

Responses to Culver City Comments on 2015 Annual Drilling Plan

1. The heavy duty diesel catalysts would be used on all engines as required by provision E.2.m.ii since the proposed Tier 4 engines would not meet the 90% reduction in ROC and PM from a Tier 2 engine.
2. The drill rig that would be used is the same rig that has been used at the field since the CSD was adopted. Emission data on the Kenai 516 rig is provided in the Air Appendix to the Baldwin Hills CSD EIR. The emission estimates are based upon fuel use data, the CARB certified emission factors for the engines, and the control efficiency of the various catalysts. Air Monitoring for drilling operations is based upon the most recently approved Air Monitoring Plan (December 2009). The compliance requirements for the air monitoring are specified in provision E.2.d of the CSD.
3. The drill rig that would be used is the same rig that has been used at the field since the CSD was adopted. Emission data on the Kenai 516 rig is provided in the Air Appendix to the Baldwin Hills CSD EIR. The emission estimates are based upon fuel use data and the CARB certified emission factors for the engines.
4. The discussion focuses mostly on air quality since the technologies evaluated are primary potential methods for reducing air emissions from drill rig operations. Section 6 of the Settlement Agreement states that the technology must be feasible and available on a commercially reasonable basis. In discussions with Kenai and other drill rig operators there are very few rigs available that have all Tier 4 engines in the size that is used at the Inglewood Oil Field. The County determines that for 2015 drill rigs with all Tier 4 engines were not available on a commercially reasonable basis.
5. The Annual Drilling and Redrilling Plan is to provide information on the drilling and redrilling operations for each calendar year. The 2015 Annual Drilling and Redrilling Plan does not include the construction of any new well pads, so the issue of well pad construction equipment would not apply to this plan. The discussion focuses mostly on air quality since the technologies evaluated are primary potential methods for reducing air emissions from drill rig operations.
6. The statements regarding the availability of natural gas and electric rigs were based upon discussion with various drill rig operators within California.
7. The oil field operator does not know what drill rig would be used at the site if a second drill rig is used. Since the approval of the CSD a second drill rig has never been used at the oil field even though all the Drilling Plans have identified the possibility of a second drill rig. If in 2015 a second drill rig is needed at the oil field, the County will conduct a review of the rig to assure that it meets all of the applicable provisions of the CSD.
8. Condition E.26.c of the CSD, which addresses the requirements of the Annual Plan, does not require that two drill rigs operating concurrently be located as far away from each other as possible. Condition E.26.c does require that drilling not result in an over concentration of

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drilling activities near developed areas. Section 2.2.ii of the 2015 Annual Drilling Plan discusses the issue of over concentration of drilling activities near developed areas.

9. Condition E.26.c of the CSD, which addresses the requirements of the Annual Plan, does not require that the Annual Plan contain information on the method of completion. Well completion method is regulated by DOGGR and the oil field operator is required to comply with the DOGGR interim regulations regarding well completions.
10. The Settlement Agreement states that for shallow well, “Drilling of wells where the Bottom Hole is less than approximately 3,500 feet deep (hereinafter “Shallow Wells”) **and above the zones identified in 1(b) as mid-zone**, shall be located away from Developed Areas (as defined in the CSD) and shall be identified in the Annual Drilling Plan.” The zones that are above the mid-zones identified in 1(b) of the Settlement Agreement include the Vickers and Rindge Zones.

The geology of the various production zones at the Inglewood Oil Field are not straight lines, and their depths vary slightly over the oil field. During the Settlement Agreement negotiations the word “approximately” was added to the text for all the bottom hole depths to account for this variation in zone depth over the oil field. The language in the Settlement Agreement for the Deep and Mid-Zone Wells clearly identifies what production zones are included, and provides the approximate overall depth of these zones.

Based upon the language in the Settlement Agreement, Shallow Wells would include the production zones that are above the production zones listed for Mid-Zone wells, which would include the Vickers-Rindge. This production zone has an approximate depth of 3,500 feet. In some locations on the oil field the Vickers-Rindge production zone, which is located above the production zones listed in the Settlement Agreement for Mid-Zones, is at a maximum depth of 4,045 feet, which would be considered approximately 3,500 feet. Therefore, wells drilled in the Vickers-Rindge would be considered Shallow Wells since this is a production zone that is above the zones listed in the Settlement Agreement for Mid-Zone wells.

Responses to Other CAP Comments on 2015 Annual Drilling Plan

- 1. The Annual Drilling Plan should contain a certification that all permits necessary for chemical use associated with the drilling of wells have been obtained by FM O&G.*

Response - The oil field operator is required to comply with all applicable Federal, State, and local regulations that apply to operations at the Inglewood Oil Field, this would include any permits that are needed for chemical use associated with drilling.

As part of the SCAQMD rule 1148.2 the operator of the Inglewood Oil Field is required to report all chemicals used as part of the drilling operations. The information that must be reported for non-trade secret chemicals includes the name of the chemical, chemical abstract service (CAS) number, purpose of the chemical, the total volume used, density, total mass, chemical trade name, maximum concentration in percent by mass, and if the chemical is considered an air toxic. For trade secret chemicals, the oil field operator must provide information that supports the basis for the trade secret protection, chemical family or similar descriptor, and if the chemical is considered an air toxic.

- 2. The Drilling Plan should contain what the AQMD requires for a new well including Rule 1148 consistent with what the plan includes for DOGGR and other regulatory requirements.*

Response - Response to Comment #1 provides some of the information that must be reported to the SCAQMD regarding chemical use as part of rule 1148.2. The Drilling Plan is focused on the requirements of the CSD and the Settlement Agreements. In a number of places the CSD and Settlement Agreement refer to DOGGR rules or regulations and as such they are discussed in the Annual Drilling Plan. Condition E.26.c of the CSD, which addresses the requirements of the Annual Plan, does not require that the Annual Plan contain a complete listing of all applicable Federal, State, and local regulations.



CAROL A. SCHWAB
City Attorney

OFFICE OF THE CITY ATTORNEY

CITY OF CULVER CITY

9770 CULVER BOULEVARD, CULVER CITY, CALIFORNIA 90232-0507

(310) 253-5660
FAX (310) 253-5664

October 1, 2014

VIA EMAIL

Department of Regional Planning
Attn: Robert Glaser
320 W. Temple Street
Los Angeles, CA 90012

COMMENTS ON FREEPORT-McMoRan 2015 DRILLING, RE-DRILLING, WELL ABANDONMENT, AND WELL PAD RESTORATION PLAN FOR THE INGLEWOOD OIL FILE DATED SEPTEMBER, 2014

Dear Mr. Glaser:

The City of Culver City has reviewed the 2015 Drilling, Redrilling, Well Abandonment, and Well Pad Restoration Plan ("Drilling Plan") submitted by Freeport-McMoRan Oil & Gas in September, 2014 and submits the following comments:

Section 2.2.x - A Discussion of the Latest Equipment and Techniques that are Proposed for Use as Part of the Drilling and Re-drilling Program to Reduce Environmental Impacts

- On Page 32, No. 3 discusses the use of Tier II or better engines and heavy duty diesel catalysts to help reduce hydrocarbons and particulate matter and implies use of catalysts on all engine levels. The engine technology discussion should be clarified to specify which engine tier will be used with the heavy duty diesel catalysts. We feel that it is unlikely that "add-on" heavy duty diesel catalysts would likely be used with interim Tier IV engines. 1
- There is no detail on the assumption/calculations that went into the drill rig emission estimates and the requirements for the installation of the air monitoring equipment. There should be a reference to what approved plan will be used for determining conformance. (e.g., Air Monitoring Plan with date reference). 2

- The drill rig technology discussion notes a daily emissions estimate that seems low for a 3,200 hp rig (Page 34), even if two of the engines are interim Tier IV. They should confirm the noted daily emissions estimate with additional information/calculations, which include a total listing of engine hp and associated tier level for each for the assumed drill rigs. 3
- The engine technology discussion has at least some discussion of why many lower emitting technologies would not be feasible, but more detail should be provided. The discussion primarily focuses on air quality and does not address other environmental impacts such as noise from drilling and re-drilling at an equal level of detail. Section 6, Clean Technology Assessment, of the Settlement Agreement does not limit the environmental impacts to just reducing air quality impacts. Additionally, even regarding the air quality impacts, the discussion is not complete as there is no reason stated on why higher Tier diesel rigs, specifically rigs with more interim Tier IV engines which are technically feasible now, are not used. There should be a discussion on the availability of diesel rigs with interim or full Tier IV engines. 4
- The Clean Technology Assessment provided appears to be primarily an analysis of drill rig engines and thus, does not fulfill the broader requirements noted in the Settlement Agreement. Section 6, Clean Technology Assessment, of the Settlement Agreement does not limit the environmental impacts to just reducing air quality impacts. That section states "...include a discussion of the latest equipment and techniques that are proposed for use as part of its drilling and re-drilling program to reduce environmental impacts". While the use of Tier III with Level 3 CARB certified diesel catalysts for the well pad construction equipment is reasonable, based on current technology availability, it should be further explored to determine if there is more advanced technology that could be used to reduce impacts. As discussed above, this discussion should be broadened to fulfill the requirements of Section 6 of the Settlement Agreement, which is not limited to the drill rig or limited to air quality impacts. An evaluation of alternative off-road equipment technologies, including higher tier engines for the off-road equipment should also be included in the Plan. An evaluation should be done to determine if there are other aspects of the equipment and techniques that warrant discussion for impact reduction (for noise, visual, etc.). 5
- There is no substantiation of the many statements made regarding the availability of various technically feasible drill rig technologies (such as Natural Gas or Electric Rigs). 6

Additional Comments

- On Page 12 it states that the drilling schedule is based on the use of 2 drilling rigs concurrently. On Page 32 (No 3.) it states that "...The drilling rig FM O&G anticipates using in the 2015 Drilling Plan execution has 2 of the 7 rig engines upgraded to Interim Tier IV, which are considered best available." If there are indeed two wells to be drilled concurrently, then additional data about the other expected drill rig, Drill Rig #2 from Page 12, to be used should also be presented within Page 32 (No. 3). 7
- With regard to the two wells being drilled concurrently, the plan should provide information on whether the two concurrently drilled wells would be located as far away from each other as possible to avoid cumulative impacts to the nearest receptors. 8
- The plan should also include information on whether the well drilling activities include well stimulation and completion events such as low volume hydraulic fracturing, gravel packing, acidizing, etc.. This information could be added to Table 2. 9
- The City disagrees with the statement made on Page 14 that "In the field the Vickers-Rindge production zone ranges in depth from approximately 1,000 to 4,800 feet, and is considered a shallow depth zone for the purposes of the Settlement Agreement." Term 1.b. of the Settlement Agreement relating to Mid-Zone Wells, provides depth and the type/name of the zones that were "presently identified" as being drilled into at the time of the Settlement Agreement. Contrary to the Drilling Plan, the Settlement Agreement does not characterize whether a well is considered a Shallow, Mid-Zone, or Deep Zone well based solely on which production zone it is located. For any proposed well where the Bottom Hole (i.e., the underground location at which drilling terminates) is between 3,500 and 7,999 feet, irrespective of the production zone, and the Top Hole (i.e., the surface location from where drilling is commenced) is closer than 800 feet to a Sensitive Development Area, a Mid-Zone Supplement is required to be prepared for that well pursuant to the Settlement Agreement. The well identified as TVIC 3243 in Table 2 has an estimated total vertical depth of 3,700 feet and is within 800 feet of a Sensitive Developed Area. Per the Settlement Agreement, a Mid-Zone Supplement is required and the 10

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Attn: Robert Glaser

operator must use commercially reasonable efforts to locate the well and well pad away from Sensitive Development Areas in order to further mitigate impacts to such Areas.

Thank you for your review and consideration of our comments.

Sincerely,


Sherry Jordan
Project Manager