictionary,* available at: https://encyclopedia2.thefreedictionary.com/reactive+aggregate.

[76] *Alkali-silica reaction (ASR)* is of more concern because aggregates containing reactive silica materials are more common. In ASR, aggregates containing certain forms of silica will react with alkali hydroxide in concrete to form a gel that swells as it adsorbs water from the surrounding cement paste or the environment. These gels can induce enough expansive pressure to damage concrete. Portland Cement Association, *Alkali-Aggregate Reaction,* available at: https://www.cement.org/learn/concrete-technology/durability/alkali-aggregate-reaction.

[77] *See e.g.,* Santa Barbara County Public Works Department, *Construction of Cathedral Oaks Road Bridge Replacement in the Second Supervisorial District Begins Today* (May 5, 2014), available at: https://www.independent.com/2014/05/05/construction-cathedral-oaks-road-bridge-replacement-second-supervisorial-district-begins-today/.

[78] Lee Lindblom, Reporter, Santa Barbara Independent, *Question: 'How many times has the Santa Barbara Mission been restored?* (January 31, 2008), available at: https://www.independent.com/2008/01/31/question-how-many-times-has-santa-barbara-mission-been-restored/.

Layer.[79] (Application at 91) To produce water from a formation, it must be permeable otherwise water could not move through the formation into the well. If these two wells have produced or currently produce water in the Upper Sisquoc Confining Layer, then the confining layer is permeable, contrary to statements in the Application. The Application must disclose if Wells CC197 and 225 have produced or are producing water from the Upper Sisquoc Confining Layer because if so, injected fluids cannot be expected to be confined in the target Formations and the State's criterion under Section 3131, subsection (a)(3) has not been satisfied.

IV. The Application Must Not Proceed Until the USGS Publishes the Groundwater Sampling Data Results from the Cat Canyon Oil Field.

Through the Regional Monitoring Program ("RMP"), authorized by California Senate Bill 4 of 2013, the SWRCB is collaborating with USGS to determine the hydrogeologic relationships between oil and gas activities and protected groundwaters, and to determine whether there is evidence of fluid migration and water quality changes.

The RMP is designed to answer the following questions:

- "Where are protected groundwater resources?
- How close are oil and gas operations and protected groundwater, and what geologic materials (i.e., features and properties) separate them?
- Where is there evidence of fluids from oil and gas sources in protected groundwater?
- Where does evidence indicate no connections?
- When fluids from oil and gas sources are present in protected groundwater, what pathways or processes are responsible for observed transport?
- Have oil and gas operations contributed to overall water-quality changes in groundwater basins?"[80]

The first step for the RMP was to prioritize oil and gas fields based on potential risk of groundwater to oil and gas development.[81] The USGS identified four factors in order to prioritize California's 487 onshore oil and gas fields: (1) petroleum-well density, (2) volume of water injected in oil fields, (3) vertical proximity of groundwater resources to oil and gas resource development, and (4) water-well density.[82] Based on the prioritization analysis, twenty-two percent (107 fields) of the total number of oil and gas fields in California were ranked as

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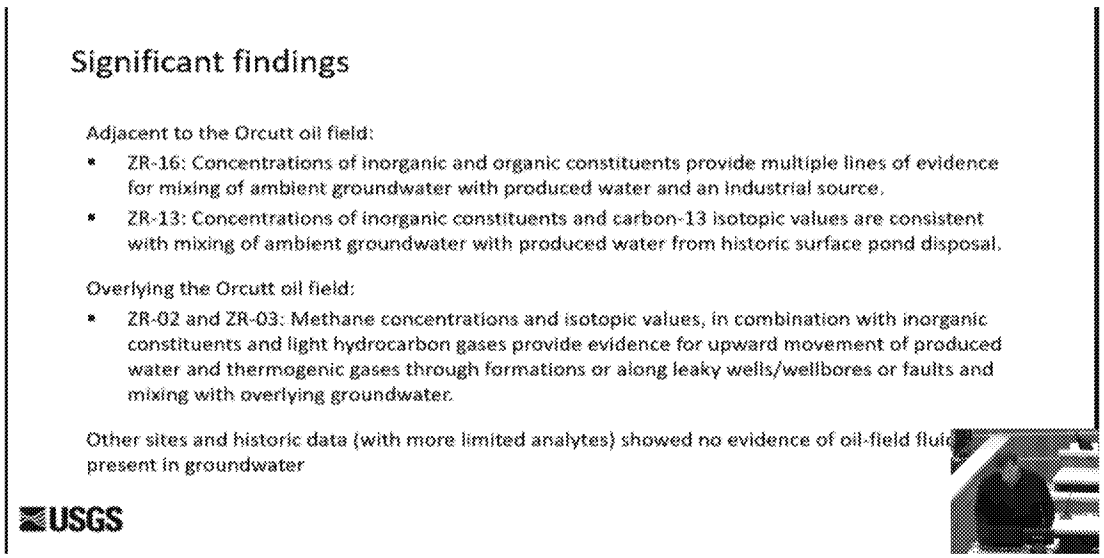
[79] *See also* Table 5.1-1 at 86–88 showing water wells completed in the Upper Sisquoc Confining Layer. *See also* Figure 5.1-6 showing one of the water wells tapping Upper Sisquoc Confining Layer.
[80] SWRCB, *2018 Annual Performance Report: Model Criteria for Groundwater Monitoring in Areas of Oil and Gas Stimulation* at 29 (April 5, 2019), available at: https://www.waterboards.ca.gov/water_issues/programs/groundwater/sb4/docs/2018_performance_measures.pdf.
[81] Davis, T.A., Landon, M.K., and Bennett, G.L., 2018, *Prioritization of oil and gas fields for regional groundwater monitoring based on a preliminary assessment of petroleum resource development and proximity to California's groundwater resources: U.S. Geological Survey Scientific Investigations Report 2018–5065* at 1, available at: https://doi.org/10.3133/sir20185065. ("Exhibit G").
[82] *Id.*

high priority.[83] The Cat Canyon, Orcutt, and Oxnard oil fields were all identified as high priority fields.[84]

Cat Canyon oil field is identified as a high priority study area based on the field's high volume of injection.[85] USGS estimates that the study will begin sometime this year. Due to the possibility of irreversible damage to the County's domestic water supplies, the Application must be withdrawn outright or, in the alternative, the agencies must place the Application on hold until the USGS publishes the data from the Cat Canyon study.

Given the preliminary findings that have been published by the USGS with regards to the Oxnard oil field and Orcutt oil field, it is highly likely that oil-field fluids and/or thermogenic gases will be detected in at least some groundwater wells throughout Cat Canyon oil field. For example, in the neighboring Orcutt oil field, the preliminary results released by the USGS at a stakeholder meeting on February 25, 2019 found mixing between oil-field fluids and groundwater in four of the sixteen wells sampled in the field.[86] Sampling results from two wells contained groundwater mixed with produced water.[87] Two other wells had evidence of groundwater mixing with produced water and thermogenic gases.[88] Below is a summary of the "significant findings" of the groundwater sampling results in the Orcutt oil field presented by USGS scientists.[89]



[83] *Id.*
[84] *Id.*
[85] *Id.* at 67.
[86] USGS, *Regional groundwater monitoring results for the Orcutt study unit, Santa Barbara County, CA* (February 25, 2019)("Exhibit H"); *See also* Anders, Robert, Landon, Matthew K., and McMahon, Peter B., *Abstract; Groundwater quality results from the Regional Monitoring Program study of the Orcutt Oil Field* (2019), available at: https://ca.water.usgs.gov/projects/oil-gas-groundwater/products.
[87] SWRCB, *USGS Stakeholder Meeting* (February 25, 2019), available at: https://www.waterboards.ca.gov/water_issues/programs/groundwater/sb4/regional_monitoring/#stakeholder.
[88] *Id.*
[89] *Id.*

Potential pathways for groundwater contamination in the Orcutt oil field include legacy surface disposal (ZR-16), injection into formations that are hydraulically connected to the shallow groundwater (ZR-16), percolation from historical surface pond disposal (ZR-13), **upward flow of oil-field fluids through formations** (ZR-02 and ZR-03), leaky wells allowing flow across confining layers (ZR-02 and ZR-03), and **movements along faults or fractures** (ZR-02 and ZR-03).[90]

Moreover, in the Oxnard oil field, thermogenic methane[91] was detected in at least two wells and possibly a third well also.[92] As depicted on the map below, ZR-05 had the highest level of methane concentration (9.1 mg/L) and is surrounded by the densest grouping of oil and gas wells.[93] "The detected thermogenic gases occurred in deep groundwater wells, with the highest concentration associated with relatively high density of oil wells, large injection volumes of water disposal, and shallow oil development."[94] Notably, USGS found that the groundwater wells with the highest thermogenic signals were located above cyclic steaming activity.[95] Potential pathways for thermogenic gases underground could be "**through wells or boreholes or vertical migration through the formation**."[96]

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[90] SWRCB, *USGS Stakeholder Meeting* (February 25, 2019), available at: https://www.waterboards.ca.gov/water_issues/programs/groundwater/sb4/regional_monitoring/#stakeholder. (emphasis added.)

[91] Thermogenic gases come from oil and include methane, ethane, propose, butane, and pentane. Microbial gases come from bacteria eating organic material and primarily occur as methane. *Id.*

[92] USGS, *SB4 Regional Groundwater monitoring results for Oxnard study unit* (February 25, 2019)("Exhibit I"); *See also* Rosecrans, Celia Z., Landon, Matthew K., and McMahon, Peter B., *Abstract: Groundwater quality results from the Regional Monitoring Program study of the Oxnard Oil Field* (2019), available at: https://ca.water.usgs.gov/projects/oil-gas-groundwater/products.

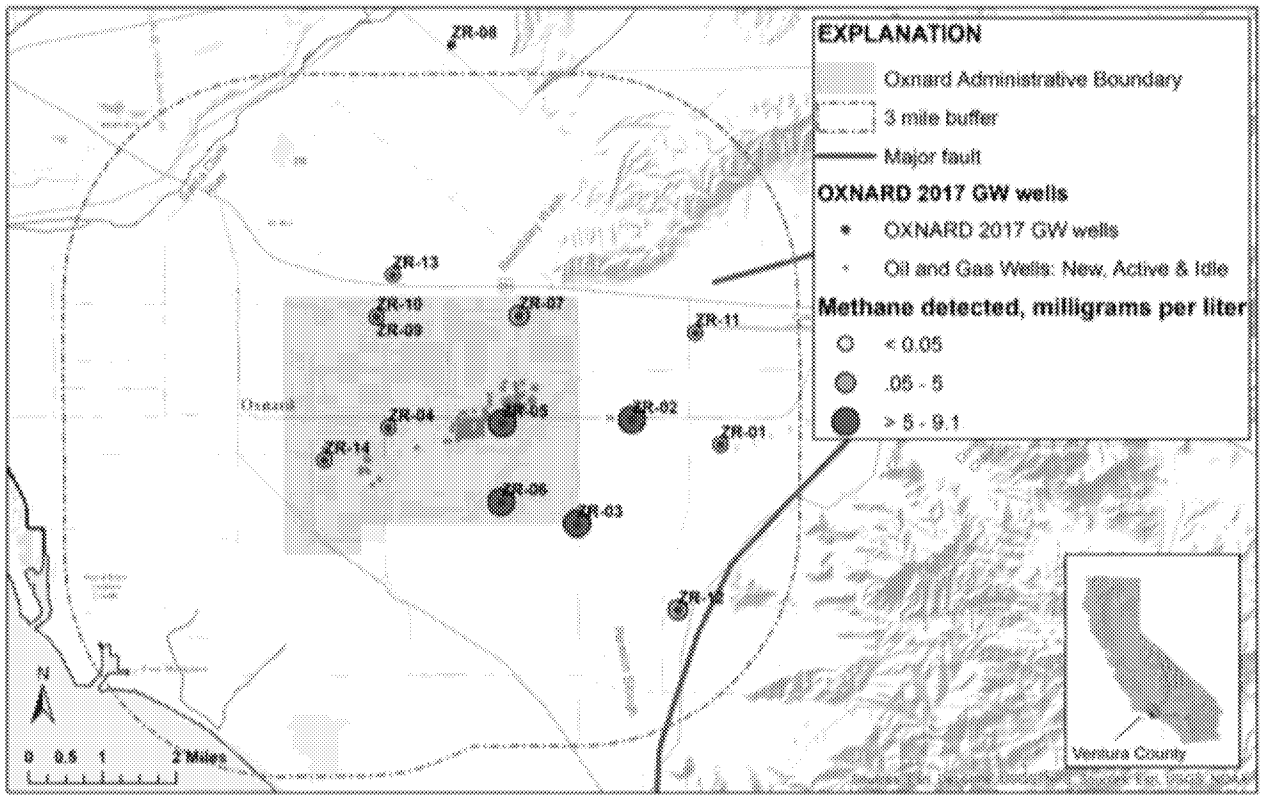
[93] SWRCB, *USGS Stakeholder Meeting* (February 25, 2019), available at: https://www.waterboards.ca.gov/water_issues/programs/groundwater/sb4/regional_monitoring/#stakeholder.

[94] Rosecrans, Celia Z., Landon, Matthew K., and McMahon, Peter B., *Abstract: Groundwater quality results from the Regional Monitoring Program study of the Oxnard Oil Field* (2019), available at: https://ca.water.usgs.gov/projects/oil-gas-groundwater/products.

[95] *Id.*

[96] SWRCB, *USGS Stakeholder Meeting* (February 25, 2019), available at: https://www.waterboards.ca.gov/water_issues/programs/groundwater/sb4/regional_monitoring/#stakeholder. (emphasis added).

Map of Sites Where Methane is Detected[97]



On April 9, 2019, in a direct response to the preliminary findings by USGS of petroleum-related gases migrating into the potable water aquifers of the Fox Canyon aquifer, Ventura County Board of Supervisor Steve Bennett proposed an interim ordinance pursuant to Government Code Section 65858 to temporarily prohibit approval of new oil and gas wells, and re-drilling of existing oil and gas wells, for production that will utilize steam injection in the vicinity of potable groundwater aquifers.[98] In addition to Supervisor Bennett's concerns about degradation of groundwater quality from enhanced oil recovery, Supervisor Bennett also "said the moratorium is appropriate partly because Peak Oil is proposing to drill 79 new wells that would operate with steam injection into tar sands beneath the Fox Canyon aquifer."[99] Supervisor Bennett classified this proposal as a "large number of new steam injection wells."[100]

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[97] *Id.*

[98] Recommendation by Steve Bennett, County of Ventura Board of Supervisor, to the Board of Supervisors to Direct the Planning Division to Promptly Return to the Board with a Proposed Interim Ordinance Pursuant To Government Code Section 65858 To Temporarily Prohibit The County's Approval Of New Oil And Gas Wells, And Re-Drilling Of Existing Oil And Gas Wells, For Oil Production That Will Utilize Steam Injection In The Vicinity of Potable Groundwater Aquifers While the County Studies Potential Regulations For This Land Use (April 9, 2019)("Exhibit J").

[99] Wilson, Kathleen, *Moratorium proposed on new oil drilling based on water issues,* Ventura County Star (April 10, 2019).

[100] *Id.*

The Ventura County Board of Supervisors approved the interim urgency ordinance on April 23, 2019, upon finding "the existence of a current and immediate threat to the public health, safety and welfare…."[101] A true and correct copy of the ordinance is attached hereto as Exhibit K.[102] The motion to approve the ordinance also requires "that the Board of Supervisors send a letter to the California State Water Quality Control Board requesting that they contact the United States Geological Survey to encourage an expedited process for determining the source of thermogenic gases found in the Fox Canyon Groundwater Aquifer."[103] On June 4, 2019, the Ventura County Board of Supervisors voted to extend the moratorium an additional six months, now expiring on December 7, 2019.[104]

The aforementioned preliminary groundwater sampling results from the USGS studies indicate that oil and gas operations pollute groundwater resources, including water that has beneficial uses, such as for drinking water or agricultural irrigation. The approval of the Cat Canyon aquifer exemption proposal could allow more and riskier enhanced oil recovery techniques to be employed in the field, threatening the quality of the underlying groundwater basins. For these reasons, it is imperative that the Application not proceed until the results from the USGS study of the Cat Canyon oil field are released.

V. Approval of the Cat Canyon Aquifer Exemption Proposal Could Open the Door for a Massive Expansion of Oil Production in Santa Barbara County, thus Curtailing Efforts to Promote a Clean, Renewable Energy Future.

A. The Three Currently Pending Enhanced Oil Recovery Projects in Cat Canyon Oil Field Depend on the Approval of the Massive Expansion of the Field's Existing Aquifer Exemption Boundary.

The request by Cat Canyon oil and gas operators to significantly expand the existing aquifer exemption boundary in the field coincides with three pending proposals by ERG, Aera, and PetroRock, respectively, to drill and operate over 700 new wells in Cat Canyon oil field, thus tripling Santa Barbara County's current oil production. If approved these projects will cause irreparable, unmitigated damage to numerous acres of important sensitive habitat and native vegetation, endangered wildlife, and our air and water quality and public health, and exacerbate climate change.

The three projects each propose to utilize enhanced oil recovery techniques, such as cyclic steam injection, thus necessitating the expansion of the existing aquifer exemption in the field. Cumulatively, the projects will substantially increase steam injection and wastewater

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[101] County of Ventura, Board of Supervisors, *Official Summary Minutes* at 12 (April 23, 2019), available at: http://ventura.granicus.com/DocumentViewer.php?file=ventura_3a56ca989e9ca9b67e1146bc816e0212.pdf&view=1.
[102] Ordinance No. 4542 (April 23, 2019)("Exhibit K").
[103] *Id.*
[104] Wilson, Kathleen, *With no answers, drilling moratorium extended six months,* Ventura County Star (June 6, 2019), available at: https://www.vcstar.com/story/news/politics/2019/06/06/ventura-county-moratorium-oil-drilling-extended-six-months-oxnard/3714331002/.

disposal activities in the field. For ERG's project alone, approximately 80,000 barrels of produced wastewater will be generated **daily** of which 30,000 barrels would be injected underground each day as steam and 50,000 barrels per day will be disposed of into the Monterey Formation—a different formation than where the operator proposes to produce.[105] Without the approval of the proposed exemption, these projects will not be able to proceed at the scale currently planned.

Over the past two years, EDC, on behalf of our clients, has been actively engaged in the environmental and administrative review processes on these projects. To support our research, we have gathered information from multiple agencies through Public Records Act requests, studied the CEQA documents, and reviewed various reports and studies. To date, EDC has submitted four comment letters, dated August 3, 2018, March 11, 2019, May 24, 2019, and May 28, 2019, totaling over a thousand pages, on the ERG project's significant, unmitigated impacts to biological resources, air quality, climate change, water quality, surface and groundwater resources, hazards, and geological resources.[106] We also submitted a comment letter dated January 28, 2019 on the DEIR for Aera's Project, which details the significant environmental impacts associated with Aera's proposal to drill 296 new wells in Cat Canyon using highly polluting and risky thermal enhanced oil recovery methods and acidizing.[107]

Based on this research, we have gathered evidence of unsafe operating history in Cat Canyon oil field, rampant oil contamination in the field, and evidence of local groundwater contamination from oil operations in and near Cat Canyon. For example, while undertaking an investigation into ERG's operating history in Santa Barbara County, EDC's investigation revealed that in just nine years of operating in our County, ERG's oil operations have resulted in:

- several dozen spills of oil and produced water, including five oil spills that breached containment and eight spills that escaped to secondary containment, including one that sprayed oil onto a hillside and native oak grove; [108]

- two wildfires on its property, in 2016 and 2017, that burned over thirty-five acres and required several air tanker drops to extinguish;[109]

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[105] ERG West Cat Canyon Revitalization Plan, *Final Environmental Impact Report* at 4.9-23 (February 2019).
[106] Letter submitted by the Environmental Defense Center to the County of Santa Barbara, Energy Division on the ERG West Cat Canyon Revitalization Plan Draft Environmental Impact Report (August 3, 2018)("Exhibit L"); Letter submitted by the Environmental Defense Center to the County of Santa Barbara Planning Commission on the ERG West Cat Canyon Revitalization Plan Final Environmental Impact Report (March 11, 2019)("Exhibit M"); Letter submitted by the Environmental Defense Center to the County of Santa Barbara Planning Commission on the ERG West Cat Canyon Revitalization Plan (May 24, 2019)("Exhibit N"); Letter submitted by the Environmental Defense Center to the County of Santa Barbara Planning Commission on the ERG West Cat Canyon Revitalization Plan (May 28, 2019)("Exhibit O").
[107] Letter submitted by the Environmental Defense Center to the County of Santa Barbara, Energy Division on the Aera Energy LLC East Cat Canyon Oil Field Redevelopment Plan Draft Environmental Impact Report (January 28, 2019)("Exhibit P").
[108] All spills were confirmed by the Annual Briefings on Oil and Gas Development in Santa Barbara County, and by documents obtained through a PRA request to the County's Office of Planning and Development ("Exhibit Q").
[109] All documents were obtained from the County Fire Department.

- one employee death, Roberto Garcia, an oil rig operator, age thirty-six, killed on October 12, 2013 while working on one of ERG's leases; [110]

- dozens of Notices of Violations ("NOVs") from multiple agencies, including APCD, DOGGR and the County; [111]

- illegally injected toxic wastewater into the freshwater aquifer underlying Cat Canyon through forty-seven wells for the last nine years in violation of the federal SDWA.[112]

In addition to ERG's numerous violations and spills, EDC has reviewed hundreds of documents retained by the County's Environmental Health Services Division ("EHS") which disclose extensive soil contamination present throughout Cat Canyon oil field caused by decades of unsafe and irresponsible oil extraction practices. The legacy of unsafe oil operations in Cat Canyon has resulted in: mercury, asbestos, and lead contamination; buried oil sumps mixed with oil; over 53,000 cubic yards of solid dried tar; uncovered piles of waste soil; elevated benzene in soil on at least twelve well pads; shallow groundwater impacted by tar in Canyon 7; and tar contamination in Cat Canyon Creek.[113] While some remediation has been conducted, most of this contamination still remains and will not be fully remediated if the field is allowed to expand and develop additional oil reserves.

Finally, groundwater resources underlying Cat Canyon oil field are at risk of contamination, if not already degraded, by years of dirty operations in the field. Historically, Cat Canyon oil operators utilized creeks and other natural channels to flow oil down the canyons prior to pipelines.[114] As a direct result of these activities, extensive and significant high-viscosity petroleum contamination is present in Cat Canyon Creek and eleven other canyons, as confirmed in 2016 after tar contamination was discovered in the creek bed.[115] On February 15, 2019, EHS

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[110] OSHA issued three serious violations and imposed penalties totaling $42,750 to Key Energy Services, for the death of Roberto Garcia, age thirty-six, who was killed on October 12, 2013 while working on one of ERG's oil rigs on its property. Key Energy Services is one of ERG's subcontractors for drilling oil and gas wells. *See* U.S. Department of Labor, Occupational Safety and Health Administration, *Inspection Detail*, available at: https://www.osha.gov/pls/imis/establishment.inspection_detail?id=316671544.

[111] All NOV's were confirmed by the Annual Briefing annual Briefings on Oil and Gas Development in Santa Barbara County and by documents obtained through a PRA request to the County's Office of Planning and Development, and PRA requests to DOGGR. Information regarding APCD violations was gathered from searching the APCD's website, available at: www.ourair.org.

[112] Exhibit A. Information documenting ERG's illegal injections into Santa Barbara County aquifers was provided by John Zorovich, Santa Barbara County.

[113] Spreadsheet of historic contamination on ERG's Project site created by Brian Trautwein, Environmental Analyst/Watershed Program Director, Environmental Defense Center, based on documents maintained on GeoTracker. ("Exhibit R").

[114] Letter from Thomas M. Rejzek, Professional Geologist and Certified Hydrologist, Santa Barbara County Public Health Department, Environmental Health Services ("EHS"), to Johanna Neuman, Shell Exploration and Production Company at 1 (February 15, 2019)("Exhibit S").

[115] *Id.*

approved a Remedial Action Plan ("RAP") and Interim Remedial Action Plan ("IRAP") to remediate a mere portion of this pollution.[116] In the letter of approval, EHS confirms that "[s]hallow groundwater was encountered in Canyon 7 borings…" and "[t]his groundwater was noted to be in contact with the oil remains."[117]

Threats to groundwater quality also arise from well casing failures, which DOGGR does not track or report on despite the potential for groundwater contamination if the casing fails. Recently, in 2015, the injection well, Lloyd Et Al 17, in Cat Canyon oil field experienced a casing breach.[118] On November 9, 2015, DOGGR informed the SWRCB and the Central Coast RWQCB by letter that the injection well had experienced a failure.[119] DOGGR records indicate that the well had multiple holes in the well tubing, recently failed casing pressure tests, and there had been multiple exceedances of the maximum allowable surface pressure during injection.[120] Based on these factors, the SWRCB concluded that there "is a potential for the migration of injection fluids into aquifers suitable for drinking water supply and other beneficial uses."[121]

Prior to the well casing failure, DOGGR had notified the operator on multiple occasions that the well exceeded pressure tests during well injection.[122] Moreover, the failure that occurred in the Lloyd Et Al 17 injection well in 2015 was not the first instance of such a breach, according to Greka's Project Manager, Richard H. Field. Mr. Field explicitly stated in an email to the California Department of Water Resources that:

> The injection well has had a history of potential casing problems/failures that might have impacted the Regional Aquifer (Santa Maria Basin) if the injection fluid had migrated out of the well casing into groundwater.[123]

On March 25, 2016, the SWRCB issued an Order pursuant to California Water Code Section 13267 with regards to the 2015 Lloyd Et Al 17 well casing breach.[124] The Order required Greka to submit technical information and reports to the SWRCB "to assess the potential threats to both human health and to water quality" given "[t]he potential for significant degradation of the Santa Maria groundwater basin," and "[t]he high potential for harm to drinking water."[125]

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[116] *Id.*
[117] *Id.* at 2.
[118] Central Coast Regional Water Quality Control Board, *Order Pursuant to California Water Code Section 13267* (March 25, 2016)("Exhibit T").
[119] *Id.*
[120] *Id.*
[121] *Id.*
[122] DOGGR, *Report on Operations* (August 3, 2015); DOGGR, *Report on Operations* (August 23, 2013); DOGGR, *Report on Operations* (December 4, 2013)(collectively, "Exhibit U").
[123] Email from Richard H. Field, Project Manager/Consultant for Greka Integrated, to Chris Guevara, California Department of Water Resources, (June 19, 2016 at 9:07 pm)("Exhibit V").
[124] Exhibit T.
[125] *Id.* at 1.

A second Order was issued by the SWRCB on May 4, 2017 because SWRCB staff "identified several deficiencies related to [Greka's] technical submittal."[126] The Order also concluded that "the information provided indicates that a release of Class II fluids has occurred from 'Lloyd et al' 17 and that waters of current or potential future beneficial use were likely affected."[127] As such, the Order required additional subsurface investigations to determine the depth intervals at which release(s) occurred, as well as the lateral and vertical extent of any groundwater contamination.[128] To date, Greka still has not completed the required groundwater sampling of the twenty-three groundwater wells located within a one-mile radius of Lloyd Et Al 17 well. Although the extent of groundwater contamination from the well casing failure is still a question, the documents to date confirm that the breach caused a release of oil-field fluids that "likely affected" waters of current or potential future beneficial use.[129]

Finally, at the PetroRock scoping hearing on June 28, 2018, Mr. Mark Ontiveros, a property owner in Cat Canyon, testified about oil-field fluids that contaminated a newly installed groundwater well on his property:

> We have a water well we drilled three years ago to the tune of about $500,000 that operates part of the vineyard and part of the ground that's gonna be put into vineyards. … We're in the process of going through a bunch of testing right now but it is contaminated. I've got the lab results here; they're not conclusive, but we have tested the water. … Toulenes and benzenes in the water supply. … I don't think there's any doubt that these wells are gonna start leaking again. We already have a current one leaking.[130]

For the aforementioned reasons, we must not gamble with such a critical natural resource by employing even riskier enhanced oil recovery techniques to drill through fragile groundwater basins. Cat Canyon oil field overlies critical groundwater basins that supply freshwater to prime farmlands for the region. Preservation of agricultural lands in Northern Santa Barbara County is critical to protect the County's multi-billion-dollar agriculture and vineyard industries.[131] Moreover, approximately 345 water wells, including municipal wells and private wells, are located within a one-mile radius of the proposed exemption area and if approved, drinking water and irrigation wells would be at risk of contamination if injected fluids migrate into freshwater aquifers. Based on the foregoing, expanding the aquifer exemption in Cat Canyon is simply not worth it.

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[126] *Id.*
[127] RWQCB, *Order Pursuant to California Water Code Section 13267* at 2 (May 4, 2017)("Exhibit W").
[128] *Id.*
[129] *Id.*
[130] Testimony by Mark Ontiveros to the County of Santa Barbara Energy Division staff at the PetroRock public scoping hearing (June 28, 2018).
[131] Agricultura Impact Associates, Agricultural Commissioner County of Santa Barbara and County of Santa Barbara, *Economic Contributions of Santa Barbara County Agriculture* at 1, available at: https://countyofsb.org/uploadedFiles/agcomm/Content/bulletins/SB-Ag-Econ-vDec31-5pm.pdf.

B. Cat Canyon Oil Field is Ranked in the 100th Percentile for Groundwater Threats Based on a Review of Sixty-Four Groundwater Clean-up Sites Present in the Field.

According to the California Office of Environmental Health Hazard Assessment's CalEnviro Screen 3.0 tool, parts of Cat Canyon oil field are ranked in the 100th percentile for groundwater threats.[132] This means that 99 to 100% of the census tracts in California have lower threats to groundwater than this area of Cat Canyon. This heightens concerns about degradation of water quality in the Santa Maria Groundwater Basin if the aquifer exemption is approved.

CalEnviro Screen 3.0 also ranks this area in Cat Canyon in the 90th percentile for drinking water contaminants and in the 97th percentile for impaired surface water bodies.[133] It must also be noted that this census tract contains a high percentage of a vulnerable class since 20% of the population is elderly.[134] The average in California census tracts is 12%.[135]

The CalEnviroScreen 3.0 rankings for the Cat Canyon census tract are based on data from sixty-four groundwater cleanup sites.[136] Groundwater cleanup sites include two types of sites: (1) cleanup program sites, and (2) land disposal sites.[137] The data utilized in the CalEnviroScreen 3.0 tool shows the extent of existing pollution documented within a single census tract in Cat Canyon oil field.

Groundwater resources are valuable, and our economy depends upon the availability of quality freshwater for drinking and agriculture. The County, state agencies, and EPA have a duty to protect our water from risky operations and toxic injections. The consequences of contaminates migrating into groundwater aquifers via injected wastewater or other fluids could irreparably damage vital freshwater resources, as is demonstrated by the ample evidence set forth above. The proposed aquifer exemption would compound existing groundwater contamination in Cat Canyon by allowing the three enhanced oil recovery projects to proceed through the County review process at the scales proposed, which is not a risk the State can afford to take.

C. The Proposed Expansion of the Aquifer Exemption in Cat Canyon is Inconsistent with Climate and Renewable Energy Goals Set by the County and State.

The 2018 International Panel on Climate Change ("IPCC") report shows that global emissions must be reduced by half by 2030–a mere eleven years from now.[138] This reduction

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[132] OEHHA, *Maps & Data,* available at: https://oehha.ca.gov/calenviroscreen/maps-data.
[133] *Id.*
[134] *Id.*
[135] *Id.*
[136] Spreadsheet of sixty-four groundwater cleanup sites in census tract 6083002006 produced by OEHHA ("Exhibit X").
[137] *Id.*
[138] IPCC, *Global Warming of 1.5°C* (October 7, 2018), available at: https://www.ipcc.ch/sr15/.

can only be achieved if no new sources of carbon emissions are permitted. Current trends are moving in the opposite direction; in fact, 2018 was the fourth warmest year in recorded history; the past five years have been the five warmest years.[139]

California is leading the charge in efforts to reduce greenhouse gas ("GHG") emissions and increase renewable energy goals, although nowhere in the Application is this fact acknowledged. California cannot meet these goals, however, if the State and EPA approve this proposal, which could lead to the addition of large new emission sources in Cat Canyon oil field as well as substantially increase fossil fuel production in the field. In fact, Santa Barbara County is far from meeting its own goals as set forth in its Energy and Climate Action Plan ("ECAP"). According to the 2017 ECAP Progress Report, GHG emissions were fourteen percent above 2007 levels (whereas the goal in the ECAP is to *reduce* emissions to fifteen percent below 2007 levels by 2020, or next year).[140] This important information must be considered in the Application.

The aquifer exemption could open the door for an unprecedented surge in cyclic steam injection activities in the Cat Canyon oil field given the three pending enhanced oil recovery projects discussed above. Steam injection operations require large amounts of energy to stimulate oil recovery, and thus they rank among the most carbon-intense operations in the world.[141] The California Air Resources Board ("CARB") issues a Crude Oil Lifecycle Assessment each year, quantifying the carbon intensity of each California oilfield. Carbon intensity is measured in gCO2e/MJ, which is the amount of GHG emissions released in the lifecycle of one unit of oil-energy. However, this particular analysis only takes into account upstream (oil production) emissions of the oil production lifecycle. It is therefore an incomplete analysis, and does not reliably represent the carbon intensity of an oilfield. A complete model for lifecycle carbon intensity has been developed by The Carnegie Endowment for International Peace. The Carnegie model augments the CARB model by incorporating additional data about refining and end use emissions, making it a 'cradle-to-grave' lifecycle assessment. Using this model, Cat Canyon oil is estimated to produce 620 kgCO2e/bbl with current production, which puts it among the top 10% of carbon intense oil operations in the world.[142]

Expanding the aquifer exemption boundary in Cat Canyon oil field could exacerbate climate change at a time when we have only eleven years to drastically reduce global carbon emissions. Approving this Application would put the County, the State, the nation, and the planet on an irreversible path to unsustainable climate change.

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[139] NASA, *2018 fourth warmest year in continued warming trend, according to NASA, NOAA* (February 6, 2019), available at: https://climate.nasa.gov/news/2841/2018-fourth-warmest-year-in-continued-warming-trend-according-to-nasa-noaa/.
[140] *County of Santa Barbara Energy and Climate Action Plan 2017 Progress Report* (December 2018), available at: https://www.countyofsb.org/csd/asset.c/270.
[141] Gordon, Deborah & Wojcici, Samuel, *Need to Know: The Case for Oil Transparency in California* Carnegie Endowment for International Peace (2017).
[142] *Id.*

VI. Environmental Review is Required Prior to Consideration of this Aquifer Exemption.

Pursuant to EPA regulations and the State's Public Resources Code, exempting an aquifer from protections under the SDWA requires an analysis and determination by the State agencies, DOGGR and SWRCB, as well as the federal agency, EPA. For the reasons set forth below, the State agencies are not fulfilling their duties under the California Environmental Quality Act ("CEQA") where no environmental review has been conducted prior to a decision on this proposal.

A. Environmental Review of the Proposed Expansion of the Existing Aquifer Exemption Must Be Conducted under CEQA.

The purpose of CEQA is "'to afford the fullest possible protection to the environment within the reasonable scope of the statutory language.'" *Friends of Mammoth v. Bd. Of Supervisors* (1972) 8 Cal.3d 247, 259; *See also Laurel Heights Improvement Assn. v. Regents of University of California* (1988) 47 Cal. 3d 376, 390. CEQA "[e]nsure[s] that the long-term protection of the environment, consistent with the provision of a decent home and suitable living environment for every Californian, shall be the guiding criterion in public decisions." Pub. Res. Code § 21001. The Legislature intended that "all agencies of the state government which regulate activities of private individuals, corporations, and public agencies which are found to affect the quality of the environment, shall regulate such activities so that major consideration is given to preventing environmental damage." *Id.*; *citing to* Pub. Res. Code § 21000(g).

CEQA applies to "discretionary projects proposed to be approved or carried out by public agencies." Pub. Res. Code § 21080(a). A discretionary project "requires the exercise of judgment or deliberation when the public agency or body decides to approve or disapprove a particular activity, as distinguished from situations where the public agency or body merely has to determine whether there has been conformity with applicable statutes, ordinances, or regulations." CEQA Guidelines § 15357. "Project" is defined as an activity which may cause either a direct physical change in the environment, or a reasonably foreseeable indirect physical change in the environment,…." Pub. Res. Code § 21065.

"'The EIR [Environmental Impact Report] is the heart of CEQA' and the integrity of the process is dependent on the adequacy of the EIR." *Save Our Peninsula Committee v. Monterey County Bd. of Supervisors* (2001) 87 Cal. App. 4th 99, 117 (internal citations omitted). An EIR is a public document used by the governmental agency to analyze the significant environmental effects of a proposed project, identify alternatives, and disclose ways reduce or avoid the possible environmental damage. Pub. Res. Code § 21061; CEQA Guidelines §15002(f). An EIR must contain the information outlined in Article 9, "Contents of Environmental Impact Reports," Sections 15120 to 15132 of the Guidelines for Implementation of CEQA. CEQA Guidelines § 15120(a).

DOGGR, as the lead agency, must conduct environmental review of the proposed aquifer exemption pursuant to the requirements of CEQA. The project is not exempt from the

requirement to prepare an EIR. CEQA Guidelines § 15251. The State cannot avoid its responsibility by deferring to the EPA approval process because EPA does not conduct environmental review pursuant to the National Environmental Policy Act ("NEPA").[143]

The proposed exemption fits within the definition of a "project" under CEQA because the exemption, if approved, will increase the injection of fluids, e.g., steam and wastewater, into underground formations for oil production. Exempting thirty square miles from the SDWA in Cat Canyon oil field commits the field's hydrocarbon and water resources to decades of increased production and thus influences subsequent site-specific actions. If approved, neither DOGGR nor SWRCB will revisit their determination that the target formations in Cat Canyon are exempt from the SDWA such that fluids can be injected into these aquifers.

Moreover, the proposal is a discretionary project because DOGGR and SWRCB must exercise their respective judgment in assessing the proposal's consistency with the State's criteria under Section 3131(a) of the Public Resources Code, which includes a determination that the proposed exempted area meets the criteria set forth in the Code of Federal Regulations at Section 146.4. Thus, the State agencies must make a decision as to whether the proposal complies with the State's criteria and the Federal criteria based on the evidence set forth in the Application. The decision is discretionary, as defined by CEQA, because the agencies must evaluate the evidence, and can modify the exemption based on the data.

Environmental review under CEQA ensures that a full analysis and disclosure of potential environmental impacts occurs *before* a decision is made. Pub. Res. Code § 21002.1(a). Environmental review will also provide an evaluation of mitigation measures and alternatives that are capable of avoiding or reducing potential impacts. *Id.* This analysis must occur early in the process to ensure adequate input and opportunity to avoid potentially significant environmental impacts. CEQA Guidelines § 15004(b). In fact, under CEQA, an agency may not approve a project as proposed "if there are feasible alternatives or mitigation measures available which would substantially lessen the significant environmental effects of such project[]." Pub. Res. Code § 21002.

For the foregoing reasons, the State's failure to conduct environmental review prior to a decision on the aquifer exemption proposal violates CEQA.

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[143] EPA, *Aquifer Exemption Record of Decision for Portions of the Dollie Sands Member of the Pismo Formation in the Arroyo Grande Oil Field* at 7 (April 30, 2019).

Conclusion

Therefore, the Application for Expansion of the Cat Canyon Aquifer Exemption must be withdrawn.

Sincerely,

Linda Krop	Tara C. Messing	Brian Trautwein
Chief Counsel	Staff Attorney	Environmental Analyst

cc: Katie Davis, Sierra Club Los Padres Chapter
Ken Hough, SBCAN
U.S. EPA Region 9
County of Santa Barbara

Exhibits:

A - Spreadsheet produced by Division Oil, Gas, and Geothermal Resources of illegal injections into non-exempt aquifers in Santa Barbara County.

B - Letter from John M. Robertson, Executive Officer Central Coast Regional Water Quality Control Board, to Jonathan Bishop, Chief Deputy Director State Water Resources Control Board (April 3, 2018).

C - Letter from Hydrogeologist Dr. Barry Keller to Department of Conservation (June 19, 2019).

D - Santa Barbara County Energy Division, *ERG West Cat Canyon Revitalization Plan Final Environmental Impact Report* at 4.6-7—4.6-8 (February 2019).

E - Santa Barbara County Energy Division, *ERG West Cat Canyon Revitalization Plan Final Environmental Impact Report* at 4.9-28 (February 2019).

F - Santa Barbara County Energy Division, *AERA East Cat Canyon Oil Field Redevelopment Plan Draft Environmental Impact Report* at 4.9-26 (November 2018).

G - Davis, T.A., Landon, M.K., and Bennett, G.L., 2018, *Prioritization of oil and gas fields for regional groundwater monitoring based on a preliminary assessment of petroleum resource development and proximity to California's groundwater resources: U.S. Geological Survey Scientific Investigations Report 2018–5065* (2018).

H - U.S. Geological Survey, *Regional groundwater monitoring results for the Orcutt study unit, Santa Barbara County, CA* (February 25, 2019).

I - U.S. Geological Survey, *SB4 Regional Groundwater monitoring results for Oxnard study unit* (February 25, 2019).

J - Recommendation by Steve Bennett, County of Ventura Board of Supervisor, to the Board of Supervisors to Direct the Planning Division to Promptly Return to the Board with a Proposed Interim Ordinance Pursuant To Government Code Section 65858 To Temporarily Prohibit The County's Approval Of New Oil And Gas Wells, And Re-Drilling Of Existing Oil And Gas Wells, For Oil Production That Will Utilize Steam Injection In The Vicinity of Potable Groundwater Aquifers While the County Studies Potential Regulations For This Land Use (April 9, 2019).

K - Ordinance No. 4542 (April 23, 2019).

L - Letter submitted by the Environmental Defense Center to the County of Santa Barbara, Energy Division on the ERG West Cat Canyon Revitalization Plan Draft Environmental Impact Report (August 3, 2018).

M - Letter submitted by the Environmental Defense Center to the County of Santa Barbara Planning Commission on the ERG West Cat Canyon Revitalization Plan Final Environmental Impact Report (March 11, 2019).

N - Letter submitted by the Environmental Defense Center to the County of Santa Barbara Planning Commission on the ERG West Cat Canyon Revitalization Plan (May 24, 2019).

O - Letter submitted by the Environmental Defense Center to the County of Santa Barbara Planning Commission on the ERG West Cat Canyon Revitalization Plan (May 28, 2019).

P - Letter submitted by the Environmental Defense Center to the County of Santa Barbara, Energy Division on the Aera Energy LLC East Cat Canyon Oil Field Redevelopment Plan Draft Environmental Impact Report (January 28, 2019).

Q - Annual Briefings on Oil and Gas Development in Santa Barbara County (2015, 2017, 2019).

R - Spreadsheet of historic contamination on ERG's Project site created by Brian Trautwein, Environmental Analyst/Watershed Program Director, Environmental Defense Center, based on documents maintained on GeoTracker.

S - Letter from Thomas M. Rejzek, Professional Geologist and Certified Hydrologist, Santa Barbara County Public Health Department, Environmental Health Services, to Johanna Neuman, Shell Exploration and Production Company (February 15, 2019).

T - Central Coast Regional Water Quality Control Board, *Order Pursuant to California Water Code Section 13267* (March 25, 2016).

U - Division Oil, Gas, and Geothermal Resources, *Report on Operations* (August 3, 2015); Division Oil, Gas, and Geothermal Resources, *Report on Operations* (August 23, 2013); Division Oil, Gas, and Geothermal Resources, *Report on Operations* (December 4, 2013).

V - Email from Richard H. Field, Project Manager/Consultant for Greka Integrated, to Chris Guevara, California Department of Water Resources (June 19, 2016 at 9:07 pm).

W - Central Coast Regional Water Quality Control Board, *Order Pursuant to California Water Code Section 13267* (May 4, 2017).

X - Spreadsheet of sixty-four groundwater cleanup sites in census tract 6083002006 produced by the California Office of Environmental Health Hazard Assessment.