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MEMORANDUM

To: City of Los Angeles, Department of City Planning **Job No.:** 1264.012
From: Brett Pomeroy, Associate Principal, Impact Sciences, Inc.
Subject: Oil & Gas Drilling Ordinance IS/MND (Case No. ENV-2022-4865-MND);
Evaluation of Public Comment on the Draft IS/MND
Date: November 23, 2022

OVERVIEW

The City of Los Angeles (City) prepared an Initial Study and a Mitigated Negative Declaration (IS/MND) for the proposed Oil and Gas Drilling Ordinance (Oil Ordinance), Case No. ENV-2022-4865-MND. The IS/MND was prepared in accordance with CEQA (Public Resources Code §21000 et seq.) and the State CEQA Guidelines (Title 14, California Code of Regulations, §15000 et seq.). The 30-day circulation period for public review and comment on the IS/MND was from September 15, 2022 to October 17, 2022. The IS/MND evaluated the impacts associated with the proposed Oil Ordinance (Project) that would ban any new drilling and deem all existing oil and gas extraction a non-conforming use citywide within a 20-year amortization period. Impact Sciences, Inc. prepared the Air Quality and GHG Technical Report for the Project's IS/MND. Mr. Brett Pomeroy, Associate Principal with Impact Sciences, Inc., has more than 18 years of experience in the preparation of air quality analyses, GHG analyses, and human health risk assessments in accordance with guidance and methodologies established by the California Office of Environmental Health Hazard Assessment (OEHHA), California Air Resources Board (CARB), and the South Coast Air Quality Management District (SCAQMD).

A comment letter on the Draft IS/MND was submitted by Day, Carter, and Murphy LLP on behalf of Warren Resources (see Draft IS/MND Comment Letter No. 12), which included an Air Study prepared by Yorke Engineering, Inc. (Yorke). Yorke asserts the IS/MND's air quality analysis is flawed due to a misstatement of the emissions related to equipment used for abandonment of wells and due to a lack of any analysis of the health-related impacts associated with the equipment used for abandonment. Yorke prepared their own calculations purporting to allege that emissions related to abandonment would be higher than those disclosed in the IS/MND and health risks associated with diesel particulate matter during abandonment would exceed cancer and non-cancer health risk thresholds established by the SCAQMD.

The purpose of this memorandum is to illustrate that Yorke's assertions are not supported with substantial evidence, and thus, the comment is not credible and does not present a fair argument that the Project may have a significant effect on the environment. As stated in Section 15384(a) of the State CEQA Guidelines, "substantial evidence" as used in these guidelines means enough relevant information and reasonable inferences from this information that a fair argument can be made to support a conclusion, even though other conclusions might also be reached. Whether a fair argument can be made that the project may have a significant effect on the environment is to be determined by examining the whole record before the lead agency. Argument, speculation, unsubstantiated opinion or narrative, evidence which is clearly erroneous or inaccurate, or evidence of social or economic impacts which do not contribute to or are not caused by physical impacts on the environment does not constitute substantial evidence. Section 15384(b) of the State CEQA Guidelines further states substantial evidence shall include facts, reasonable assumptions predicated upon facts, and expert opinion supported by facts. As discussed in further detail below, Yorke's assertions are not predicated on facts, do not contain reasonable assumptions predicated on facts, and consist of speculation and evidence that is clearly erroneous and inaccurate. Because Yorke's assertions are clearly not supported with substantial evidence, the comment is not credible and does not present a fair argument that the Project may have a significant effect on the environment.

EMISSIONS DURING ABANDONMENT

Yorke asserts that the IS/MND does not disclose the specifications for the equipment used for analyzing abandonment emissions (see Yorke page 7). This assertion is false. Pages 3 through 5, page 41, and the appendices of the Air Quality and GHG Technical Report (included as Appendix A to the IS/MND) provide a detailed description of the assumptions for the abandonment process including anticipated duration, equipment, worker trips, and truck trips that may be necessary for abandonment. The equipment type, fuel type, engine tier, hours per day, horsepower and load factor were disclosed in Appendix B to the Air Quality and GHG Technical Report. The abandonment process and assumptions for abandonment were based on 1) consultations with the California Geologic Energy Management Division (CalGEM). CalGEM has overseen the abandonment of at least 1,400 oil wells and is therefore an expert on the process; 2) publicly available information including CEQA documentation for the Culver City Oil Ordinance. Further, the IS/MND recognizes that each well presents unique circumstances and the assumptions provided represent the City's best effort at determining what might occur at any particular site. These assumptions are based on expert opinion and the City's knowledge about the type and location of these wells which may include Warren's wells as well as others. Many of the assumptions used in the IS/MND, including the timing and anticipated equipment for abandonment, are consistent with the CEQA document prepared by the City of Culver City and their experts in analyzing an ordinance to terminate nonconforming oil and gas uses. These sources are directly relevant to the Ordinance as they relate to abandonment of oil wells.

Yorke asserts the IS/MND should have used a different power rating for the workover rig and asserts a mud pump engine would also be required for well abandonments (see Yorke page 7). As detailed in Appendix A to the IS/MND, the Air Quality and GHG Technical Report calculated the potential abandonment emissions with the use of the California Emissions Estimator Model (CalEEMod). Because this is the air quality model recommended by the SCAQMD for CEQA analyses, the IS/MND appropriately relied on CalEEMod to apply assumptions related to equipment type, fuel type, engine tier, hours per day, horsepower and load factor. The CalEEMod User Guide states CalEEMod calculates the exhaust emissions based on the CARB OFFROAD2017 methodology.¹ As stated above, the anticipated equipment list for the abandonment of wells was developed by reviewing the equipment list provided in CEQA documents prepared by Culver City analyzing potential impacts from well abandonment and in the administrative record for the Jefferson Drill site in Los Angeles, which recently was abandoned in accordance with CalGEM regulations (City of LA Case No. ZA-1965-17528(PA5)).

The basis for Yorke's assertions regarding equipment type and power ratings that should have been used to calculate well abandonment emissions is a Final EIR prepared by the SCAQMD for the Breitburn Santa Fe Springs Blocks 400/700 Upgrade Project (see Yorke page 7). However, upon review of the Final EIR cited by Yorke, the project analyzed therein was related to a facility upgrade to increase production at an existing oil and gas facility. The analysis contained therein did not address well abandonment nor discuss the necessary equipment for abandonment. Yorke cites Table B-16 of that Final EIR as the basis for their opinion on what the IS/MND should have included for abandonment activities, yet Table B-16 describes drilling emissions associated with the proposed upgrade (see Yorke page 7, footnote 2). Thus, because these conditions do not reflect the characteristics of abandonment, Yorke's assertion regarding equipment is not based on relevant information and is not considered a reasonable assumption predicated on fact. Yorke offers no additional evidence supporting their claims on the equipment that will be needed for abandonment activities. In addition, Yorke's revised emissions calculations (see Yorke Attachment 2) do not disclose which emission factors were used or how the emissions were calculated. Without any documentation supporting how the emissions were calculated, Yorke's revised emissions calculations cannot be reviewed and are not substantiated. Further compounding Yorke's unsubstantiated claims, Yorke speculates that all of the purported missing equipment would be used in addition to the equipment already included in the IS/MND (see Yorke page 7 and Yorke Attachment 2). Yorke provides no credible evidence for this assumption and does not substantiate what equipment and intensities will be required for well abandonment. Thus, Yorke's assumptions are not supported by facts and Yorke's speculation results in a significant overestimation of emissions. Notwithstanding Yorke's use of irrelevant information, unreasonable assumptions unsupported by fact, and speculation resulting in a significant overestimation

¹ CalEEMod User Guide Version 2022.1, Appendix C: Emission Calculation Details for CalEEMod, page C-9.

of emissions, Yorke agrees with the IS/MND conclusion that per-well abandonment would not exceed the regional or localized thresholds of significance established by the SCAQMD (see Yorke page 8).

ABANDONMENT TIMING

Yorke incorrectly relies on assumptions that the Ordinance includes an intensive and accelerated abandonment program (see Yorke page 6), proposes a mandated abandonment program (see Yorke page 6), and includes an amortization period that dictates the timing of when wells must be abandoned (see Yorke page 8). These characterizations do not reflect the project description of the Ordinance. Page 29 of the IS/MND clearly states the Ordinance does not set a specific timetable for the closure and abandonment of wells, regulate the abandonment of oil wells that have permanently ceased operation, or mandate or regulate the remediation of well sites where extraction has terminated permanently. Page 29 of the IS/MND further states abandonment of individual wells may occur at any time during the 20-year timeframe, and potentially beyond the 20-year timeframe. Therefore, Yorke's assertions related to the timing of abandonment and potential cumulative impacts associated with a purported intensive and accelerated abandonment program are speculative and not supported by facts.

HEALTH RISKS

Yorke asserts the IS/MND does not analyze health risk impacts (see Yorke page 6). This assertion is false. Page 44 of the IS/MND appropriately evaluates potential health-related risks associated with diesel particulate matter (DPM) emissions under the Ordinance. As stated therein, because current methodologies for conducting health risk assessments are associated with long term exposure periods (9, 30, and 70 years) and typical abandonment activities are expected to last for approximately 10 work days, short-term abandonment activities would not have the potential to generate a significant health risk.

Yorke asserts that the IS/MND failed to include a required Health Risk Assessment and cites to their screening-level HRA calculations (see Yorke page 9 and Yorke Attachments 3 and 4). An HRA is not required for the Ordinance and a detailed HRA is not necessary to substantiate the IS/MND's conclusion of less-than-significant health-related impacts. The *California Office of Environmental Health Hazard Assessment (OEHHA) Risk Assessment Guidelines, Guidance Manual for Preparation of Health Risk Assessments, February 2015* (OEHHA 2015) provides HRA procedures for use in the Air Toxics Hot Spots Program or for the permitting of existing, new, or modified stationary sources. Thus, the OEHHA 2015 guidance and associated calculations used in Yorke's HRA are not directly applicable to temporary and short-term emissions associated with well abandonment under the Ordinance. Yorke page 9 generally agrees, stating "DPM does not have a listed health risk impact for short-term acute health hazard risks." Furthermore, while OEHHA 2015 offers limited information on conducting a short-term HRA, the guidance acknowledges the many inherent uncertainties that may occur, and it does not identify the types of short-

term projects or non-stationary projects subject thereto. Page 8-18 of the OEHHA 2015 guidance further states *“Due to the uncertainty in assessing cancer risk from very short-term exposures, we do not recommend assessing cancer risk for projects lasting less than two months at the maximally exposed individual resident (MEIR). We recommend that exposure from projects longer than 2 months but less than 6 months be assumed to last 6 months (e.g., a 2-month project would be evaluated as if it lasted 6 months). Exposure from projects lasting more than 6 months should be evaluated for the duration of the project.”* The IS/MND clearly states that abandonment would not typically require more than 10 work days, which is consistent with CEQA documents prepared by Culver City analyzing potential impacts from well abandonment. Yorke offers no credible evidence to support that well abandonment would typically last longer than 10 work days. For these reasons, it is clear that the Ordinance does not meet the criteria necessitating the preparation of an HRA. Furthermore, the SCAQMD has not opined on the application of OEHHA 2015 guidance to short-term and temporary activities contemplated under the Ordinance and it would be speculative to conduct such an analysis without SCAQMD’s necessary oversight.

While it is clear that an HRA is not required nor appropriate for the Ordinance, additional responses have been provided below to illustrate key inadequacies in Yorke’s screening-level HRA as it:

1. Improperly relies on unsubstantiated and overestimated DPM emissions;
2. Improperly characterizes DPM emissions;
3. Applies erroneous and inaccurate exposure durations;
4. Uses incorrect equipment type and associated dispersion factors per SCAQMD;
5. Fails to meet standards for a screening-level HRA.

With regard to Item 1, Yorke’s screening level HRA improperly relies on unsubstantiated and overestimated DPM emissions. As described under the ‘Emissions During Abandonment’ heading above, Yorke’s assumptions regarding equipment and the associated emissions (including DPM) are not based on relevant information and are not considered reasonable assumptions predicated on fact. Further compounding Yorke’s unsubstantiated DPM emissions calculations, Yorke speculates that all of the purported missing equipment (and associated DPM emissions) would be used in addition to the equipment already included in the IS/MND (see Yorke Attachment 2). The comment provides no credible evidence for this assumption and does not substantiate what equipment and intensities will be required for well abandonment under the Ordinance. Thus, the comment is not supported by facts and the speculation results in a significant overestimation of DPM emissions claimed by Yorke. The screening-level HRA prepared by Yorke improperly relies on overestimated DPM emissions to make its revised health risk calculations (see Yorke Attachments 2, 3 and 4), resulting in unrealistic and substantially overstated health risks.

With regard to Item 2, Yorke improperly characterizes all of the Ordinance's particulate matter emissions as DPM emissions. Yorke assumes that all particulate matter emissions with a diameter of 10 microns or less (PM10) are DPM emissions (see Yorke page 8). However, this assumption is not substantiated and is inconsistent with the California Air Resources Board (CARB) characterization of DPM. CARB states that more than 90% of DPM is less than 1 micron in diameter (about 1/70th the diameter of a human hair), and thus is a subset of particulate matter less than 2.5 microns in diameter (PM2.5).² Therefore, in assuming all PM10 emissions would be considered DPM, Yorke overestimates DPM emissions and the purported health risk calculations are not supported by substantial evidence.

With regard to Item 3, Yorke's HRA applies an erroneous and inaccurate exposure duration when calculating cancer and non-cancer chronic health risks. As noted in Yorke Tables 1 and 2 (see Yorke page 10), the risk calculations for a single-well abandonment scenario were based on a 2-year exposure. In addition to this error, Yorke's calculations incorrectly assume abandonment emissions would occur continuously for 8 hours per day, 7 days per week, and 52 weeks per year (see Yorke Attachment 3, page 1, operation schedule). Yorke offers no explanation for these assumptions, and the assumptions are clearly inaccurate given the IS/MND clearly states that abandonment would not typically require more than 10 work days and would not occur on Sundays. Although not clearly explained in the comment letter, Yorke's screening-level calculations assume emissions would occur continuously for two years from one source location, affecting the same single receptor location. This assumption is clearly erroneous as well-abandonment locations and associated receptor locations would be spread across the entire City. Health risks associated with DPM exposure are a localized concern affecting a receptor in proximity to a specific source, yet Yorke offers no explanation supporting their assumption that a single-well abandonment scenario would affect the same single receptor for two years continuously. For these reasons, Yorke's assumptions and application of a 2-year exposure duration for an activity that would last 10 days clearly yields incorrect, unrealistic, and significantly overestimated health risks.

With regard to Item 4, Yorke applied incorrect source equipment types and associated dispersion factors in the screening-level calculations, resulting in substantially overestimated health risks. As shown in Yorke Table 2 in Attachment 3 and Attachment 4, Yorke selected 'other' under equipment type when using the SCAQMD Risk Tool V1.105. However, the risk tool offers several source equipment types, including diesel internal combustion engines which is reflective of the equipment that would be used under abandonment. This is an important error in Yorke's screening-level calculations as the dispersion factors applied by the risk tool for 'other' sources yield much higher risks compared to the dispersion factors built-in to the risk tool specifically defined for diesel internal combustion engines. Dispersion factors are a key component in

² CARB, Overview: Diesel Exhaust & Health, <https://ww2.arb.ca.gov/resources/overview-diesel-exhaust-and-health>; accessed October 25, 2022.

the Tier 2 screening method used by Yorke. According to the SCAQMD, the concentration of a contaminant decreases as it travels away from the site of release and spreads out or disperses. Dispersion factors (χ/Q) are numerical estimates of the amount of dispersion that occurs under specific conditions. The amount of dispersion depends on the distance traveled, the height of release, and meteorological conditions such as wind speed and atmospheric stability. The dispersion factors for the screening risk assessment procedure give the estimated annual average ground-level concentration ($\mu\text{g}/\text{m}^3$) resulting from a source emitting one ton/year of a contaminant. This means that if dispersion factors are incorrect, then the resulting concentrations of a contaminant and associated health risk calculations would also be incorrect. Yorke Table 2 in Attachment 3 and Attachment 4 cites to Table 6 and Table 6.4 for chronic and acute dispersion factors (χ/Q) identified in SCAQMD Permit Application Package "N".³ However, Tables 6 and 6.4 in SCAQMD Permit Application Package "N" provide dispersion factors to be used for general non-combustion point source equipment. Yorke used a dispersion factor of 36.19 for the chronic scenario (Yorke identified the Long Beach Airport as the representative project location). However, because Yorke's screening-level assessment is evaluating the use of diesel internal combustion engines, Yorke should have selected diesel internal combustion engines as the source type and also should have used Tables 10 and 10.6 in SCAQMD Permit Application Package "N" which specifically provides dispersion factors to be used for diesel internal combustion engines based on their power ratings. As shown in Table 10.4A in SCAQMD Permit Application Package "N", the diesel internal combustion engine chronic dispersion factor would be 10.06 based on the BHP rating cited by Yorke for the workover rig and mud pump that was assumed in their calculations. Based on this error, the chronic dispersion factor used by Yorke was almost four times higher than it should have been, resulting in incorrect, unrealistic, and significantly overestimated health risks.

With regard to Item 5, the USEPA defines a screening-level assessment as an exposure assessment that examines exposures that would fall on or beyond the high end of the expected exposure distribution. Screening-level assessments typically use readily available data and conservative assumptions to estimate a high-end exposure of the exposure to a sensitive receptor.⁴ As described above, Yorke did not use readily available data, and instead, made several erroneous assumptions that were not based on relevant information. Thus, while it is acknowledged that screening-level HRA's such as Yorke's tend to err on the side of caution and are known to overestimate health risks, even screening-level HRA's must accurately characterize a project's potential emissions and apply justified exposure assumptions. Based on the

³ SCAQMD, Permit Application Package "N", For Use in Conjunction with the Risk Assessment Procedures for Rules 1401, 1401.1, and 212 Version 8.1; www.aqmd.gov/docs/default-source/permitting/rule-1401-risk-assessment/riskassessproc-v8-1.pdf?sfvrsn=12

⁴ USEPA, Exposure Assessment Tools by Tiers and Types - Screening-Level and Refined; <https://www.epa.gov/expobox/exposure-assessment-tools-tiers-and-types-screening-level-and-refined>.

responses provided above, it is clear Yorke does not accurately characterize the reasonably foreseeable emissions associated with implementation of the Ordinance and does not apply justified exposure assumptions.

CONCLUSION

As demonstrated in detail above, Yorke's assertions are not predicated on facts, do not contain reasonable assumptions predicated on facts, and consist of speculation and evidence that is clearly erroneous and inaccurate. As such, Yorke's analysis and opinions are not credible and do not constitute substantial evidence.