November 25, 2015

via FedEx

San Luis Obispo Planning Commission
Attention: Nicole Retana, Appeals
976 Osos Street
San Luis Obispo, CA 93408

APPEAL FROM PLANNING COMMISSION DECISION ON NOVEMBER 12, 2015
TO SAN LUIS OBISPO COUNTY SUPERVISORS
File Number DRC20150002

Re: Freeport-McMoRan Oil & Gas, LLC, Arroyo Grande Oil Field, Application to Extend Phase IV CUP #D010386D

Dear Supervisors,

The Center for Biological Diversity ("Center") is appealing the decision by the Planning Commission on November 12, 2015 to extend the Phase IV CUP #D010386D for three years to allow Freeport-McMoRan Oil and Gas ("FMOG") to build 31 wells at its Arroyo Grande Oil Field ("AGOF"). For reference, we are attaching comments by Matt Hagemann, certified hydrogeologist, who has reviewed FMOG's documentation ("Hagemann, November 24 Expert Letter," Attachment A). The comments submitted to the Planning Commission on November 11, 2015 ("November 11 Comments," Attachment B) and October 21, 2015 ("October 21 Comments," Attachment C) are also attached and incorporated herein.

The original CUP was operational for ten years. FMOG now requests a three-year extension or until Phase V begins to complete the 31 wells. The Center opposes this lengthy extension of an expired decade-long permit that specifically required FMOG to undergo review and approval for a new CUP if, at the end of ten years, any wells or steam generators had not yet been completed.\(^1\) That review and approval has not occurred. Furthermore, the County may only issue extensions on CUPs in very limited circumstances. These include, for instance, that there have not been any

\(^1\) October 21 Comments, p. 3, citing Staff Report for Phase IV CUP, Exhibit B, "Conditions of Approval."
intervening changes to the capacities of community resources, including but not limited to water supply, and that there have not been any relevant changes to the Land Use Ordinance or Element. These conditions have not been met here. If FMOG wishes to move forward with the construction of the 31 wells, it must undergo this review and approval process for a new CUP, with either a Supplemental or Subsequent EIR or the inclusion of the 31 wells in the Phase V Draft EIR, due to be released soon.

The condition added by the Planning Commission requiring FMOG to install an unspecified number of sentry wells and sample wells if requested by neighbors within 1/2 mile of the AGOF is the very least of what the County must provide the residents whose wells, homes, and farms border the AGOF. As noted below, pursuant to an order by the Central Coast Regional Water Quality Control Board ("CCRWQCB"), FMOG is already required to sample wells within one mile of the AGOF, but as of August 21, 2015, had failed to do so. Even without this prior requirement, however, the language of the Planning Commission’s condition fails to specify who will select the monitoring/testing laboratory, how the sample sites and locations of the sentry wells will be chosen, or who will pay for sampling and testing. This information is critical in order to ensure that the data is independent and reliable, and that the residents are not saddled with the costs. What is more, while requiring sentry wells is instructive in showing what chemicals have contaminated the groundwater and already begun to migrate, the information they provide comes too late to protect the neighbors from polluted water. As the attached Hagemann expert letter notes: "the water quality conditions detected in the sentry wells may indicate a condition that is irreversible, i.e. contamination that may have already travelled beyond a point where it could be hydraulically contained."

For these reasons and the reasons set forth below, it is imperative that--in addition to monitoring for contamination once it has occurred (within a 1-mile radius as required by the CCRWQCB rather than the 1/2-mile suggested by the Planning Commission)--the County act further to prevent it. Prior to allowing the 31 wells--including wells that are slated to inject wastewater into what is currently a protected aquifer under the Safe Drinking Water Act--the County must require full environmental review of the impacts of these wells.

The Center's further grounds for appeal of the Planning Commission's decision to extend the CUP are as follows:

---

2 October 21 Comments, pp. 3-7; San Luis Obispo Land Use Ordinance, County Code § 22.64.070(A).
I. The Planning Commission ignored significant new information that has come to light since the approval of the 2004 Phase IV Environmental Impact Report ("EIR"). This includes information relating to:

- The breakdown of the regulatory system overseeing oil and gas production in the state, including at AGOF. In the last few years, it has become clear that the state has permitted thousands of wells, including wells currently operating at the AGOF, to inject into groundwater protected under the Safe Drinking Water Act. These wells either must cease operation by February 2017 or apply for an exemption from the state and US EPA. Then, last month, a self-audit by DOGGR further found that the state had completely failed in its oversight over the state's injection well program. The audit revealed that the state: had permitted injection wells without required Area of Review evaluations to ensure the safety and isolation of the injection site; had failed to conduct annual reviews to ensure well safety and integrity; and was missing critical quality control data, among other failures. In addition, a large portion of the small sample of wells studied failed to meet current integrity and safety standards. DOGGR is in the process of reevaluating its regulations and enforcement procedures. The County should wait for this process to occur in order to ensure that the new wells follow the strictest, most protective regulations to protect the AGOF neighbors.

- The substantial overestimation of the production capacity and efficiency of production at the AGOF in the original EIR. Data from the state and from FMOG indicate that per well oil production at AGOF is declining, while water use is on the rise. By its own admission, FMOG is extracting only about 1350 barrels of oil per day (bpd) from almost 200 active oil production wells and 40 active injection wells. At current production rates, the addition of the 31 new wells with the CUP extension is likely to add less than 150 bpd to this oil field's production capacity, nowhere near the additional 3,650 bpd needed to reach the production

---

5 Hagemann, November 24 Expert Letter, pp. 1-2. See also, Maya Golden-Krasner, Center for Biological Diversity, Comments on the Arroyo Grande Oil Field Aquifer Exemption (September 21, 2015) ("Aquifer Exemption Comments"), Attachment E, pp. 2-5.


7 November 11 Comments, p. 2.

goal of 5,000 bpd in Phase IV, and certainly not enough of an increase to warrant extending the Phase IV CUP rather than rolling these wells into the Phase V EIR for environmental review.

- **A new regulatory regime governing energy use and carbon intensity with the passage of AB 32 (the Global Warming Solutions Act), the Low Carbon Fuel Standard, and similar measures.** FMOG’s own data shows that this oil field produces a heavy crude, which is much more energy and carbon intensive to produce, refine, and combust than lighter crudes. This issue has become increasingly important over the last decade with the passage of laws such as the Global Warming Solutions Act and the Low Carbon Fuel Standard, which are intended to decrease greenhouse gas emissions and carbon intensity. The production at the AGOF—especially with respect to the heaviness of the crude and the decreasing efficiency of the production—must be evaluated in light of these new regulations and requirements prior to approval the 31 wells.

- **The advent of a historic drought that has changed the regulatory structure governing water usage in the state and at the county.** The multi-year severe drought the state is currently experiences is causing people to drill their domestic and agricultural wells deeper and to tap into new groundwater sources. Meanwhile the state has implemented water use restrictions due to the drought. In addition, the San Luis Obispo County Board of Supervisors adopted a resolution last year proclaiming a local emergency due to drought conditions in the County, and the County has proposed a Water Conservation Program (amending the General Plan and County Code) in response to the fact that water resources have declined over the last decade, with the drought exacerbating this decline. Because FMOG is extracting water at an ever-increasing rate and has not provided evidence to show that its operations do not affect local drinking water supplies, the County cannot extend the CUP without first evaluating the impacts of the 31 wells in light of the drought and new water mandates.

---

10 AGOF crude has an API gravity of 12-16 see http://www.fcx.com/operations/USA_california.htm. See also USGS fact sheet, Heavy Oil and Tar Sands-Strategic Petroleum resources, available at http://pubs.usgs.gov/fs/fs070-03/fs070-03.html. Heavy oil is defined as oil with an API gravity lower than 22°; extra heavy oil is below 10°.
12 October 21, 2015 Comments, pp. 4-5; Aquifer Exemption Comments, pp. 2-5, 19-20.
13 October 21, 2015 Comments, p. 5.
14 November 11 Comments, p. 2.
• Significant new scientific information about the impacts of oil drilling on the environment and on public health that was not evaluated in the FEIR. Since the FEIR was certified over a decade ago, significant new scientific information has demonstrated ever more harmful impacts of oil extraction on the environment and health.\textsuperscript{16} As just one example, we have learned much more about the impacts of heavy crude on safety and the environment. The FEIR for Phase IV assumes that, in the event of an oil spill entering Pismo Creek, “the heavy, high-viscosity crude oil will spread slowly as it cools to ambient temperatures.”\textsuperscript{17} This assertion implies that a spill of high-viscosity crude oil will have less impact than a spill of lighter crude. Experience in the years since this FEIR was approved has proved this assumption to be false. A 2010 pipeline break that spilled heavy crude oil into the Kalamazoo River in 2010 has not been completely mitigated despite years of cleanup efforts.\textsuperscript{18} The oil produced at AGOF is almost as heavy as the tar sands crude in the Kalamazoo spill.\textsuperscript{19} The fact that heavy crude sinks \textit{complicates} cleanup efforts rather than making them easier,\textsuperscript{20} as the Phase IV FEIR stated. New information like this should be taken into consideration before any new well permits are granted for AGOF. In addition, as the 2012 explosion at the Chevron Refinery in Richmond, California demonstrated, heavy crudes have been found to corrode pipes, leading to increased risks of explosions and more frequent pipeline spills.\textsuperscript{21} The pipeline that transports most of AGOF’s crude oil--including oil that would be produced by these 31 wells--to the Phillips 66 Refinery runs along a public road and crosses a waterway. Thus the chance of an oil spill into this sensitive watershed is even greater than if the oil it carried contained lighter crude. As a result, a full CEQA review and additional mitigation measures are necessary before the County can allow the AGOF expansion to continue.

II. FMOG made representations (and misrepresentations) about the safety of its operations that is unsupported by the evidence presented. For instance:

• FMOG overstated the certainty of the impermeability (or extremely low permeability) of the tar seal. A main concern of the Planning Commissioners was that the existence of a tar seal said by FMOG to form several of the boundaries between the AGOF aquifer and drinking water sources is not certain. This is an important and valid concern that the Planning Commission ultimately decided to overlook, despite the fact that FMOG's own

\textsuperscript{16} See \textit{e.g.}, October 21, 2015 Comments, pp. 9-13.
\textsuperscript{17} 2004 FEIR, p. 5.10-9.
\textsuperscript{19} See supra note 10.
\textsuperscript{20} Palmer \textit{supra} note 18 and Sink or Swim, infographic of Kalamazoo oil spill, available at \url{http://www.onearth.org/earthwire/kalamazoo-tar-sands-oil-spill-cleanup}; last viewed on 11/24/2015.
\textsuperscript{21} U.S. Chemical Safety And Hazard Investigation Board Final Investigation Report Chevron Richmond Refinery Pipe Rupture And Fire (January 2015), p 5; available at \url{http://www.csb.gov/chevron-refinery-fire/}. 5
documentation shows that the existence of the seal is merely inferred, but not known. In the cross-section presented by FMOG, the tar seal is shown as a dashed line.\textsuperscript{22} As stated in the attached Hagemann expert letter, the "use of a dashed line in these cross section means that the existence of the tar seal is uncertain, according to geologic mapping conventions. Therefore, the ability of the tar seal to form a lateral boundary separating Project wells from drinking water wells is unknown."\textsuperscript{23} Additionally, the injection of steam itself could impair the integrity of any aspect of the seal that does exist,\textsuperscript{24} an issue that the Planning Commission did not evaluate, but an EIR would.

- **FMOG failed to provide the type of evidence normally used to demonstrate hydrologic isolation of an aquifer.** The County cannot allow this extension because FMOG has failed to include basic information that must be, and is normally, required when evaluating the safety of oil operations on groundwater. As stated in the Hagemann expert letter attached, this information includes: "fundamental information on drinking water wells [that] is presented for public evaluation"; "boundary conditions [that] are defined, including the location of the tar seal, to show that the oil field is isolated from groundwater used for drinking water"; and, "a numerical groundwater model . . . to evaluate potential hydraulic interconnections along Project boundaries with groundwater used for drinking water, including simulation of the hydraulic sink."\textsuperscript{25}

- **FMOG has not evaluated the impacts of dewatering the aquifer on surrounding water sources.** A main concern of the Planning Commissioners was the potential of the FMOG's intentional dewatering of the aquifer to create a sink that pulls in surrounding groundwater, including water tapped for drinking water wells. As stated in the Hagemann expert letter, this is a real concern: "[o]ver the past two years, net water extraction from the aquifer has averaged of 18,050 barrels, or 2.33 acre-feet/day. The dewatering lowers hydraulic pressure and creates a 'sink.' . . . The impact of this pressure sink on inducing flow from adjacent

\textsuperscript{22} See Attachment G: W-E Structural Cross Section B-B' from AGOF Aquifer Exemption Application, Appendix A 7 a 2, Cross Section B to B’, p. 56.
\textsuperscript{23} Hagemann November 24 Expert Letter, p. 3. See also Natural Resources Defense Council (NRDC), Comments on the Aquifer Exemption (September 21, 2015) ("NRDC, Aquifer Exemption Comments"), Attachment J p. 17.
\textsuperscript{24} NRDC, Aquifer Exemption Comments, pp. 15-16. NRDC also points out numerous other flaws in FMOG's inadequate demonstration of hydraulic isolation and explanation of aquifer boundaries. (Id., p. 16.)
\textsuperscript{25} Hagemann, November 24 Expert Letter, p. 4. See also, NRDC, Aquifer Exemption Comments, p. 8, noting that FMOG "has not adequately identified groundwater flow directions, either local or regional, and how pumping activities within and around the aquifer exemption boundary impacts the hydraulic gradient. Information must be collected that demonstrates water level data, relevant geologic features, and discharge rates for steady-state and non-steady state aquifer responses; to ultimately identify any potential current community to the aquifer exemption boundary through a radius of influence induced by a discharge promoted cone of depression." In other words, FMOG must provide a numerical groundwater model, which would demonstrate groundwater flow under a variety of pumping conditions. FMOG has failed to conduct this modeling or provide this information to any agency. As a result, it cannot assert that it has provided the information necessary to ensure the isolation of its aquifer and the protection of surrounding water users.
drinking water resources and across the exemption boundaries [into the AGOF production aquifer] has not been evaluated."  

This must be evaluated fully before the County can allow FMOG to drill 31 new wells.

- **FMOG has not fully complied with an order pursuant to California Water Code section 13267 issued by the Central Coast Regional Water Quality Control Board on May 14, 2015, which requires FMOG to sample water wells within one mile of the injection wells.** There are 105 domestic water wells within one mile of the injection wells covered in this order. The documents FMOG uploaded to GeoTracker (and attached hereto) do not include laboratory analysis of water samples from any domestic water wells, as required by the order. FMOG asserts that its operations pose no harm to the surrounding water table, but it has, as yet, failed to do the state-mandated water testing that would provide evidence to support or refute this claim. A document titled “Analyses of groundwater within 1 mile” includes only anecdotal reports of the smell and look of water from several extremely shallow wells through 2014, but do not include any actual laboratory analysis to determine whether the harmful chemicals present in the injection fluids from the site have migrated to the adjacent drinking water wells. As noted in the attached Hagemann expert comment letter, a minimum of 24 of the 105 domestic water wells within one mile of AGOF draw their water from the same water-bearing formation into which the oil field injects wastewater, and at similar depths underground. Any documents provided to the CCRWCB purporting to provide water well information provide only general descriptions of their location, hardly any information regarding the depths of the wells, and no records of water samples from these wells. In sum, there is no evidence to back FMOG’s assertion that its current or expanded operations will not affect the drinking water supply of nearby residents and farms.

- **FMOG misrepresented the fate of all of the water extracted from the oil field, and has not explained where excess produced water will go.**

At the Planning Commission hearing on November 12, 2015, FMOG's representative, Mr. Martini, stated that all of the water that is produced goes through the water reclamation facility ("WRF"), and that no water is reinjected into the aquifer that has not gone through the WRF. In fact, as shown in a presentation to on the Department of Conservation web page and at the September 21, 2015 hearing regarding this aquifer exemption, at least 7600 bpd of water is reinjected into the aquifer after having gone only through the water softener and steam generators, but not through the WRF. In addition, the WRF was built to handle a

---

26 Hagemann, November 24 Expert Letter, p. 3.
27 Documents filed by FMOG in response to the 5/14/2015 order pursuant to CWC § 13267 are on the enclosed disc and are also available at http://geotracker.waterboards.ca.gov/profile_report.asp?global_id=T10000006979.
28 Hagemann, November 24 Letter, p. 2.
29 Presentation: Arroyo Grande Oilfield, San Luis Obispo County, California, Edna Member, Dollie Sands, Pismo Formation
throughput of only 20,000 bpd of water.\(^{30}\) The AGOF, however, currently (without the 31-well expansion) produces 29,750 bpd of water\(^{31}\)--meaning that over 9,000 bpd of water cannot be moving through the WRF. This produced water at the field contains high levels of chemicals and metals, including VOCs such as benzene, chromium, lead, and aluminum, among many others.\(^{32}\) It remains unclear, then, what the composition of the water is that is reinjected into the aquifer via the steam injection process, and where exactly all of the produced water is going. Furthermore, assuming the high temperatures involved in steam injection evaporate the VOCs from the reinjected water, a question arises regarding what the air quality impacts are of the oil extraction operations at the AGOF. While much the concern from neighbors has centered around water quality, it is important to analyze other potentially serious impacts as well, such as to air quality, noise, traffic, the nearby wetlands and sensitive species, and other resources, in a new EIR.

Furthermore, according FMOG’s Aquifer Exemption Application for AGOF, the oil field currently discharges 18,050 barrels per day (bpd) of treated water into Pismo Creek, an amount equal to 64 percent of the water produced by AGOF.\(^{33}\) A NPDES discharge permit issued by the CCRWQCB for this facility, effective from February 1, 2014 through February 1, 2019, allows a maximum discharge of 0.84 million gallons per day (MGD) into Pismo Creek.\(^{34}\) The current discharge, converted to gallons, is 0.758 MGD. For FMOG to comply with this water board permit, it can only discharge an additional 0.082 MGD into Pismo Creek. If FMOG expands operations at AGOF, it will produce more water. The expansion envisioned in the CUP would require FMOG to find alternate means of disposing of produced water, either through additional injection, taking water offsite, or some other means. Plans for handling additional wastewater were not adequately addressed in the original FEIR nor in the FMOG’s application for an extension of the CUP. The County must evaluate the impacts of the excess produced water and clarify its handling and disposal before allowing the 31-well expansion.


\(^{31}\) Attachment F, supra note 8.


\(^{33}\) Attachment F, supra note 8, Attachment F: the 18,050 bpd discharged to Pismo Creek is 64 percent of AGOF’s reported 29,750 bpd of produced water. See also supra note 28, Attachment H, p. 6.

\(^{34}\) Central Coast Regional Water Quality Control Board, Draft Order R3-2013-0029, NPDES No. CA0050628 (December 5, 2013), Attachment I, pp. 4, 56-59, 64, 81, and 87.
III. Approval of expansion at the AGOF has been piecemealed into several phases and other aspects in order to avoid real environmental review.

Because the 31 wells are part of a larger planned expansion of production at the AGOF, they should be included in the Phase V EIR in order to allow for a more comprehensive and complete environmental review. CEQA requires that an EIR identify all significant impacts on the environment of the "whole of action." Environmental review thus requires that a proposed project be analyzed along with reasonably foreseeable future phases or other action. In addition, applicants may not avoid environmental review "by chopping up proposed projects into bite-size pieces which, individually considered, might be found to have no significant effect on the environment or to be only ministerial." Environmental considerations must not be hidden by separately focusing on isolated parts, overlooking the cumulative effect of the whole action, or attempting to avoid responsibility for considering the environmental impact of the project as a whole.

Here, the 31 wells are part of a much larger project that is being piecemealed into bite-sized pieces to avoid an analysis of the impacts of the larger project. First, the oil pipeline approved by the County last year from the AGOF to Phillips 66 is to accommodate expanded production. Second, the aquifer exemption is similarly meant to allow for expanded production, and includes some of the 31 wells at issue here. Third, FMOG has admitted that the 31 wells are tied into its Phase V expansion by requesting a three-year extension up to August 2018 "or until such time as a decision regarding FM O&G's pending CUP application for the Phase V Development of AGOF is made by the County." FMOG further notes in its extension application that the extra three years to drill the 31 wells will "provide a seamless transition into FM O&G's proposed Phase V Development (if approved)." FMOG is in the process of applying for a conditional use permit for its Phase V expansion project that is expected to have significant impacts that require mitigation to, among other environmental resources: wildlife species and vegetation that are endangered or threatened by water degradation, geology, groundwater and hydrology.

---

36 Laurel Heights Improvement Ass'n v. Regents of Univ. of Cal. (1988) 47 Cal.3d 376, 396.
38 Id.; Bozung v. LAFCO (1975) 13 Cal.3d 263, 283.
40 Id.
In order to comply with CEQA, the County should analyze the 31 wells as part of the Phase V EIR and (if the County so chooses) approve the CUP for these wells at that time.

CONCLUSION

For the reasons set forth above and in the attached documents, the Center urges the Board of Supervisors to overturn the Planning Commission's decision and deny FMOG's request to extend FMOG's CUP permit to allow it to build 31 wells unless or until it evaluates the impacts of these wells in an EIR.

Sincerely,

Maya Golden-Krasner
Climate Staff Attorney

cc: State Oil and Gas Supervisor Steve Bohlen, Steve.Bohlen@conservation.ca.gov
    State Water Resources Control Board Chief Deputy Jonathan Bishop, jonathan.bishop@waterboards.ca.gov
    Central Coast Regional Water Quality Control Board, Kenneth Harris, Executive Officer, info3@waterboards.ca.gov

42 Phase V Initial Study, pp. 21-22.
43 Phase V Initial Study, pp. 41-48.