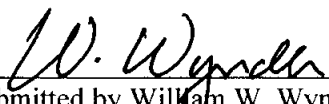


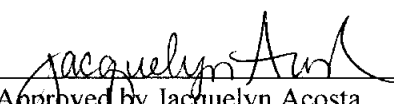


City of Carson Report to Mayor and City Council

April 29, 2014
Special Orders of the Day

SUBJECT: CONSIDER ADOPTING URGENCY ORDINANCE NO. 14-1538U EXTENDING THE 45-DAY MORATORIUM ADOPTED BY INTERIM URGENCY ORDINANCE NO. 14-1534U, ON THE DRILLING, REDRILLING OR DEEPENING OF ANY NEW OR EXISTING WELLS WITHIN THE JURISDICTION OF THE CITY OF CARSON THAT ARE ASSOCIATED WITH OIL AND/OR GAS OPERATIONS


Submitted by William W. Wynder
City Attorney


Approved by Jacquelyn Acosta
Acting City Manager

I. SUMMARY

On March 18, 2014, the City Council adopted Ordinance No. 14-1534U, an urgency ordinance to establish a 45-day temporary moratorium on the drilling, redrilling or deepening of any new or existing wells within the City that are associated with oil and/or gas operations.

On April 15, 2014, the City Council issued its 10-Day Report, pursuant to Government Code Section 65858(d), describing the measures taken to alleviate the condition that led to the adoption of the moratorium.

For the reasons that will follow, we are of the considered opinion that the City Council has the legal authority, in its sound discretion, to extend the 45-day moratorium for a period of time up to a maximum of 10 additional months and 15 additional days (or less).

This discretion is based upon the evidence presented and the findings made by the City Council at the adoption of the initial 45-day moratorium, and upon the actions taken by the City and the information considered by the City Council since the adoption of the 45-day moratorium, including the information contained in the so-called 10-Day Report.

II. RECOMMENDATION

CONSIDER and PROVIDE direction.

III. ALTERNATIVES

1. WAIVE further reading and ADOPT by 4/5ths vote Urgency Ordinance No. 14-1538U, "AN INTERIM URGENCY ORDINANCE OF THE CITY OF CARSON, CALIFORNIA, EXTENDING FOR THE BALANCE OF ONE YEAR THE 45-DAY MORATORIUM ESTABLISHED BY ORDINANCE NO. 14-1534U, ON THE DRILLING, REDRILLING OR DEEPENING OF ANY WELLS WITHIN THE JURISDICTION OF THE CITY OF CARSON

THAT ARE ASSOCIATED WITH OIL AND/OR GAS OPERATIONS, AND DECLARING THE URGENCY THEREOF,” to ensure the public health, safety and welfare is protected during the period of extension; *or*

2. WAIVE further reading and ADOPT by 4/5ths vote Urgency Ordinance No. 14-1538U, “AN INTERIM URGENCY ORDINANCE OF THE CITY OF CARSON, CALIFORNIA, EXTENDING THE 45-DAY MORATORIUM ESTABLISHED BY ORDINANCE NO. 14-1534U, ON THE DRILLING, REDRILLING OR DEEPENING OF ANY WELLS WITHIN THE JURISDICTION OF THE CITY OF CARSON THAT ARE ASSOCIATED WITH OIL AND/OR GAS OPERATIONS, AND DECLARING THE URGENCY THEREOF,” to ensure the public health, safety and welfare is protected during the period of extension, but for a period of time less than 10 months and 15 days; *or*
3. TAKE NO ACTION on this item and let the 45-day moratorium expire by operation of law on May 2, 2014; *and/or*
4. Rescind the minute order to stay all on-going or future negotiations of any possible Development Agreement No. 04-11 with OXY USA, Inc. until such time as the new owner of its California operations is in place and has presented appropriate financial and other appropriate *bona fides* to the City; *or*
5. Take such other action as the City Council deems appropriate consistent with the requirements of law.

IV. BACKGROUND

A. Legal Background

In establishing moratoriums on development, the City must comply with the procedures and requirements of Government Code Section 65858. Pertinent to the City’s possible extension of Ordinance No. 14-1534U are the following requirements from Section 65858:

- If an interim ordinance is initially adopted without notice and a hearing, the ordinance is effective for only 45 days. (Gov’t Code Section 65858.) The City Council may extend the interim ordinance once for up to a maximum of 10 additional months and 15 additional days, and a second time for one additional year, consideration of either or both extensions requires a noticed public hearing. Any extension requires a four-fifths vote and requires findings justifying the same. The moratorium may not be extended more than twice. The maximum total time for the moratorium, as extended, to be in place is *two years*. No new moratorium on the same subject can be adopted after the second extension of the original moratorium. (*Id.*)

- Before adopting or extending the moratorium, the City Council must make the finding that there is a ***current and immediate threat to the public health, safety, or welfare***, or that the approval of additional subdivisions, use permits, variances, building permits, or the like, would result in such a threat. The findings must be contained in the ordinance. The finding must be based upon specific articulable facts that are included in any urgency ordinance (*216 Sutter Bay Assocs. v. County of Sutter* (1997) 58 Cal.App.4th 860.)
- Before adopting or extending the moratorium, the City Council must also be able to state in good faith that it is suspending development in order to “consider a contemplated general plan, specific plan, or zoning proposal that the legislative body is considering or studying or intends to study within a reasonable time.” That “good faith” needs specific facts to support the same. (Section 65858(a).)
- Ten days prior to the expiration of the moratorium, or any extension of the same, the City Council must issue a written report describing the measures taken to alleviate the condition that led to the adoption of the ordinance. (Gov’t Code Section 65858(d).)

B. March 18, 2014 Adoption of Interim Urgency Ordinance

In response to concerns raised regarding the environmental and public health risks posed by new oil and gas drilling methods and the current processing of an application by OXY USA, Inc. (“OXY”), the City Council, at the March 18, 2014 Council Meeting, adopted an urgency ordinance No. 14-1534U (“Urgency Ordinance” or “Ordinance No. 14-1534U”) to impose a 45-day moratorium on issuing new permits for oil and gas drilling in the City. The 45-day ordinance was consistent with the procedures required under State Law, and found at Government Code Section 65858.

Section 3 of Ordinance No. 14-1534U provided the following:

During the period of this Ordinance, the City Manager or his or her designees shall review, study and propose revisions as necessary to the City’s laws, rules, procedures and fees related to oil and/or gas operations, to enable the City to adequately and appropriately balance the rights of existing operators and future applicants who wish to develop oil and gas drilling and extraction facilities in the City, with the preservation of the health, safety and welfare of the communities surrounding the oil

and gas drilling and extraction facilities in the City, including Carson and the Region.

As Ordinance No. 14-1534U was adopted without notice and a hearing, the ordinance was effective for 45 days. (Gov't Code Section 65858.) The City Council may extend the interim ordinance up to a maximum of 10 months and 15 days. (*Id.*)

Like the Urgency Ordinance itself, any extension of the moratorium requires a four-fifths vote and requires findings justifying the same. These findings *must also include specific articulable facts* to support them as described in Section IV. A.

The current Urgency Ordinance will expire on May 2, 2014 if it is not extended by Council on or before that date. In order for the City Council to consider whether the facts and circumstances warrant extension of the moratorium the City Council shall hold a noticed public hearing. Again, that public hearing cannot be held less than 10 days from the date the City Council issues the required 10-day report.

C. Issuance of 10-Day Report

On April 15, 2014, the City Council considered and issued its 10-Day Report pursuant to Government Code Section 65858(d).

The 10-Day Report issued by the City Council is attached to the Proposed Ordinance as Exhibit "A." To comply with the City's Council's direction to *review, study and propose revisions as necessary to the City's laws, rules, procedures and fees related to oil and/or gas operations*, the report identified four (4) issues that may warrant, in the discretion of the City Council, further study, scientific and legal analysis, and possible recommendation(s) for new or additional regulatory reform or legislative action. These were as follows:

- *What are the risks of oil and gas drilling, including the use of well stimulation, to public health and environment?*

In order to determine whether and/or what regulations are necessary or appropriate to address oil and gas drilling and production operations including the use of well stimulation technologies, the City must first determine what threats, if any, exist with respect to public health and safety and to the environment. The City can either conduct its own independent studies or wait for the independent studies and reports to be prepared by the State pursuant to the requirements of Senat Bill No. 4 ("SB 4").

- *What are the activities involved in oil and gas well stimulations that create risks?*

To better understand the risks to the public health and environment created by oil and gas drilling and production and if they may be reduced by regulation, the City is warranted in studying the question of what activities involved in oil and gas drilling and production operations, including well stimulation activities, may create impacts to the water, air and the environment. Again, the City may determine to engage its own experts and/or wait to review the SB 4 reports and studies. From preliminary review, based upon the complexity involved and the extent of the scientific debate, it may be advisable, for practical and fiscal impact reasons to wait and look at the SB 4 report and study before undertaking its own independent analysis.

- *Are there regulatory and/or enforcement gaps in the Carson Municipal Code and/or in the State Regulatory scheme of oil and gas production?*

After the activities in oil and gas drilling and production (including well stimulation) that create potential health and safety risks are carefully identified, the City can then determine if new and/or amended regulatory or legislative action(s) is/are necessary or warranted and whether there are regulatory or legislative “gaps” exist that need to be addressed .

- *What is the City’s authority to regulate any gaps and the time anticipated to promulgate and publicly consider the same?*

The City may adopt legislative or regulatory actions on oil and gas drilling and production operations provided such legislative or regulatory actions do not conflict with state law. (59 Ops.Cal.Atty.Gen. 461 (1976).) Additionally, the City may consider adopting more stringent and supplemental land use and environmental regulations so long as the same do not conflict or interfere with state regulations. The Division of Oil, Gas & Geothermal Resources (“DOGGER”) is required to develop and adopt new regulations on well stimulation. It may be advisable for the City to wait for DOGGER to issue its regulations, pursuant to SB 4, prior to adopting its own.

D. Summary of 10-Day Report Findings

To address the issues identified above, the City Attorney’s Office, working with City staff, took all of the following actions and made the following findings as described in more detail in the 10-Day Report:

1. Contacted DOGGR

At the March 18, 2014 Council meeting, representatives from OXY and/or other interested stakeholders in the oil and gas industry, submitted comment letters arguing that the City was preempted from adopting the moratorium. Based upon the research of the Office of the City Attorney to date, we respectfully disagree.

On March 24, 2014, the City Attorney's Office communicated with legal counsel for the Department of Conservation and the Division of Oil, Gas, and Geothermal Resources ("DOGGER"). DOGGER is a subordinate division within the Department of Conservation and is the state regulatory agency that oversees oil and gas drilling and production and is required to implement SB 4. DOGGR Counsel indicated that they would not take an official position on the City's interim urgency ordinance but also stated that they did not take exception to the City's interim ordinance or its authority to adopt such interim ordinance.

DOGGER Counsel also explained that they had already retained an environmental consultant to prepare the Statewide environmental impact report (EIR) required by SB 4 to be issued by July 2015 and were developing the scope for the EIR. Importantly for the City, DOGGER Counsel explained that they did not expect to seek an extension of the July 2015 deadline for the EIR and that the EIR would address attendant activities related to well stimulation.

Attendant activities could include such topics as identifying and regulating various well stimulation technologies, identifying and regulations the transportation of well stimulation chemicals to and from a drill site, and studying and requiring the issuance of well stimulation permits. These activities are not generally regulated by State oil and gas production laws, but would potentially be amenable to local legislative and/or regulatory jurisdiction. (See discussion below in subsection 5. and Dr. Mearns conclusion that accidents in transportation of well stimulation chemicals can create a risk to the public and the environment.)

2. Research and Retain Consultants

The issues raised by the moratorium as discussed above, involve complex scientific and technical issues. To assist the City Council, City Staff and the City Attorney in understanding the issues involved, the City Attorney's Office reached out to more than a dozen individuals, including academics and professional consultants, who are experts in oil and gas production, geology and in environmental health concerns.

As of the 10-Day Report (and this Staff Report), the City has retained one consultant, Susan Mearns, Ph.D., who is an environmental consultant and risk assessor. Dr. Mearns has prepared a study as discussed, below, in item 5. The City is also currently in talks with an expert in the petroleum industry to perform further consulting services.

3. Research Other City Oil and Gas Ordinances

To help determine if there exists legislative or regulatory gaps in the City's current laws and regulations, the City Attorney's Office undertook a state-wide search of city and county ordinances to determine if other agencies were regulating well stimulation technologies, and if so, what those legislative and/or regulatory schemes looked like.

The 10-Day Report summarizes six city and county ordinances (at pages 11-21), including the City of Carson regulations on oil and gas drilling and production. Generally, the report found the following:

- A number of cities and counties (including, Santa Cruz, Los Angeles, Beverly Hills and Culver City) are taking a closer look at imposing additional regulations on the use of well stimulation and new oil and gas drilling in their communities, including the adoption of moratoriums.
- A majority of the city and county ordinances we looked at had more comprehensive regulations on oil and gas drilling and production than the City's own ordinances, including regulations directed at conventional oil and gas drilling and production.
- At least two counties (San Benito and Santa Barbara) had adopted oil and gas regulations expressly for well stimulation methods.

4. Research and Monitor SB 4 and SB 1132

As presented to the City Council at the March 18, 2014, SB 4 was adopted last year and went into effect this year. Senate Bill No. 1132 (SB 1132) is currently pending in the legislature. SB 4 is an acknowledgment by the State Legislature that there is not enough known about the risks of well stimulation methods and that additional regulations are necessary.

SB 4 defined well stimulation. Additionally, SB 4 requires, among other things, DOGGER to adopt new regulations on well stimulation by January 1, 2015 and prepare a statewide environmental impact report on the impacts from well stimulation by July 1, 2015. SB 4 also requires the Secretary of the Natural

Resources Agency to prepare a study by January 1, 2015. SB 4 also explicitly requires those using well stimulation to provide new notices and publications (including providing notice to property owners of the constituents used in well stimulation) and it allows for groundwater testing.

SB 1132 would, if enacted, impose a moratorium on all new well stimulation, unless an operator can demonstrate the right to utilize well stimulation by virtue of a pre-existing and vested right to do so. The legislative analysis of amendments made last month to SB 1132 questions whether any operator will be able to demonstrate a vested right to well stimulation based upon the standard provided. (See http://www.leginfo.ca.gov/pub/13-14/bill/sen/sb_1101-1150/sb_1132_cfa_20140404_141847_sen_comm.html)

Additionally, SB 1132 would, if enacted, remove the January 1, 2015 date for the Secretary's study and the adoption of new regulations. Therefore, the proposed moratorium in that bill would not have a fixed ending date. The 10-Day Report further summarizes the changes SB 1132 would make to SB 4.

5. Report from Dr. Mearns on Well Stimulation

Dr. Mearns, an expert in Environmental Health and Risk Assessment, provided a report to the City dated April 9, 2014, which is attached to the 10-Day Report. In her report she found that a number of potential risks were associated with chemicals used in well stimulation, including, but not limited to the following:

- Hydrogen sulfide may be produced from well stimulation methods and high concentrations can paralyze the olfactory and respiratory nerves.
- Arsenic gas could be produced which are toxic to the environment. Arsenic is a known carcinogen.
- Hydrofluoric acid, which can be used in acidizing, is poisonous if inhaled, swallowed or touched.

Dr. Mearns found that exposure to toxic and noxious chemicals from well stimulation could occur through accidents during transportation to the well site or leaking on-site storage containers, pits or ponds or interstitial pore space within the subsurface.

Additionally, Dr. Mearns found that previously abandoned oil wells in an oil field where well stimulation is conducted that have not been properly abandoned and may have faulty casing may act as a conduit for toxic or noxious chemicals leading to exposure of these chemicals to onsite workers and nearby residents. This is especially important for the proposed OXY project because the Dominguez Hills has approximately 600 previously abandoned oil wells, several of which

were abandoned before DOGGER requirements were adopted to require the isolation of the upper hydrocarbon zone and the base freshwater during abandonment procedures.

In relation to SB 4 and the City's moratorium, Dr. Mearns concluded the following:

Given the potential risks due to stimulants and/or additives used in oil production it is reasonable for the City of Carson to wait until DOGGR, as mandated by SB 4, completes their investigations, assessments and studies, including but not limited to the EIR, and potentially passes regulations to address any issues or concerns before permitting oil and/or gas operations in the jurisdiction of the City.

Given the relatively new technique of large-volume HF matrix acidizing on horizontal wells in shale formations in California it is wise for the City of Carson to wait until DOGGR, as mandated by SB 4, completes their investigations, assessments and studies, including but not limited to the EIR, and potentially passes regulations to address any issues or concerns before permitting oil and/or gas operations in the jurisdiction of the City.

It is equally reasonable for the City of Carson to formulate their own opinion of the investigations, assessments and studies, including but not limited to the finding of the EIR after completion by DOGGR, and determine whether such findings sufficiently address the concerns of the City of Carson or if there remain issues not evaluated by DOGGR such as land use that would require the City of Carson to develop their own ordinance, before permitting oil and/or gas operations in the jurisdiction of the City.

E. Extending Moratorium

As summarized in this report, and set forth in greater detail in the 10-Day Report, there has arguably been insufficient time, within the initial 45 days of the moratorium, for staff, consultant(s), and legal counsel to undertake the scientific and/or legal analysis necessary to thoughtfully "review, study and propose revisions as necessary to the City's laws, rules, procedures and fees related to oil and/or gas operations, to enable the City to adequately and appropriately balance the rights of existing operators and future applicants who wish to develop oil and gas drilling and extraction facilities in the City, with the preservation of the

health, safety and welfare of the communities surrounding the oil and gas drilling and extraction facilities in the City, including Carson and the Region.”

Based on the forgoing, the Office of the City Attorney is of the considered opinion that the City Council has both the legal authority and the discretion, in the exercise of its collective judgment, to extend the moratorium established by Ordinance No. 14-1534U and making the necessary findings to extend the same for a period of time up to a maximum of an additional ten (10) months and fifteen (15) days as authorized by Government Code Section 65858.

V. FISCAL IMPACT

In the event the City Council, in its sound discretion, determines to extend the moratorium, staff and legal counsel anticipate requesting authority to engage additional experts to assist in the further detailed studies that will be necessary in order to bring back for City Council consideration of recommendations regarding well stimulations technologies and/or new well drilling criteria legislative or administrative rule-making actions, all in an amount that is unknown as of the writing of this agenda item.

VI. EXHIBITS

1. Ordinance No. 14-1538U. (pgs. 11-18).
2. 10-Day Report, dated April 9, 2014. (pgs. 19-76)

Prepared by: Kathy Phalen, Special Counsel & Sunny Soltani, Assistant City Attorney

TO: Rev09-05-2013

Reviewed by:

City Clerk	City Treasurer
Administrative Services	Public Works
Community Development	Community Services

Action taken by City Council

Date _____ Action _____

ORDINANCE NO. 14-1538U

AN URGENCY ORDINANCE OF THE CITY OF CARSON, CALIFORNIA, EXTENDING FOR THE BALANCE OF ONE YEAR THE 45-DAY MORATORIUM ESTABLISHED BY INTERIM URGENCY ORDINANCE NO. 14-1534U, ON THE DRILLING, REDRILLING OR DEEPENING OF ANY WELLS WITHIN THE JURISDICTION OF THE CITY OF CARSON THAT ARE ASSOCIATED WITH OIL AND/OR GAS OPERATIONS, AND DECLARING THE URGENCY THEREOF

The City Council of the City of Carson does hereby ordain as follows:

SECTION 1-- FINDINGS. The City Council of the City of Carson hereby finds, determines, and declares that:

A. On March 18, 2014, after receiving and considering all oral and written testimony from City staff, the City Attorney, and the public, including a Staff Report dated March 18, 2014, (attached to the 10-Day Report in Exhibit "A"), the City Council adopted Urgency Ordinance No. 14-1534U entitled "An Interim Urgency Ordinance of the City of Carson, California, Establishing a 45-Day Temporary Moratorium on the Drilling, Redrilling or Deepening of any Wells Within the Jurisdiction of the City of Carson that are Associated with Oil and/or Gas Operations, and Declaring the Urgency thereof," in order to allow the City time to thoroughly review, study and revise the City's laws, rules, procedures and fees related to oil and/or gas operations, to enable the City to adequately and appropriately balance the rights of existing operators and future applicants who wish to develop oil and gas drilling and extraction facilities in the City, with the preservation of the health, safety and welfare of the communities surrounding the oil fields in Carson and the Region. Ordinance No. 14-1534U was adopted and immediately effective pursuant to the authority set forth in Government Code Section 65858.

B. In adopting this Ordinance No. 14-1534U, the City Council made the following findings:

1. Local neighborhoods in the City of Carson have been negatively impacted by the historical development and operation of oil and gas producers within the City, including some that may have been operated consistent with the laws of the State. For example, but without limitation, the Carousel Tract Homes development, which includes over 200 homes, is currently the subject of a RWQCB clean up and abatement order based on the discovery of contamination from a prior use of the property for oil and gas tank farms. In March of 2010, residents of the 285 Carousel Tract homes were told to not eat fruit and vegetables grown in their backyards by the RWQCB.

2. Oil and gas exploration and production is rapidly developing and evolving in the State of California, including the Los Angeles Metropolitan region, based on advances in technology, including the development of shale oil extraction using well stimulation techniques.

EXHIBIT NO. 01



3. The State of California has recognized that not enough is known about the safety of the risks to the environment and the public from well stimulation methods. The recently enacted Senate Bill 4 (2013-2014), which went into effect in January of this year, called on the California Department of Gas and Geothermal Resources ("DOGGR") to (1) study and develop new regulations for the use of well stimulation methods and (2) develop an environmental impact report ("EIR") by January and July of 2015, respectively.

4. All oil and gas operations, whether conducted using conventional methods or well stimulation methods, have the potential for significant and immediate impacts on the health, safety, and welfare of the citizens of Carson through increased noise, odor, dust, traffic, and other disturbances, as well as the potential to significantly impact the City's air, water, soil, biological quality, geology, water, stormwater and wastewater infrastructure, transportation, emergency response plans and other aesthetic values and community resources.

5. California DOGGR is empowered by the State Legislature (Public Resources Code Sections 3000, et seq.) to adopt statewide rules and regulations concerning the development and production of oil and gas resources and the DOGGR has done so.

6. California DOGGR's statutory powers do not preempt the City's zoning and land use powers related to oil and gas operations.

7. The State Planning and Zoning Law (Cal. Gov't Code Sections 65000, et seq.) broadly empowers the City to plan for and regulate the use of land in order to provide for orderly development, the public health safety and welfare, and a balancing of property rights and the desires of the community and how its citizens envisions their city.

8. The City of Carson zoning and land use standards and regulations on oil and gas drilling have not been updated in several years, and have not been updated prior to various changes in oil and gas production practices and changes to state statutes and regulations, and therefore are ripe for review and merit review to determine whether amendments are necessary to reflect today's industry, its practices, and impacts on land use, transportation, public health, and other environmental and natural resources, as well as to determine if amendments are necessary to coordinate with noticing requirements of SB 4.

9. The City staff have begun to analyze whether the existing zoning and other land use regulations pertaining to oil and gas activities are sufficient to protect the public health, safety and welfare.

10. The City is also aware of the immediate and future interest by several stakeholders to pursue drilling, redrilling and deepening of wells associated with oil and/or gas drilling and extraction operations in the City.

11. There is a significant concern regarding the short- and long-term health impacts on the community from current and future oil and gas drilling and extraction operations, as well as the future impact on the Region's evolving business community. There is further significant concern regarding the potential pollution that may impact the citizens of Carson and the Region.



12. Effective regulation should be adopted that allows oil drilling operations to co-exist safely with the communities surrounding the City and Region's oil fields.

13. Provisions of the City's current laws, rules, procedures and fees relating to oil drilling and extraction activities (the "Existing Regulations"), currently set forth in the Carson Municipal Code ("CMC"), and land use plans, need review, study and revisions in order to protect the health, safety and welfare of the communities surrounding the Regions oil fields including in the City and Region.

14. The revisions described in Paragraph 13, above, and the nature of those activities and land uses will likely result in the City amending, repealing and adding provisions to the CMC, including the Zoning Code.

15. Without the imposition of a temporary moratorium on the drilling, redrilling and deepening of wells associated with oil and/or gas operations, the City may be required to process applications for such drilling activities despite the fact the Existing Regulations are in need of updating and studies should be done to provide recommendations of possible new standards for oil and/or gas operations.

16. A moratorium is necessary in order to protect the City and its residents, businesses and visitors from the potential health and safety impacts of oil and/or gas operations approved under the Existing Regulations, including air quality, noise, releases, spills and other impacts, and to preserve the quality of life and protect the health, safety and welfare of the communities surrounding the oil drilling and extraction operations in the City, including in the City and the Region.

17. A moratorium is immediately required to preserve the public health, safety and welfare and should be adopted immediately as an urgency ordinance, to make certain that permits for the drilling, redrilling or deepening of wells associated with oil and/or gas operations are issued only under adequate regulations. Imposition of a moratorium will allow the City sufficient time to conclude the preparation of a comprehensive ordinance for the regulation of such activities. The absence of this Ordinance would create a serious threat to the orderly and effective implementation of any amendments to the CMC which may be adopted by the City Council as a result of studying this issue, in that the drilling, redrilling and deepening of wells associated with oil and/or gas operations under the Existing Regulations may be in conflict with or frustrate the contemplated updates and revisions to the CMC.

18. There is a current and immediate threat to the public health, safety and welfare of the City and its community, thereby necessitating the immediate enactment of this Ordinance, in that the approval of permits for the drilling, redrilling or deepening of wells associated with oil and/or gas operations, which would be required to be processed under the Existing Regulations, do not provide adequate protections for the communities surrounding oil and gas drilling and extraction operations in the City, including Carson and the Region. Moreover, the City is aware of new proposals for oil and gas drilling within the jurisdiction of the City, including an open application for a development agreement and specific plan amendment to develop over 200 new or redrilled wells.



19. A moratorium is also immediately required to allow the City time to follow and study SB 4. California DOGGR's studies and adoption of new regulations will have an impact on the City's updates to its regulation.

20. A moratorium is also immediately required to allow the City to conduct a comprehensive study on the creation a "oil zone" to address the potential health and safety issues arising from stimulated drilling.

C. By operation of law and its own terms, the moratorium adopted by Ordinance No. 14-1534U shall expire and be of no further force and effect on May 2, 2014, unless extended by a four-fifths (4/5) vote of the City Council.

D. On April 15, 2014, the City Council, by minute action, approved and issued a report as required by Government Code Section 65858(d), which is attached to this Ordinance as Exhibit "A" and hereby incorporated by this reference (the "10-Day Report").

1. The 10-Day Report sets forth actions and measures taken to alleviate conditions which led to the adoption of Ordinance No. 14-1534U, which include, but are not limited to, the City's continuing efforts to review, study and propose revisions, as necessary to the City's laws, rules, procedures and fees related to oil and gas operations.

2. The 10-Day Report identified the following four issues that warrant study, scientific and legal analysis, and possible recommendations for new or additional regulatory or legislative action:

- a. What are the risks of oil and gas drilling, including the use of well stimulation, to the public health and environment?
- b. What are the activities involved in oil and gas well stimulations that create risks?
- c. Are there regulatory and/or enforcement gaps in the Carson Municipal Code and/or in the State Regulatory scheme of oil and gas production?
- d. What is the City's authority to regulate any gaps and the time anticipated to promulgate and publicly consider the same?

3. The 10-Day Report set forth the actions the City had taken since the adoption of Ordinance No. 14-1534U to address the identified issues, which included:

- a. Contacting representatives of the Division of Oil, Gas, and Geothermal Resources to discuss preemption issues and the status of Senate Bill 4 implementation.
- b. Researched consultants to assist in the technical and scientific issues of oil and gas drilling and production operations.

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- c. Retained one consultant, Susan Mearns, Ph.D., who is an environmental consultant and risk assessor and was in discussions to hire a petroleum industry expert.
- d. Researched SB 4, enacted last year, and the proposed SB 1132. Continued monitoring the status of SB 1132.
- e. Obtained an initial report from Dr. Mearns on the threat from well stimulation methods and the City's moratorium status in relation to SB 4.
- f. Researched and reviewed other city and county ordinance regulating oil and gas drilling and production, including well stimulation methods.

E. On April 29, 2014, the City Council held a duly noticed public hearing to consider extending the moratorium adopted by Ordinance No. 14-1534U for the balance of one year, which would be an additional 10 months and 15 days, from and after May 2, 2014.

F. The City Council considered all of the written and oral testimony offered concerning whether to extend the prohibition for an additional 10 months and 15 days.

G. The 10-Day Report and the record shows that there has not been sufficient time within the initial 45 days of the moratorium for staff, consultants, and legal counsel to undertake the scientific and legal analysis necessary to thoughtfully address and make recommendations to the City Council regarding the issues identified in the 10-Day Report and any revisions necessary to the City's laws, rules, procedures and fees related to oil and/or gas operations, including the use of well stimulation.

H. The extension of the moratorium adopted by Ordinance No. 14-1534U (the "Moratorium") is necessary in order to protect the City from the potential health and safety impacts of oil and/or gas operations, including the use of well stimulation in those operations, approved under the Existing Regulations, including air quality, noise, releases, spills and other impacts, and to preserve the quality of life and protect the health, safety and welfare of the communities of the City and the region.

I. The Moratorium continues to be immediately required to preserve the public health, safety and welfare and should be extended immediately by adoption of this ordinance, to make certain permits for the drilling, redrilling or deepening of wells associated with oil and/or gas operations are issued only under adequate regulations. Extension of the Moratorium will allow the City sufficient time to conclude the preparation of comprehensive regulations for such activities. The termination of the Moratorium would create a serious threat to the orderly and effective implementation of any amendments to the Carson Municipal Code or other related regulations which may be adopted by the City Council as a result of studying this issue, in that drilling, redrilling and deepening of wells associated with oil and/or gas operations under existing regulations may be in conflict with or frustrate the possible updates and revisions to the Carson Municipal Code and other regulations.



J. There is a current and immediate threat to the public health, safety and welfare of the City and its community, thereby necessitating the immediate enactment of this Ordinance, in that the approval of permits for the drilling, redrilling or deepening of wells associated with oil and/or gas operations, which would be required to be processed under the Existing Regulations, do not provide adequate protections for the communities surrounding oil and gas drilling and extraction operations in the City, including Carson and the Region. Moreover, the City is aware of new proposals for oil and gas drilling within the jurisdiction of the City, including an open application for a development agreement and specific plan amendment to develop over 200 new or redrilled wells.

K. The facts constituting such urgency are set forth in Section 1, Paragraphs A-J, inclusive, of this Ordinance, including the 10-Day Report referenced and incorporated in Paragraph D of Section 1.

L. City Council action approving this Ordinance is based upon the 10-Day Report attached as Exhibit "A," and all evidence, whether written or oral, presented to the City Council at the City Council meetings on March 18, 2014, April 15, 2014 and April 29, 2014 related to Ordinance No. 14-1534U and this Ordinance, including the March 18, 2014, Staff Report attached to the 10-Day Report in Exhibit "A."

SECTION 2 -- EXTENSION OF MORATORIUM. The City Council finds and determines the Moratorium duly enacted by Ordinance No. 14-1534U shall be and hereby is extended for an additional ten (10) months and fifteen (15) days from the initial 45-day moratorium period. Ordinance No. 14-1534U was adopted on March 18, 2014 and the 45-day period is set to expire on May 2, 2014. Accordingly by this ordinance that 45-day period of time is extended until midnight March 18, 2015, unless sooner terminated or further extended by the City Council. During the effective period of this Ordinance, no application for permit shall be accepted, no consideration of any application for permit shall be made and no permit shall be issued by the City, for the drilling, redrilling or deepening of any well associated with oil and/or gas operations, or any other land use application requesting approval to conduct new or expanded oil and gas drilling or extraction activities within the City.

SECTION 3 -- REVIEW AND STUDY. During the period of this Ordinance, the Acting or new City Manager, or designee(s), shall review, study and propose revisions as necessary to the City's laws, rules, procedures and fees related to oil and/or gas operations, to enable the City to adequately and appropriately balance the rights of existing operators and future applicants who wish to develop oil and gas drilling and extraction facilities in the City, with the preservation of the health, safety and welfare of the communities surrounding the oil and gas drilling and extraction facilities in the City, including Carson and the Region.

SECTION 4 -- URGENCY MEASURE. The City Council further finds and determines that adoption of this Ordinance as an urgency measure is necessary for the preservation of the public health, safety and welfare. The City Council further finds and determines that the current zoning regulations and land use plans do not adequately protect the peace, health, safety and general welfare of the residents of the City or in communities around the City.

The City Council further finds and determines that this urgency ordinance is necessary in order to ensure adequate regulation of oil and/or gas operations is adopted prior to the issuance



of any permits for the drilling, redrilling or deepening of any well associated with oil and/or gas operations, which regulations will serve to adequately and appropriately balance the rights of existing operators and future applicants who wish to develop oil and gas drilling and extraction facilities in the City, with the preservation of the public health, safety and welfare of the communities surrounding the oil and gas drilling and extraction facilities in the City, including Carson and the Region.

SECTION 5 -- AUTHORITY AND EFFECT. This urgency ordinance is enacted pursuant to the authority conferred upon the City Council of the City of Carson by Government Code Section 65858 and shall be in full force and effect immediately upon its adoption by a four-fifths (4/5) vote of the City Council as if, and to the same extent that, such ordinance had been adopted pursuant to each of the individual sections set forth hereinabove.

SECTION 6 -- CEQA FINDING. The City Council finds that this Ordinance is exempt from CEQA based on the findings in Section 1, and pursuant to Public Resources Code Section 21080(b)(4), as it is adopted to prevent or mitigate an emergency and pursuant to CEQA; Guideline Section 15061(b)(3) as it can be seen with certainty that there is no possibility that the Ordinance will have a significant effect on the environment; and CEQA Guideline Section 15307 and 15308 as it is a regulation adopted to protect the environment.

SECTION 7 -- SEVERABILITY. The City Council hereby declares, if any provision, section, subsection, paragraph, sentence, phrase or word of this ordinance is rendered or declared invalid or unconstitutional by any final action in a court of competent jurisdiction or by reason of any preemptive legislation, then the City Council would have independently adopted the remaining provisions, sections, subsections, paragraphs, sentences, phrases or words of this ordinance and as such they shall remain in full force and effect.

SECTION 8 -- PUBLICATION. The City Clerk shall certify as to the passage and adoption of this Interim Urgency Ordinance and shall cause the same to be published in a manner prescribed by law.

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SECTION 9 -- EFFECTIVENESS OF ORDINANCE. This Ordinance shall take effect immediately, pursuant to the authority conferred upon the City Council by Government Code Section 36937. This Ordinance shall be of no further force and effect on March 18, 2015 unless extended in accordance with the provisions set forth in Government Code Section 65858. Not later than ten (10) days prior to the expiration of this urgency ordinance, the City Council shall issue a written report as required by applicable state law.

PASSED, APPROVED and ADOPTED as an URGENCY ORDINANCE this 29th day of April, 2014.

Jim Dear, Mayor

ATTEST:

Donesia L. Gause, City Clerk

APPROVED AS TO FORM:

City Attorney



Report to City Council of the City of Carson

10-Day Report on Urgency Ordinance No. 14-1534U

William W. Wynder, City Attorney

April 9, 2014

I. BACKGROUND

In response to concerns raised about the potential environmental and public health risks associated with new oil and gas drilling methods, specifically well stimulation technologies, including, but not limited to, hydraulic fracturing ("fracking"), the City Council adopted an urgency ordinance No. 14-1534U ("Urgency Ordinance") to adopt a 45-day moratorium on new oil and gas drilling in the City at its meeting of March 18, 2014. The March 18, 2014 Staff Report (Exhibit A), as well as the written and oral testimony submitted to the City Council at or before the hearing, enabled the City Council made the following findings, among others:

- *Oil and gas exploration and production is rapidly developing and evolving in the State of California, including the Los Angeles Metropolitan region, based on advances in technology, including the development of shale oil extraction using well stimulation techniques.*
- *The State of California has recognized that not enough is known about the safety of the risks to the environment and the public from well stimulation methods. The recently enacted Senate Bill 4 (2013-2014), which went into effect in January of this year, called on the Department of Gas and Geothermal Resources (DOGGR) to (1) study and develop new regulations for the use of well stimulation methods and (2) develop an environmental impact report (EIR) by January and July of 2015, respectively.*
- *All oil and gas operations, whether conducted using conventional methods or well stimulation methods, have the potential for significant and immediate impacts on the health, safety, and welfare of the citizens of Carson through increased noise, odor, dust, traffic, and other disturbances, as well as the potential to significantly impact the City's air, water, soil, biological quality, geology, water, stormwater and wastewater infrastructure, transportation, emergency response plans and other aesthetic values and community resources.*
- *The City staff have begun to analyze whether the existing zoning and other land use regulations pertaining to oil and gas activities are sufficient to protect the public health, safety and welfare.*
- *There is a significant concern regarding the short- and long-term health impacts on the community from current and future oil and gas drilling and extraction operations, as well as the future impact on the Region's evolving business community. There is further significant concern regarding the potential pollution that may impact the citizens of Carson and the Region.*

- *Effective regulation should be adopted that allows oil drilling operations to co-exist safely with the communities surrounding the City and Region's oil fields.*
- *Provisions of the City's current laws, rules, procedures and fees relating to oil drilling and extraction activities (the "Existing Regulations"), currently set forth in the Carson Municipal Code ("CMC"), and land use plans, need review, study and revisions in order to protect the health, safety and welfare of the communities surrounding the Region's oil fields including in the City and Region.*
- *A moratorium is immediately required to preserve the public health, safety and welfare and should be adopted immediately as an urgency ordinance, to make certain that permits for the drilling, redrilling or deepening of wells associated with oil and/or gas operations are issued only under adequate regulations. Imposition of a moratorium will allow the City sufficient time to conclude the preparation of a comprehensive ordinance for the regulation of such activities. The absence of this Ordinance would create a serious threat to the orderly and effective implementation of any amendments to the CMC which may be adopted by the City Council as a result of studying this issue, in that the drilling, redrilling and deepening of wells associated with oil and/or gas operations under the Existing Regulations may be in conflict with or frustrate the contemplated updates and revisions to the CMC.*

Based on these findings, the City Council adopted a 45-day moratorium on the drilling, redrilling or deepening of any new or existing wells within the jurisdiction of the City or Carson that are associated with oil and/or gas operations, and directed City Staff to do the following:

During the period of this Ordinance, the City Manager or his or her designees shall review, study and propose revisions as necessary to the City's laws, rules, procedures and fees related to oil and/or gas operations, to enable the City to adequately and appropriately balance the rights of existing operators and future applicants who wish to develop oil and gas drilling and extraction facilities in the City, with the preservation of the health, safety and welfare of the communities surrounding the oil and gas drilling and extraction facilities in the City, including Carson and the Region.

This report provides an overview of City staff's compliance, to date, with the requirement to study and propose revisions to the City Code.

II. ISSUES

In order to comply with the City Council's direction to study and then to consider the propriety of possible new and/or additional regulations on oil and gas drilling and production operations including as related to the use of well stimulation technologies, it is both necessary and appropriate to carefully study and then make recommendation regarding at least the following four (4) issues as discussed in greater detail hereinafter.

1. What are the risks of oil and gas drilling, including the use of well stimulation, to public health and environment?

To determine whether and/or what regulations are necessary or appropriate to deal with oil and gas drilling and production operations including the use of well stimulation technologies, the City must first determine what threats, if any, exist with respect to public health and safety and to the environment. As discussed in March 18, 2014 Staff Report (Exhibit A), the State Legislature has recognized four (4) areas of particular concern to the public and the environment: (1) impacts to air quality, (2) water quality, (3) water use, and (4) land use and wildlife impacts.

The State Legislature also formally recognized, in its enactment of Senate Bill No. 4 ("SB 4"), that not enough is known about the safety risks to the environment and the public from the use of well stimulation methods. Under SB 4, the Secretary of the Natural Resources Agency is required to look at these safety risks by January 1, 2015. Additionally, DOGGR is required to prepare a Statewide EIR by July 1, 2015 to study the impacts to the environment from the use of well stimulation methods, including hydraulic fracturing and acidizing.

Therefore, the City's has the option to conduct its own independent studying these same issues, focusing on the unique impacts of well stimulation technologies within the geographic boundaries of Carson, and in making regulatory recommendations in light of such study, or to



simply wait until the pending state-wide studies are concluded and determine whether the analysis and report prepared pursuant to SB 4 are sufficient to enable Carson to simply "model" state recommendations in Carson, or whether to adopt "unique" Carson regulations, or a combination of both options.

2. What are the activities involved in oil and gas well stimulations that create risks?

The City is warranted in studying the question(s) of what activities, for example, in the oil and gas drilling and production operations that include the use of well stimulation technologies that may allow impacts to water and air quality? As a simplified example, (and as discussed in the March 18, 2014 Staff Report), hydraulic fracturing involves injecting well stimulant fluids into a well at very high pressures.

Some of the chemicals used in well stimulant fluids can be highly toxic to humans and animals. Some of the ways those chemicals may get exposed to people and the environment can be from spilling in transportation, release on the surface during drilling operations, or escape from the well casing during injection or pumping activities, and/or improper disposal of waste fluids after use. Whether chemicals are allowed to escape the well bore during operations may depend on whether the cement casing was adequately constructed or whether a fracture was allowed to form in the wrong strata.

Whether those escaped chemicals reach groundwater or the surface may depend on whether there are improperly (and possibly unknown) abandoned wells in the area.¹ Therefore, the risk to the environment can come from transportation activities, drilling activities, pumping

¹ See Exhibit B, Mearns Report; see also Chilinger, G.V., Endres, B., "Environmental hazards posed by the Los Angeles Basin urban oilfields: an historical perspective of lessons learned." Environmental Geology (2005).

activities, disposal and activities related to planning and constructing a well and adequately surveying for abandoned wells, as well as potentially others.

To better understand the general and specific activities that create risks, the City also has the option of hiring its own expert(s) in petroleum production and/or waiting to review the SB 4 reports and studies. From a preliminary review of some of the academic literature, however, it seems the questions involving the impacts of well stimulation technologies are significant, complex, and a matter of some scientific debate warranting specific expertise to advise the City in its detailed analysis.² Therefore, for practical and fiscal impact reasons, it may be advisable for the City to wait and look at the DOGGER's EIR and the Secretary's report, rather than incur the cost, not to mention the time needed, of preparing a unique Carson-specific analysis and recommendation.

3. Are there regulatory and/or enforcement gaps in the Carson Municipal Code and/or in the State Regulatory scheme of oil and gas production that warrant further study and or legislative action?

Once the activities that create risk are identified, the City can determine if regulations and necessary enforcement of those regulations exist, whether in State or local regulations. With SB 4, the State Legislature recognized that there are gaps in the State regulations for well stimulation technologies. If that is true at the state level, it seem prudent to assume that there are gaps in the City's own regulatory scheme that warrants careful study and possible regulatory and legislative actions.

In addition to any new regulations that may come out of the state studies and reports required by SB 4, the statute itself requires, among other things: significantly more notice and reporting requirements of operators, including the disclosure to the public agencies, property

² Wiseman, *infra*, n. 2.



owners and the public about the use of well stimulation and the chemicals involved; the identification of all of the government agencies that may be involved or have jurisdiction over the chemicals used and the activities in well stimulation to create transparency; the preparation of geologic surveys in and around the well site to identify fracture zones; and the requirement to conduct water quality testing at the property owner's request. (Pub. Resources Code §§ 3160.) The State's own assessment is supported in the scientific literature which generally finds that "substantial gaps" exist in regulating and enforcement of public health and environmental risks created by well stimulation.³

As an initial matter, it would seem that it is unlikely that the City can determine if there are regulatory gaps until the City is able to better understand the issues identified in the first two questions, and after DOGGR has developed its new regulations. With that said, as discussed below in Section III.C., our initial review of a half dozen other California city and county oil and gas development ordinances demonstrates that the City of Carson's oil and gas drilling and production regulations--without specific consideration for the use of well stimulation methods--are generally *not as comprehensive as the other ordinances we have identified and reviewed (which, at a minimum, seem to warrant careful review, study, and possible future legislative action by the City Council)*. (See discussion below in Section III.C.)

4. What is the City's authority to regulate any gaps and the time anticipated to promulgate and publicly consider the same?

The California Attorney General has opined, consistent with State case law on preemption, that local agencies are *not barred from adopting regulations on oil and gas drilling*

³ Wiseman, Hannah, "The Capacity of State Institutions to Govern Shale Gas Development Risks," Environmental Science and Technology, 10 Mar 2014. Found at, <http://pubs.acs.org>, on April 7, 2014; see also Schmidt, Charles W., "Blind Rush? Shale Gas Boom Proceeds amid Human Health Questions," Environmental Health Perspectives, August 2011 (identifying the need for health effect studies).

and production operations when the local regulation does not conflict with state regulation.

(59 Ops.Cal.Atty.Gen. 461 (1976).) The Attorney General specifically noted that the state has not occupied the field of oil and gas drilling and production operations, and cities may adopt more stringent and supplemental land use and environmental regulations so long as it does not conflict or interfere with state regulation. Notably, the State Department of Conservation (which oversees DOGGER), hosts this Attorney General Opinion on its website.⁴

Based on this legal opinion, we are of the consider opinion that the City may adopt its own local, more stringent or supplemental, regulations. However, because it is anticipate that the State may be adopting new regulations to implement SB 4, it may be advisable for the City to wait for DOGGER to issue its regulations, pursuant to SB 4, prior to considering whether new or additional regulations are warranted for Carson (as interpreted by DOGGER regulations).

III. PRELIMINARY STEPS TAKEN BY LEGAL COUNSEL AND STAFF SINCE ENACTMENT OF ORDINANCE NO. 14-1534U TO ADDRESS ISSUES RAISED IN THE MORATORIUM

A. Contact with Division of Oil, Gas and Geothermal Resources (DOGGER)

On March 24, 2014, the City Attorney's Office participated in a teleconference with legal counsel for the Department of Conservation (DOC) and DOGGER ("DOGGER Counsel") about the DOGGER position on the City's moratorium and the status of SB 4 implementation.

1. City's Moratorium and Preemption

DOGGER Counsel had read the City's March 18, 2014 Staff Report and Urgency Ordinance. DOGGER attorneys advised that they would not take an official position on the issue of whether the City's Urgency Ordinance was preempted by State law. However, DOGGER counsel indicated DOC and DOGGER did not take any exceptions to the City's moratorium

⁴ <http://ftp.consrv.ca.gov/pub/oil/publications/prc03.pdf> found on, April 9, 2014.

ordinance and would not be raising any challenges. DOGGER counsel also indicated that the City's March 18, 2014 Staff Report (Exhibit A) appeared well researched and thorough.

DOGGER counsel advised that, were the City were to consider promulgating or adopting new or additional regulations or legislative measures, DOGGER would be appreciate the opportunity of reviewing the same prior to adoption to comment on whether the City was intruding upon DOGGER's field of regulatory authority. As counsel explained, DOGGER's authority covers the construction and operation of the wells but counsel agreed with the City that a number of activities associated with oil and gas drilling and well stimulation are within the regulatory authority of cities and local municipalities under their land use authority and police powers.⁵

2. Implementation of SB 4

DOGGER counsel explained the well stimulation regulations called for under SB 4 need to be adopted by January 15, 2015 but the EIR is required to be completed by July 1, 2015.⁶ Counsel further explained there is no intention of extending the deadline for the EIR and a consultant had already been retained and a scope of study was being developed with input from interested stakeholders. Importantly, for the City of Carson, DOGGER counsel explained that the Statewide EIR will analyze environmental impacts from the attendant activities that go along with oil and gas drilling that uses well stimulation, such as the trucking/transporting of hazardous waste materials. These type of activities are especially amenable to local regulation, and have not historically been regulated by DOGGER.

⁵ As discussed in Part I, this opinion is consistent with the State Attorney General Opinion, 59 Ops.Cal.Atty.Gen. 461 (1976).

⁶ March 24, 2014 Telephone call by Assistant City Attorney Sunny Soltani and Special Counsel Kathy Phelan with DOC Chief Counsel Bruce Reeves and DOC Counsel Graham St. Michel, and DOGGER Counsel James Pierce.

DOGGER counsel further explained that the new regulations required under SB 4 will impose permitting requirements on using any kind of well stimulation. Counsel stated the process will generally include getting the Regional Water Quality Control Board's sign off on permits. These new regulations are not intended to prevent the use of well stimulation technologies, which they confirmed, has been going on for decades in the State, but to: (1) disclose fully and thoroughly the types of well stimulation being used, (including all chemicals involved) and (2) to regulate closely the use of well stimulation. According to DOGGER counsel, the new statewide regulations will have a substantial number of noticing and publishing requirements, including requiring 60 days after use of well stimulation, notifying what chemicals are used to all surface property owners.

The proposed permanent regulations will also have a number of requirements as to location of use of well stimulation and sufficiency of well casing, including study of and potential re-abandonment of nearby previously abandoned wells. This also is important as the City potentially has dozens if not hundreds of previously abandoned wells (including on the proposed OXY site) that may or may not meet DOGGER's current requirements.

B. Interview Potential Consultants

To assist the City in addressing the scientific and technical issues raised in Part I. of this report, the City Attorney's Office has reached out to more than a dozen individuals, including academics and professional consultants, specializing in oil and gas production, geology, and environmental health concerns. Of particular concern was finding consultants that had the requisite expertise and had not worked exclusively with the industry or the public sector.

To date, we have retained, Dr. Susan Mearns, whose initial report is attached as Exhibit B and discussed in Section C.5., below. Dr. Mearns is an expert environmental consultant and risk

assessor. Additionally, the City is close to retaining a second consultant who is an expert in the petroleum industry and in the use of well stimulation methods.

C. Research Other Public Agency Codes and Activities Related to Well Stimulation

To help determine whether, and what, regulatory and/or legislative gaps may currently exist within the Carson municipal code, we undertook a state-wide search of California city and county regulatory systems to determine if any other agencies regulate well stimulation technologies and, if so, what those legislative and/or regulatory scheme look like and how they operate. From our research, there are a number of cities and counties that are, like Carson, carefully studying the use of well stimulation and new oil and gas drilling in their communities, including adopting moratoriums.

The counties of San Benito and Santa Barbara have both adopted ordinances that expressly address, at least some of the concerns related to well stimulation and hydraulic fracturing. Additionally, from our initial review ordinances from the cities of Long Beach, Los Angeles, Beverly Hills and Culver City, which have no specific regulations related to well stimulation, their land use regulation for the oil and gas drilling and production are more comprehensive than the City's current ordinance. With the exception of speaking with an Assistant County Counsel for the County of San Benito, and the City Attorney for Culver City, the City Attorney's Office has not had an opportunity to interview other agencies to determine if they believe their regulations have been effective.

1. Carson's Municipal Code

The City regulates oil and gas drilling in the City's Zoning Ordinance, by special development standards for residential, commercial and industrial land use types in Sections

9128.6, 9138.10, and 9148.2.⁷ Additionally, Section 9182.22 establishes a 20-year grandfathering period for oil and gas drilling operations that become nonconforming after legal permits are issued. The City's provisions may be summarized as follows:

Aesthetics

The City's ordinance has a number of requirements related to aesthetics. For example, pumps and pipelines are required to be undergrounded, equipment is required to be enclosed, the property is required to be landscaped and well pumps and facilities are required to be fenced, and signs are limited to only identifying signs required under the ordinance.

Noise

For noise, the ordinance requires the walls surrounding equipment to use sound deadening materials, operators to comply with the City's noise ordinance and any identified necessary noise mitigation measures to be included in the conditions on a conditional use permit. Additionally, well maintenance is limited to the hours of 8:00 a.m. and 6:00 p.m. on weekdays.

Parking and Circulation

The City's ordinance has minimal requirements for parking and circulation, requiring only that there be at least one driveway approach and a concrete slab be provided on site for parking of heavy equipment.

Safety

The ordinance also has specific requirements related to safety issues. These are as follows:

- The well shall be maintained in a safe operating condition in conformance with current safety and emission standards (these are not specified).

⁷ <http://www.codepublishing.com/ca/carson.html>. Note that the City's Zoning rules would not necessarily apply to the proposed OXY development which is an allowed use by right under the applicable specific plan and OXY is seeking a plan amendment to allow the development to be an allowed use under a development agreement, which may or may not include the current Zoning Ordinance standards.



- Each well is required to be marked with a sign that includes a twenty-four hour emergency number.
- All drilling and producing operations shall conform to all applicable fire and safety regulations. (These are not specified).
- The property shall be kept free of debris, weeds, brush, and pools of oil, water or other liquids. (Includes 25-foot buffer zone for weeds and debris around well.)
- Adequate protection shall be provided to control and prevent a blowout of a well.
- Protection shall meet Federal, State and other applicable jurisdiction requirements.
- All equipment and design must be approved by the County Fire Department.
- Requires 300-foot setback from residential uses, hospitals and schools.
- All drilling and production operations shall be conducted in such a way as to not constitute a public nuisance.

Enforcement Mechanisms

Other than requiring a \$5,000 performance bond per well, the City's code has no special administrative or enforcement mechanisms adopted to enforce safety issues on ongoing operations once a permit is issued. Additionally, the bond requirement does not provide what it may be used for and may be waived upon proof of operator holding a "valid Blanket Oil and Gas Well Indemnity Bond."

2. San Benito County

The San Benito County Code was the most recently adopted ordinance that we found. It was adopted last year. It includes express provisions related to well stimulation.⁸ The ordinance

⁸ See, Chapter 19.21. at [http://www.amlegal.com/nxt/gateway.dll/California/sanbenitocounty_ca/title19landuseandenvironmentalregulation/chapter1921oilandgaswells?f=templates\\$fn=altmain-nf.htm\\$q=\[field%20folio-destination-name:%27Chapter%2019.21%27\]\\$x=Advanced#JD_Chapter19.21](http://www.amlegal.com/nxt/gateway.dll/California/sanbenitocounty_ca/title19landuseandenvironmentalregulation/chapter1921oilandgaswells?f=templates$fn=altmain-nf.htm$q=[field%20folio-destination-name:%27Chapter%2019.21%27]$x=Advanced#JD_Chapter19.21)

created the position of Petroleum Administrator. A conditional use permit is required for any developments that includes oil and gas drilling and production. A separate permit is not required for each well. The ordinance specifically requires a CUP for any new operation, but also a CUP or an amendment to an existing CUP whenever there is a proposal to engage in well stimulation when it is not expressly authorized in the operators CUP.

Drilling Plan

The permit process requires a drilling plan. Included, among many other things, the drilling plan must include the following:

- Geological information regarding the area in which drilling is to occur, including identification of known *earthquake faults*, wells and *abandoned wells*.
- A list of any hazardous materials that will be stored, discharged, or produced on the property. An emergency spill contingency plan must be included.
- A description of any secondary or enhanced recovery operation or hydraulic fracturing proposed as part of the project.
- A description of all chemicals and fluids to be used as part of the secondary or enhanced recovery operation and sources of water. If the applicant claims trade secret, they must still disclose the chemical family or similar descriptor.
- The maximum length of any horizontal wells.
- A description of the gases and products expected to be found and extracted.
- A description of the maximum pressure at the well-head and pipelines.
- Calculations for criterion pollutants and greenhouse gas emissions.
- Identification of the watershed in which the well will be located.

Financial Assurances

Permittees are required to provide financial assurances of \$15,000 per well. This is intended to guarantee the performance of all conditions on the permit. Additionally, the operator is required to have \$2 million in insurance with the county named as an additional insured.

Conditions on CUP/Development

The CUP and/or the Code require the following, among other requirements:

- No vibration, dust, odor or other harmful effects shall be created which affect materially any person living or working outside the project area.
- The CUP shall specify how all waste materials and wastewater will be disposed of, what materials and fluids are allowed to remain on site.
- 500-foot setback from all roads.
- Grading is required to cause the least possible disfigurement and soil erosion.

Notices

Operators are required to give notices to the City whenever changes are made to well status and injection status, whenever there is an intention to use well stimulation, transfer operators, and submit documents to the County that they supply to DOGGER.

Spill Control Plan

A copy of the spill control plan required by the EPA and spill contingency plan required by DOGGER to the County.

Surface Inspections

Well-site and well operations can be inspected for compliance by the City's Petroleum Administrator. If the Administrator finds any operations constitute imminent threat to the public or the environment, they can require immediate action to abate the threat. Operators are responsible for remediation of damage.

Water Quality

The ordinance prohibits disposal of water produced from drilling operations or any other waste product in any way that it is a threat to the environment or will pollute water system.



For project using well stimulation, including hydraulic fracturing, water quality testing may be a condition of approval and a condition on the CUP. The county may require baseline testing and annual testing up to a mile around the well site. The county's costs are recoverable from the operator.

Initiative

In addition to the ordinance adopted by San Benito, there is an initiative that will be placed on the ballot at the next election to ban all well stimulation techniques in the County. The initiative is described by its proponents as being supplemental to the ordinance adopted last year.

3. Santa Barbara County

The San Benito Code was modeled after the Santa Barbara "Petroleum Code."⁹ The Santa Barbara Ordinance is in many ways more comprehensive in its overall scheme, especially regulations related to emission control, well-abandonment and enforcement against "high risk operators," (those who have had violations or spills). But the Santa Barbara regulations related to well stimulation, found in Section 25-30 are less detailed than the San Benito ordinance.

Generally, the Santa Barbara ordinance provides that well enhancement equipment may be inspected periodically if it is within 200 feet of a school or residence; the petroleum administrator may impose reasonable conditions on well stimulation that involves the use and handling of hazardous materials that could endanger waterways or subsurface fresh water strata; the operator can be required to provide information sufficient to assure the petroleum administrator that the necessary requirements are met and the petroleum administrator may require proof that well stimulation will not constitute a nuisance or damage water resources.

⁹ See Chapter 25, at <https://library.municode.com/index.aspx?clientId=16322>



4. City of Los Angeles

As discussed in the March 18, 2014 Staff Report (Exhibit A), the City Council for the Los Angeles took action to direct City staff and the City Attorney's Office to prepare an ordinance banning the use of well stimulation on February 28, 2014. The City of Los Angeles has ordinances regulating oil and gas drilling operations.¹⁰ Los Angeles requires a permit for each well. The Los Angeles regulations have minimum size requirements for creating "oil districts."

The ordinance limits oil drilling to one well to each acre. No more than one well shall be bottomed in each five acres of a drilling district. Additionally, no more than two wells may be drilled in each city block and bottomed under that block. This requirement may be amended if there is directional drilling. Waste substances from the drilling operation must be piped or hauled to an area approved by the Los Angeles Regional Pollution Control Board No. 4. Wells are required to be cased tight to bedrock or by means approved by the Department of Water and Power to prevent vertical movement of ground water. The DPW is permitted to review and inspect methods used in the drilling and producing operations and in the disposal of waste and can require changes to protect the public.

The Zoning Administrator may deny an application for drilling in an urbanized area if they find an alternative location that is available and reasonably obtainable in the same district or nearby district could be done with greater safety and security and less harm to other property. A \$5,000 bond is required to secure compliance with all conditions imposed by the code and the zoning administrator. The operator is required to have insurance. The Zoning Administrator can

¹⁰ See Section 13.01 at ,
[http://www.amlegal.com/nxt/gateway.dll/California/lamc/municipalcode?f=templates\\$fn=default.htm\\$3.0\\$vid=amlegal:losangeles_ca_mc](http://www.amlegal.com/nxt/gateway.dll/California/lamc/municipalcode?f=templates$fn=default.htm$3.0$vid=amlegal:losangeles_ca_mc)



impose additional conditions at any time or require corrective measures if after actual observation, he or she finds, that additional conditions are required to protect surrounding property.

Although the City of Los Angeles Code does not have any express requirements related to well stimulation methods, the requirements related to review and approval by the Department of Water and Power, if not otherwise preempted, give the City some ability to address the threats to water from well stimulation methods caused by inadequate well-casing.

5. City of Long Beach

The City of Long Beach has a relatively extensive set of regulations on oil and gas drilling productions.¹¹ Each well is required to have a permit. Additionally, drilling requires a separate permit. Obtaining a permit requires a bond and insurance similar to the Culver City ordinance. The application requirements include a certification that the methods by which liquid spills will be removed will conform to the State requirements.

The City of Long Beach requires, where possible the consolidation of well sites, for the purpose of allowing surface uses to be available for other land use purposes. The ordinance includes specific requirements for the disposal of drilling fluid, drill cuttings, petroleum and other oil field wastes. The Long Beach ordinance has specific noise decibel limits for well operations depending upon location. There are specific abandonment requirements and procedures.

The Long Beach Code has specific storage and fire control regulations. For example, flammable waste gases or vapors are not allowed to be discharged from the site except by written approval of DOGGER. The Long Beach ordinance also includes a specific permit revocation

¹¹ See Title 12 at , <http://library.municode.com/index.aspx?clientId=16115>



procedure. Long Beach does not have any particular rules related to well stimulation methods, including fracking and acidization.

5. Culver City

On March 31, 2014, the Culver City Council discussed adopting a fracking moratorium. Most council members indicated they were in favor of adopting a moratorium. Although from news accounts, it appears the Council intends to wait until the City of Los Angeles comes out with its new ordinance.¹²

Currently, the Culver City Code requires a permit to drill, re-drill or deepen any well hole. To obtain a permit, Culver City requires filing a bond, entering an indemnity agreement with the city, and submitting proof of commercial liability insurance in the amount of at least \$10 million. The bond is expressly required to guarantee payment of all costs for the removal of any and all equipment on the site and returning the premises to original condition.¹³

The Culver City ordinance does not appear to be as comprehensive as many of the other cities and counties ordinances that we looked at but it has specific requirements on the location and type of tanks, piping and electrical equipment, that are more detailed than the City of Carson's regulations. Additionally, the Culver City ordinance expressly provides that the Fire Chief may require immediate cessation of all operations whenever he or she believes an extraordinary fire hazard exists. Currently, the Culver City regulations do not specifically address well stimulation, such as fracking or acidization directly.

¹² See <http://www.culvercityobserver.com/story/2014/04/03/news/council-proceeds-cautiously-on-fracking-ban/3677.html> found on April 7, 2014.

¹³ See Chapter 11.12 at , http://www.amlegal.com/culvercity_ca/

6. Beverly Hills

In January 2014, the City of Beverly Hills directed their staff to prepare a moratorium on the use of well stimulation. Beverly Hills currently prohibits all new oil and gas drilling and production within the City, except from one drill site (Drill Site No. 1). All other drilling in the city limits is declared to be a public nuisance.¹⁴ For drilling outside the city limits that will enter the boundaries of the city at the subsurface level, the city requires a permit. All operations that are otherwise allowed require a permit.

The Beverly Hills ordinance requires a number of very specific requirements on the oil and gas drilling and production, related to noise, aesthetics, circulation, safety and operations. Some examples that are not found in the City's regulations are the following:

- Beverly Hills requires all well holes passing through or under the city are required to be at least 500 feet deep.
- Walls for enclosing the equipment and facilities are required to be made with fire retardant materials.
- Drilling derricks are required to be mounted on vibration isolators or springs to dampen the drilling vibrations. Adequate parking is required for employees.
- Well sites are required to have sliding gates that are closed at all times.
- Trucking for the delivery of equipment and supplies and for removal of materials must be done between 8:00 a.m. and 6:00 p.m. weekdays.
- Any wastewater reinjection is required to be approved by American Petroleum Institute Methods.
- Volatile hydrocarbons may not be used to clean up the site.
- The operator is required to monitor drilling mud during drilling to ensure no obnoxious odors are produced.
- The operator is required to maintain automatic vapor detection sensors for hydrocarbons coupled to automatic shutdown mechanisms on any controlled drill site.

¹⁴ See Chapter 10, Article 3, at , http://www.sterlingcodifiers.com/codebook/index.php?book_id=466



- The operator is required to protect the public water supply system on any controlled drill site against backflow in a manner approved by the building official consistent with the Uniform Plumbing Code.
- The operator is required to remove all equipment within 90 days of completing drilling or the abandonment of further drilling.
- Finally, the Beverly Hills ordinance requires all abandoned wells, abandoned prior to 1978, to meet the State standards for abandonment.

Additionally, the Beverly Hills ordinance has a number of specific investigation and enforcement requirements, including the following:

- The right by any city official, administrator, or staff member or independent consultant, to inspect the drill site and operation.
- The right of Council to amend, alter or add conditions to a permit in order to protect the public.
- The right to suspend or revoke a permit for a material violation or persistent violations.
- The permittee is required to provide \$1 million in insurance to the City against tort liability arising from the drilling or production activities.
- The Public Works Director is required at least every two years to determine if any adverse effects upon the surface of the city is being caused by oil and gas drilling and production.

Currently, the Beverly Hills regulations do not specifically address well stimulation, such as fracking or acidization directly.

D. Research SB 1132 and SB 4

At the March 18, 2014, Council meeting both SB 4,¹⁵ which was signed into law last year, and Senate Bill No. 1132 ("SB 1132"),¹⁶ which is pending legislation, were discussed at the City Council. SB 4 was summarized in the March 18, 2014 Staff Report (See Exhibit A.)

¹⁵ http://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201320140SB4

¹⁶ http://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201320140SB1132



Generally, SB 4 requires the Secretary of the Natural Resources Agency to prepare a study by January 1, 2015 to assess the use of well stimulation on the environment and the public. It requires DOGGER to prepare and adopt regulations for the use of well stimulation methods by January 1, 2015, to implement requirements on operators related to, among other things, noticing and well locations. It further requires DOGGER to prepare a Statewide EIR to assess the environmental impacts of the use of well stimulation methods by July 1, 2015. It also adopts new permitting and noticing requirements on operators for the use of well stimulation.

SB 1132 proposes to amend SB 4. Most of the principle elements are the same, except SB 1132 would place a moratorium on well stimulation in the State until the study to be prepared by Secretary of Natural Resources Agency is complete. SB 1132 adds a number of additional substantive requirements to what is needed to be in the study by the Secretary of Natural Resources Agency and removed the deadline for the study.

As such, the moratorium would have no specific end date under SB 1132. After the Study is finished, it is to be reviewed by a committee of members of various representatives of State agencies (including the CARB, Cal EPA, and SWRCB.) After the Committee certifies the study as complete, including allowing 60-day public input period, the Governor is to consider the Committee report and determine if the regulations prepared by DOGGER are adequate to protect environment and public. The Governor's findings may be challenged in court by anyone that submitted comments to the Committee. Once the Governor's findings are final, the moratorium ends.

SB 1132 does not change any of SB 4's requirements for (1) regulations to be prepared and adopted by DOGGER by January 1, 2015, (2) operators using well stimulation to obtain a permit and disclose chemicals being used, (3) notification requirements to agencies, tenants of

ground surface and public related to permits and well stimulation techniques, and (4) publication of chemical contents of well stimulation fluids (including new trade secret disclosure procedures). Generally speaking, DOGGER will still need to adopt regulations related to drilling methods to ensure well-casing protects water and environment and new regulations to implement the new permit and disclosure requirements by January 1, 2015. However, they would only seem to be applicable to those who have vested rights to continue current drilling operations and would not apply to new drilling operations until moratorium ends. SB 1132 expressly provides it does not affect vesting rights and requires DOGGER to develop rules to determine who has vesting rights.

The principal elements of SB 4 and SB 1132 are summarized in the table below.

	Senate Bill 4 (Enacted 2013)	Senate Bill 1132 (Proposed)
Principal Elements	<p>Defines Defines well stimulation and particular terms related to well stimulation</p> <p>Study Secretary of Natural Resources Agency to Prepare a Study by 1/1/15</p> <p>Regulations DOGGR to adopt new regulations on well stimulation by 1/1/15</p> <p>New Permit Requirements Operators required to get permit for well stimulation that includes disclosing location of wells and chemicals to be used and these are noticed to local agencies and tenants on property</p>	<p>Defines No edits to Definitions</p> <p>Study Same requirement but added a number of things to be in the study and removed the deadline (see last row below)</p> <p>Regulations Same just moved</p> <p>New Permit Requirements Same just moved</p>

	<p>New Notice Requirements 60 days after well stimulation used. notice to be put on web all wells stimulation fluid and well location data collected in permit</p> <p>New process to overcome claim by operators that contents of fluid is trade secret, including requiring to be given to health professionals and law enforcement officers</p> <p>Interim Activities Prior to Final Regs</p> <ul style="list-style-type: none"> • DOGGR to finalize and implement regulations governing SB 4 statute by 1/1/15 • Operators allowed to drill provided they comply with public notice information • DOGGR prepare an EIR by 7/1/15 	<p>New Notice Requirements Same just moved</p> <p>Interim Activities Prior to Final Regs Completely deletes all of these provisions, including ability to operate now and requirement for DOGGR to prepare EIR.</p> <p>Moratorium Prohibits all well stimulation until Study is completed</p> <ul style="list-style-type: none"> • Committee Review of Study <ul style="list-style-type: none"> -Requires that 6 mo. after study finished be subject to committee review by representatives of Natural Resources Agency, the Cal EPA, State Air Board, State Water Board and Dept. of Public Health -Committee to prepare report on Study -Public Review of Report -If find well stimulation presents danger the committee can require new report -If find well stimulation does not present danger report is final • Governor Review and Findings After Committee Certifies report, given to governor who review report and determines if
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		<p>appropriate rules in place based on Study findings</p> <ul style="list-style-type: none"> • Governor Findings May be Challenged in Court • Moratorium ends upon Governor Findings • Adds Rules related to Vesting Rights <p>Current operations may continue. DOGGR to adopt regulations to determine if someone has vesting rights.</p>
Study	<p>Generally requires the Secretary of the Natural Resources Agency to do a scientific study of well stimulation by January 1, 2015, and determine the hazards and risks that well stimulation pose to natural resources and the public.</p>	<p>Specific changes to SB 4 requirements:</p> <ul style="list-style-type: none"> • Removes 1/1/15 deadline to finish • Requires the use of only of best available science and data. • Added a number of additional express requirements for the study. • Specifically require the study to identify all "onshore" and "offshore" areas explicitly (before it just said all areas) • Added that the study needed to evaluate all potential, direct, indirect, and cumulative health and environmental effects of well stimulation offshore and onshore • Required study to evaluate extent of the increase in oil and gas development • Added additional requirements for the study to consider effects on State meeting greenhouse gas targets. • Added a number of additional areas of study including: • Impacts on private property and land use (including home values, damage to property/land)

		<ul style="list-style-type: none"> • Human health risk from chemicals used in well stimulation • Potential economic costs and harms of increased gas and oil operations, including in agricultural sector • Potential effects on communities (environmental justice issues) • Potential effect on increased traffic • Potential effect on pipeline infrastructure • Potential impacts on wildlife • Whether existing emergency planning protect public • Risk to worker safety
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E. Research Environmental and Health Issues

As discussed, the City Attorney's Office, in coordination with City Staff, are actively working on retaining consultants to assist the City in determining the risk to the environment and the public from well stimulation methods. The City was able to retain Dr. Susan Mearns, an environmental consultant and risk assessor, whose initial assessment of the issues discussed above is attached as Exhibit B. Dr. Mearns found that, (1) there are is a significant increase in the use of acidizing in the State, and (2) serious potential health risks are associated with acidizing well stimulation activities. Based on this and the pendency of SB 4 implementation, Dr. Mearns concluded as follows:

Given the potential risks due to stimulants used in oil production it is reasonable for the City of Carson to wait until DOGGR, as mandated by SB 4, completes their investigations, assessments and studies, including but not limited to the EIR, before permitting oil and/or gas operations in the jurisdiction of the City.

It is equally reasonable for the City of Carson to formulate their own opinion of the investigations, assessments and studies,

including but not limited to the findings of the EIR after completion by DOGGR, and determine whether such findings sufficiently address the concerns of the City of Carson or if there remain issues not evaluated by DOGGR such as land use that would require the City of Carson to develop their own ordinance, before permitting oil and/or gas operations in the jurisdiction of the City.

(Exhibit B.)

IV. POSSIBLE REGULATORY AND/OR LEGISLATIVE CHANGES OR ADDITIONS TO THE CARSON MUNICIPAL CODE

To best address the issues raised in the report, the City Council could determine it advisable to await the outcome of the SB 4 studies and reports and any new DOGGER regulations. At that point, the City Council would be in a position to assess whether there are regulatory and/or legislative gaps in the Carson municipal code that should or may be filled by local regulation and where those local regulations do not conflict with, or be preempted by, State law. Additionally, the Statewide EIR, which is scoped to study the threats to the environment from attendant activities (such as, transportation of well stimulation chemicals), should provide beneficial information to the City in answering what land use regulations may be necessary to deal with potentially threatening attendant activities.

If the City Council determine to undertake its own Carson-specific analysis and make recommendation to amend or add to the City's regulatory scheme prior to implementation of SB 4, the release of the Statewide EIR, or adoption of DOGGR regulations, the City Council should direct staff and the Office of the City Attorney to further study the San Benito County or Santa Barbara County ordinances, conduct additional legal and scientific research related to well stimulation regulations.

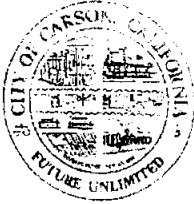
Additionally, as discussed, in Part III.C., the City's existing regulatory scheme related to oil and gas drilling operations are not as comprehensive as many we have seen and certainly fail

to address well stimulation technologies. Accordingly, the City Council may wish to further study and then promulgate new and/or amended substantive and procedural requirements in the City's current ordinance for all types of oil and gas drilling operations (including conventional operations), using other local agency regulations as a model. To accomplish such a task, additional review and analysis of the attached regulations and others would be warranted.

Exhibits

A – March 18, 2014 Staff Report with Urgency Ordinance

B – April 8, 2014 Report by Susan L. Mearns, Ph.D. (CV Attached.)



City of Carson Report to Mayor and City Council

March 18, 2014
New Business Discussion

**SUBJECT: CONSIDER ADOPTING INTERIM URGENCY ORDINANCE NO 14-1534U
IMPLEMENTING A MORATORIUM ON NEW OIL AND GAS DEVELOPMENT IN
THE CITY OF CARSON PENDING A STUDY OF THE SCOPE OF THE CITY'S
REGULATORY AND/OR LAND USE AUTHORITY OVER SUCH ACTIVITIES**

Jacquelyn Acosta
Submitted by William W. Wyder
City Attorney

Jacquelyn Acosta
Approved by Jacquelyn Acosta
Acting City Manager

I. SUMMARY

At the March 4, 2014, City Council meeting, Councilmember Robles stated that he would like the City to consider a moratorium on fracking. The City Council then took a non-binding advisory vote requesting this item to be placed on the agenda on March 18, 2014. Mayor Dear agrees that this item needs to be brought forward in an expedient manner and so has placed this item on the agenda tonight.

The Office of the City Attorney was directed to consider and, if legally appropriate, draft an interim urgency ordinance implementing a moratorium, similar to one proposed by the City of Los Angeles, on new oil and gas development within the City of Carson while city staff studies, and then reports back, to the City Council regarding the full scope of the potential municipal regulatory and/or land use authority over such activities.

For the reasons that will follow, we are of the considered opinion that the City Council has the legal authority to exercise its land use and police powers to adopt a moratorium on new oil and gas development in the City provided the City Council makes necessary findings to do so by a 4/5ths vote of the entire City Council.

II. RECOMMENDATION

CONSIDER and PROVIDE direction.

III. ALTERNATIVES

1. WAIVE further reading and ADOPT an Interim Urgency Ordinance No. 14-1534U, "AN INTERIM URGENCY ORDINANCE OF THE CITY OF CARSON, CALIFORNIA, ESTABLISHING A 45-DAY TEMPORARY MORATORIUM ON THE DRILLING, REDRILLING OR DEEPENING OF ANY NEW OR EXISTING WELLS WITHIN THE JURISDICTION OF THE CITY OF CARSON THAT ARE ASSOCIATED WITH OIL AND/OR GAS OPERATIONS, AND DECLARING THE URGENCY THEREOF," to ensure the public health, safety and welfare is protected for 45-day period by 4/5ths vote.

2. DIRECT, by minute order. City staff to stay all on-going or future negotiations of any possible Development Agreement No. 04-11 with OXY USA, Inc. ("OXY") until such time as the new owner of its California operations is in place and has presented appropriate financial and other appropriate *bona fides* to the City.
3. Take such other action as the City Council deems appropriate consistent with the requirements of law.

IV. BACKGROUND

Consistent with concerns raised by environmental groups and citizens around the State, concerns were also raised by the City Council and members of the community at the last City Council meeting regarding the use of "fracking" (or other well enhancement techniques) as a method of oil and gas development in the City. The Los Angeles City Council recently directed its City Attorney and staff to develop an ordinance to ban the use of "fracking" and/or well-enhancement techniques in the City of Los Angeles.

In response to the community concerns raised at the last City Council meeting, Councilmember Robles, with the concurrence of Mayor Dear, requested the Office of the City Attorney to consider whether the City of Carson could adopt a moratorium on the use of "fracking" or other well enhancement technologies pending the careful and comprehensive study of the City's regulatory and/or land use authority over the same. This report addresses the factual, procedural, and legal background and issues involved in a proposed moratorium.

In particular, this report considers whether such a moratorium, if adopted by Council, could be implemented in connection with the OXY project currently under review by City Staff. In an e-mail from OXY's legal counsel on March 10, 2014, OXY committed to not use any "well stimulation methods," as defined by SB 4 (discussed below). This definition would include hydraulic fracturing (or "fracking") and acid matrix stimulation, but the e-mail went further to contend that adoption of a moratorium as broad as that described in the Los Angeles City Council action would, in legal counsel's opinion, be preempted by State law.

As will be discussed in detail hereinafter, we respectfully disagree.

A. Factual Background - "Fracking" and Other Well Stimulation Techniques

1. Defined

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Well stimulation is a generalized term for any of several methods used to increase the production of a well and does not describe a particular method on its own. Well stimulation includes acidizing or fracturing.¹ New recovery of oil and gas from underground reservoirs in California generally requires some form of well stimulation to flow.² Methods to do this include creating new channels through which the oil and gas can flow. Some methods to do this are hydraulic fracturing (referred to as "fracking") and acid stimulation methods.

Fracking involves injecting fluids into the reservoir at high enough pressure to cause breaks in the reservoir rocks (i.e., shale). The cracks or fractures allow oil and natural gas to flow more freely. According to the Department of Conservation website, hydraulic fracturing has been used in the State to stimulate oil and gas production for more than 30 years.³

The fluids used in hydraulic fracturing are water-based and usually include a



Image Of Horizontal Hydraulic Fracturing.

Source: <http://today.uconn.edu/blog/2011/12/fracking-%E2%80%93-good-news-or-bad-for-america%E2%80%99s-energy-needs/>

multitude of chemical additives (often toxic) that are used to thicken or thin the fluids, improve the flow of the fluid or kill bacteria that may reduce flow.⁴ Additionally, the fluid often contains materials referred to as "proppants" which are used to wedge into the fractures to keep them open. A common proppant is silica sand.

Another form of well stimulation is called *acid matrix stimulation* (or *matrix acidizing*)⁵. This method involves injecting hydrochloric or other acid into the well to create or enhance channels in the rock and/or to remove damage. In this method, the injection pressures are not high enough to fracture the rock.⁶ There is a form of acidizing that is done with pressure to fracture rock. This method is referred to as "*fracture acidizing*" or "*acid fracturing*."⁷

¹ https://www.osha.gov/SLTC/etools/oilandgas/glossary_of_terms/glossary_of_terms_w.html

² http://www.conservation.ca.gov/dog/general_information/Pages/HydraulicFracturing.aspx

³ Id.

⁴ SB 4. Senate Floor Analysis, found at

http://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?_af_sessionid=7d558dd98d7c506cbbf941c08f36

⁵ http://petrowiki.org/Matrix_acidizing

⁶ Id.

⁷ http://petrowiki.org/Matrix_acidizing

The February 28, 2014 Los Angeles City Council action also listed gravel packing as a well stimulation technique and identified the use of waste disposal injection wells. We will define those for purposes of clarification.

Gravel-packing is not defined as a well-stimulation method. It is a method to complete construction of a well, including conventional wells, in which a perforated or slotted liner is placed in a well and surrounded by gravel. The purpose of the gravel is to keep sand out of the well while allowing the flow of gas or oil.⁸

As for **waste disposal injection wells**, these are wells that are deep underground and are designed to hold the wastewater created by drilling many wells, which may be difficult if not impossible to safely treat. Well stimulation techniques, including hydraulic fracturing and acid matrix stimulation can produce several million gallons of wastewater. Some oil and gas producers use waste disposal injection wells to dispose of that wastewater.⁹

2. Environmental Concerns

The use of "fracking," acidizing, and waste disposal injection wells have been associated with environmental risks. According to a recent report from the U.S. Government Accountability Office (GAO), which is an independent, nonpartisan agency that works for Congress, "[d]eveloping oil and gas resources...poses inherent environmental and public health risks, but the extent of risks associated with shale oil and gas development is unknown, in part, because the studies we reviewed do not generally take into account potential long-term, cumulative effects." The GAO's report categorizes the environmental risks into the four major categories: air quality, water quality, water use, and the land and wildlife impacts. These issues were discussed in the SB 4 analysis as provided below.¹⁰

Air Quality

With regard to air quality, the risks come from engine exhaust from increased truck traffic, emissions from diesel-powered pumps used to power equipment, intentional flaring or venting of gas for operational reasons, and unintentional emissions of pollutants from faulty equipment and accidents. Additionally, silica sand, used as a proppant in hydraulic fracturing, can cause air quality issues. Silica sand, if not properly handled, can become airborne, lodge into a person's lungs, and cause silicosis, which is an incurable lung disease. Impoundments (i.e.,

⁸ https://www.osna.gov/SLTC/etools/oilandgas/glossary_of_terms/glossary_of_terms_g.html

⁹ <http://science.time.com/2013/07/12/deep-disposal-wells-from-oil-and-gas-drilling-linked-to-earthquakes/>

¹⁰ SB 4, Senate Floor Analysis, found at http://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?_af_sessionid=7d558dd98d7c506cbbf941c08f3c

ponds) containing fracturing fluids and produced waters (i.e., the water produced when oil and gas are extracted from the ground) pose a risk because the evaporation of the fluids has the potential to release contaminants into the atmosphere.

Water Quality

With regard to water quality, shale oil and gas development pose risks from contamination of surface water and ground water as a result of spills and releases of hydraulic fracturing chemicals, produced water, and drill cuttings. Spills and releases of these materials can occur as a result of tank ruptures, blowouts, equipment or impoundment failures, overfills, vandalism, accidents, ground fires, or operational errors.

The potential for the spill and release of chemicals involved in hydraulic fracturing has received a great amount of public attention. According to a recent congressional report, between 2005 and 2009, oil and gas companies throughout the U.S. used hydraulic fracturing products containing 29 chemicals that are known or possible human carcinogens; regulated under the SDWA for their risk to human health; or listed as hazardous air pollutants under the Clean Air Act. As for produced water, it can carry a range of contaminants, including hydraulic fracturing chemicals, salts, metals, oil, grease, dissolved organics, and naturally occurring radioactive materials. Drill cuttings (i.e., the broken bits of solid material removed from drilling) may contain naturally occurring radioactive materials, as well.

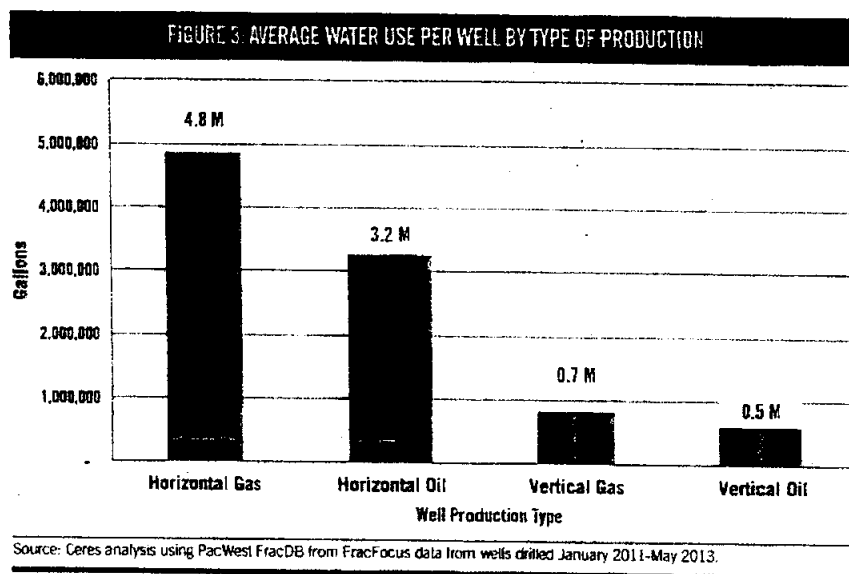
The potential for underground migration is also a potential risk to water quality. The GAO explains that "[u]nderground migration can occur as a result of improper casing and cementing of the wellbore as well as the intersection of induced fractures with natural fractures, faults, or improperly plugged dry or abandoned wells. There are also concerns that induced fractures can grow over time and intersect with drinking water aquifers."

The oil and gas industry claims that hydraulic fracturing typically occurs thousands of feet below the earth's surface and that the well casing for these wells extends below an impervious layer of rock "that would prevent any migration of fluids up into the drinking water supply." However, there is still the problem with well casing failures. A 2000 Society of Petroleum Engineers article regarding an oil field in Kern County explained that "the well failure rate, although lower than that experienced in the 1980s, is still economically significant at 2 to 6% of active wells per year." In Pennsylvania, poor cementing around a well casing allowed methane to contaminate the water wells of 19 families.

Moreover, little data exists on fracture growth in shale formations following multistage hydraulic fracturing over an extended time period; the frequency with which refracturing of horizontal wells may occur; the effect of refracturing on fracture growth over time; and the likelihood of adverse effects on drinking water aquifers from a large number of hydraulically fractured wells in close proximity to each other.¹¹

Water Use

With regard to water quantity, water is used for well drilling operations to make drilling mud as well as to cool and lubricate the drill bits. Water is also the primary component of hydraulic fracturing fluids. The amount of water used for shale gas development is small in comparison to other water uses in the State, such as agriculture and other industrial purposes. However, it still uses a great deal of water and may be cumulatively significant based on the State's drought condition. The table below represents the amount of water used in well stimulation methods:



Source: "Hydraulic Fracturing & Water Stress: Water Demand by the Numbers" at [www.Ceres.org](http://www.ceres.org), Boston, MA, Feb. 2014

Land and Wildlife Impacts

The clearing of land to allow access to the resource and construction of roads, pipelines, storage tanks, and other infrastructure needed to extract and transport the resource can negatively impact habitats. Noise, the presence of new infrastructure, and spills of oil, gas, or other toxic chemicals are other risks that

¹¹ SB 4, Senate Floor Analysis, found at, http://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?_afssessionid=7d558dd98d7c506cbbf941c08f36

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can negatively affect the surrounding environment. Additionally, there is some evidence to support the argument that hydraulic fracturing and/or waste disposal injection wells are related to earthquakes.

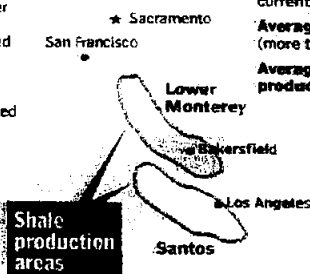
3. Demand for Increased Well Stimulation in Los Angeles Area

California has historically been one of the largest producers of oil in the Country. According to a 1993 report prepared by the Department of Conservation, the most prolific oil province in the state and probably the world is located in the Los Angeles Basin.¹² Recently, with new techniques, including using horizontal drilling along with hydraulic fracturing, the Country has experienced a boom in the production of shale oil and gas.

From 2007 to 2011, shale oil production increased more than fivefold and gas production increased fourfold.¹³ This shale boom has important consequences for the State. According to a report by USC, California has perhaps the largest deep-shale reserve in the world. The Monterey Shale Formation and Santos Shale Formation, runs 1,750 miles through the center of the state and along the Southern California Coast, including Los Angeles, at depths between 6,000 and 15,000 feet, contains an estimated 15 billion barrels of oil, and accounts for more than 2/3 of the shale-oil reserve in the Country.¹⁴

Monterey and Santos shale oil

The nation's largest shale oil play, or extension of existing production activity, is actually a combination of two shale formations: the Lower Monterey and the Santos. Together they are estimated to contain more than three times as much recoverable oil as the second-largest shale formation in the United States, the Bakken, which underlies much of North Dakota and Montana. Last year, activity in the Monterey/Santos was estimated to cover 1,752 square miles in the San Joaquin and Los Angeles basins.



Technically recoverable reserves: 15.4 billion barrels, which is 78 times California's total 2011 oil production, enough to supply the state for about 21 years at the current rate of oil refining
Average depth: 11,250 feet (more than 2 miles)
Average thickness of productive shale: 1,875 feet

Source: U.S. Energy Information Administration, California Division of Oil, Gas and Geothermal Resources

JOHN COX and KENT EUGEL / THE CALIFORNIAN

According to an article in CNN Money, OXY holds a significant interest in the shale in California and has had "some success using a technology known as deep acid injection." The process "involves injecting hydrofluoric or other acids deep

¹² Dept. of Conservation, *California Oil, Gas, and Geothermal Resources*, p. 25, found at <ftp://ftp.consrv.ca.gov/pub/oil/publications/tr03.pdf>

¹³ SB 4, Senate Floor Analysis, found at <http://leginfo.ca.gov/faces/billNavClient.xhtml;jsessionid=7d558dd98d7c506cbbf941c08f36>

¹⁴ <http://gen.usc.edu/assets/001/84955.pdf>, <http://www.bakersfieldcalifornian.com/business/oil/x65918320/Monterey-Shale-brightens-Kerns-oil-prospects>

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underground, where they eat away at the shale rock and allow the oil to flow. It's cheaper than fracking." And according to a representative of IHS Cambridge Energy Research Associates, is not as dangerous as fracking because the fluid volumes are done at a far less rate and involve less pressure.¹⁵

B. Procedural Background

a. OXY Proposal

In July 2011, OXY filed applications for a development agreement¹⁶, a specific plan amendment,¹⁷ and an environmental impact report (EIR). Under these applications, OXY proposes to construct a production facility (OXY Facility) located at 1450 -1480 Charles Willard Street, consisting of up to 202 wells (2 existing test wells and 200 new wells), an oil and gas processing facility, water treatment, water injection operations, slurry injection or disposal operations, an electrical connection, emergency flare, and shipping and pipeline facilities to produce and transport approximately 6,000 barrels per day of oil and three million standard cubic feet per day of natural gas.

Directional drilling techniques are proposed to be used in order to pinpoint oil reservoirs at depths of 4,000 to 13,500 feet. The Facility will be constructed within a 30-foot high walled 6.5 acre compound, with the drill rig mast enclosed.

Under the current specific plan and zoning designations, oil and gas drilling is allowed by right on the property subject.¹⁸ City staff were not supportive of the project moving forward without obtaining a new development agreement from OXY.¹⁹ Because OXY does not have any vesting rights to proceed with the development, it would be subject to any new zoning or land use restrictions adopted by the City prior to issuance of building permits. (*Avco Community Developers, Inc. v. South Coast Regional Com.* (1976) 17 Cal.3d 785, 791.)

Based on staffs' position, OXY applied for a new development agreement and specific plan amendment (that requires a development agreement for development of oil and gas for the subject property). The Draft EIR for the OXY project was published on January 23, 2014. The 45-day review and comment period has been extended for an additional 15 days and now ends on March 25, 2014.

¹⁵ <http://money.cnn.com/2013/01/14/news/economy/california-oil-boom/>

¹⁶ Development Agreement No. 4-11.

¹⁷ Specific Plan 2-89 Amendment No. 3.

¹⁸ The current zoning for the property is Specific Plan-2, Manufacturing Light (SP-2, ML). The General Plan designation is Light Industrial. The Dominguez Technology Center Specific Plan (SP-2) currently allows exploration, production, and transmission of gas products appropriately screened as a permitted-by-right use.

¹⁹ A prior development agreement that covered the development of the Dominguez Technology Center expired in 2011.



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On October 18, 2012, OXY sent a letter to the City's Senior Planner committing that they would not be using "hydraulic fracturing" for the proposed project as "it would not work." In a March 10, 2014, OXY's legal counsel committed that OXY would be willing to commit to not using any well stimulation treatments as defined in SB 4 (discussed below).

On February 14, 2014, OXY, which is currently based in California, announced plans to move the company to Houston, Texas, and spin off a new business that will be based in California.²⁰ According to news reports, the new company will have 8,000 employees in California and will focus on operations in oil and gas basins in Los Angeles, San Joaquin, Ventura and Sacramento.

The new company will be the State's largest natural gas producer and largest holder of oil and gas mineral acreage in the State, with approximately 2.3 million acres.²¹ OXY is still determining the management and governance of the California business and is expected to announce the new California management team in the third quarter of this year and complete the separation by the end of this year or early 2015.²²

The new business would apparently be the developer for the OXY proposal.

b. Carson Resolution No. 12-078

In 2012, the City Council expressed its opposition to the use of hydraulic fracturing. On July 17, 2012, the City passed a resolution urging the State of California, Department of Conservation, Division of Oil, Gas & Geothermal Resources (DOGGR) to place a ban on hydraulic fracturing. Specifically, the City Council resolved as follows:

The City of Carson urges Governor Jerry Brown and the California State Department of Conservation, Division of Oil, Gas & Geothermal Resources (DOGGR), to immediately place a ban on hydraulic fracturing and on the disposal of fracking wastewater by injection wells until DOGGR takes all necessary and appropriate actions to adopt, implement and enforce comprehensive regulations concerning the practice of fracking that will ensure that public health and safety and the environment will be adequately protected.

²⁰ <http://fuelfix.com/blog/2014/02/14/occidental-petroleum-to-split-move-to-houston/>

²¹ <http://www.caloilgas.com/occidental-petroleum-to-split-off-california-business/>

²² Id.



c. City of Los Angeles February 28, 2014 Council Action

On February 28, 2014, the Los Angeles City Council approved a motion requesting the City Attorney to draft a moratorium on well enhancement techniques in the City, including hydraulic fracturing, gravel packing and acidizing, as well as the use of waste disposal injection wells. The motion specifically read as follows:

1. *INSTRUCT the Department of City Planning (DCP), with the assistance of the City Attorney, to further review and develop regulatory controls over fracking in the City of Los Angeles.*

2. *REQUEST the City Attorney, with the assistance of the DCP and other relevant departments, to prepare and present an ordinance to change the zoning code to prohibit all activity associated with well stimulation, including, but not limited to, hydraulic fracturing, gravel packing, and acidizing, or any combination thereof, and the use of waste disposal injection wells in the City of Los Angeles, with such a prohibition to remain effective until measures are met as detailed in Motion (Koretz - Bonin - et al).*

3. *CLARIFY that regulations for Motion (Koretz - Bonin - et al) concerning fracking are not to be confused with the maintenance of general underground storage facilities and the renewable energy projects that the City is pursuing.²³*

The supporting motion explained the activities sought to be banned as follows:

Hydraulic fracturing (also known as "fracking") is an oil and natural gas extraction process that involves the very highly-

²³ A related motion was also passed on March 5, 2014 in substantially the same form except section 2 provides as follows:

2. *INSTRUCT the DCP, with assistance from the City Attorney, Chief Legislative Analyst, Los Angeles Department of Water and Power, and other departments as needed, to report on establishing land use regulations and zoning laws, per Section 12.32 of the Los Angeles Planning and Zoning Code, that would ensure that public health and safety is protected from the negative impacts of fracking activities.*

We called the L.A. City Clerk's Office but they were unable to tell us whether this subsequent motion was intended to amend the motion passed on February 28, 2014. As there is no language in this March 5, 2014 stating that it intended to override the other motion, it appears the February 28, 2014 motion is still effective.

pressurized injection of hydraulic fracturing fluids containing a mixture of water, sand and unreported amounts of unknown chemicals into underground geologic formations in order to fracture the rock, thereby increasing flows to and furthering the production of oil or gas from a well. Other unconventional highly-pressurized extraction processes called "acidizing" and "gravel packing" involve similar techniques.

In total, fracking, acidizing, gravel packing and other associated well-stimulation practices threaten to contaminate drinking water supplies, cost taxpayers in Los Angeles hundreds of millions of dollars, release potent and dangerous greenhouse gases into the atmosphere and cause earthquakes.

C. Legal Background – Regulation of Well Enhancement Techniques

a. Federal

Generally, regulations related to oil and gas drilling are left to the State. There is no federal regulation of hydraulic fracturing. Congress expressly exempted hydraulic fracturing from the Safe Drinking Water Act in 2005.²⁴ Additionally, oil and gas operations and waste are exempt from the most important federal pollution laws, Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) (superfund cleanup law), Resource Conservation and Recovery Act (RCRA), the National Environmental Policy Act, the Clean Water Act and the Clean Air Act.²⁵

An effort to amend the Safe Drinking Water Act in 2011, which would have brought fracking under federal jurisdiction failed.²⁶ The fact that the federal government has not regulated fracking does leave room for the state and/or local government to ban fracking without issues of federal preemption.

b. States

A number of states have passed laws regulating fracking. In 2012, Vermont banned fracking. In 2013, the State of New York extended its moratorium that it adopted in 2009 to continue studying the effects of fracking.²⁷ In 2011, West Virginia enacted emergency rules to regulate horizontal gas drilling while it works

²⁴ Land Use Planning and Development Regulation Law § 11:14 (3d ed. 2013). The exception to this is if diesel fuel is used in the process. See 35 No. 2 Zoning and Planning Law Report 1 (2012).

²⁵ Id.

²⁶ Id.

²⁷ Land Use Planning and Development Regulation Law § 11:14 (3d ed. 2013.)

on long-term regulations. Specifically, West Virginia adopted standards for casing and cement standards for wells and also requires permits for horizontal fracking, erosion and sediment control plans, well safety plans, and planned management and disposition of wastewater from fracking operations.²⁸ In 2011, the Governor of Maryland issued an executive order calling for a study of fracking and a three-year moratorium on gas drilling while studies are ongoing.²⁹

When states adopt regulations on fracking it can raise issue of preemption for local ordinances. In 2013, the State of California rejected a ban on fracking but did adopt SB 4 to study and regulate well stimulation methods in the State.

c. State of California

Consistent with a long and important history of being one of the most important oil producing states, the State of California does have rather extensive regulations on oil and gas drilling. (See Pub. Resources Code section 3000, et seq.) Recently, the State adopted interim regulations with SB 4, on well-enhancement techniques and directed the relevant State agencies to further study the safety of these methods and adopt appropriate regulations.

i. California DOGGR

Under State law, the California State Department of Conservation, Division of Oil, Gas & Geothermal Resources ("DOGGR") permits and regulates the installation, operation, and abandonment of wells (production and injection), requires notices, recordkeeping, and reporting during operation of the wells, and inspects operations of the oil and gas production facility. The Legislature appears to intend that DOGGR regulate oil and gas drilling and operations to the exclusion of other agencies, based on the following provision found in the Coastal Commission statutes:

Gas of the Department of Conservation is the principal state agency responsible for regulating the drilling, operation, maintenance, and abandonment of all oil, gas, and geothermal wells in the state. Neither the commission, local government, port governing body, nor special district shall establish or impose such regulatory controls that duplicate or exceed controls established by the Division of Oil and Gas pursuant to specific statutory requirements or authorization.

²⁸ See 35 No. 2 Zoning and Planning Law Report 1 (2012).

²⁹ Id.



(Cal. Pub. Resources Code section 30418(a).) Although, as discussed below, it does not appear that land use and zoning regulations were intended to be included in that description of "regulatory controls." Other facilities related to oil and gas that do not involve the well operations are regulated by other agencies.

ii. SENATE BILL 4 (2013)

Senate Bill 4 (SB 4) was adopted last year by the State Legislature and took effect in January. SB 4 established a regulatory framework for well stimulation treatment activities, including hydraulic fracturing and acidization. The principal elements of SB 4 are as follows:

DOGGR to Study and Adopt New Regulations.

Requires DOGGR to do all of the following:

- To adopt new rules and regulations for well enhancement techniques by January 1, 2015.
- To work in concern with other entities to complete a scientific study of well stimulation treatments by January 1, 2015.
- To complete an environmental impact report (EIR) that assesses the environmental impacts of oil and gas well stimulation treatments in the state by July 1, 2015.

Notice and Publication Requirements.

For well stimulation treatment activities before January 1, 2015 requires the following:

- Before commencing drilling, the owner or operator must apply for a permit and DOGGR has 10 days to deny the permit.
- Requires the following well stimulation notification:
 - DOGGR must provide a copy of a permit to RWQCB and local planning agency.
 - DOGGR to post permit on website.
 - Operator to post on internet well stimulation fluid composition and disposition information. (Trade secrets can be maintained under certain procedures.)

New Penalties

Authorizes civil penalties between \$10,000 and \$25,000.

New Definitions

Adopted several definitions including the following:



○ ***Well Stimulation:***

Any treatment of a well designed to enhance oil and gas production or recovery by increasing the permeability of the formation. Well stimulation treatments include, but are not limited to, hydraulic fracturing treatments and acid well stimulation treatments.

○ ***Acid well stimulation treatment:***

A well stimulation treatment that uses, in whole or in part, the application of one or more acids to the well or underground geologic formation. The acid well stimulation treatment may be at any applied pressure and may be used in combination with hydraulic fracturing treatments or other well stimulation treatments. Acid well stimulation treatments include acid matrix stimulation treatments and acid fracturing treatments. Acid matrix stimulation treatments are acid treatments conducted at pressures lower than the applied pressure necessary to fracture the underground geologic formation.

○ ***Hydraulic fracturing:***

a well stimulation treatment that, in whole or in part, includes the pressurized injection of hydraulic fracturing fluid or fluids into an underground geologic formation in order to fracture or with the intent to fracture the formation, thereby causing or enhancing, for the purposes of this division, the production of oil or gas from a well.

○ ***Well stimulation does not include:***

steam flooding, water flooding, or cyclic steaming and do not include routine well cleanout work, routine well maintenance, routine removal of formation damage due to drilling, bottom hole pressure surveys, or routine activities that do not affect the integrity of the well or the formation.

d. Local Regulations

In correspondence to the City Attorney's Office, OXY's legal counsel has taken the position that the City would be preempted from adopting regulations, including a moratorium, related to the use of well stimulation techniques. Similar legal opinions were submitted to the Los Angeles City Council by attorneys representing owners of oil and gas interests in Los Angeles. Although the City of Los Angeles is the first city in California to take formal action to move towards



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banning fracking (and other well stimulation techniques) other local governments around the country have regulated and/or banned fracking.³⁰

In the case of *In the Matter of Norse Energy Corporation USA v. Town of Dryden* (2013) 108 A.D.3d 25, the court considered whether the Town of Dryden, New York, was preempted from adopting a zoning ordinance prohibiting oil and gas drilling in the town. The State of New York had a law that provided that a State statutory scheme dealing with mineral resources superseded all local laws relating to the regulation of oil, gas and solution mining industries.³¹ The New York appellate court held that while Dryden *could not impose regulations on drilling operations, the town did retain power to dictate land uses*, including prohibiting drilling in its town.³²

Some states, such as Texas, that regulate oil drilling allow local zoning to regulate whether and where drilling occurs as a land use matter.³³ Other states limit a local agencies ability to regulate drilling. Examples of these are in New York and Pennsylvania.³⁴ For example, in Pennsylvania, in 2009, the State Supreme Court held that the state's Oil and Gas Act preempted a local ordinance on gas drilling that regulated the permitting of drilling and site restoration, imposed bond requirements and imposed well-head and capping regulations.³⁵

The court found it was preempted because the local ordinance tried to regulate many of the things the state Oil and Gas Act regulated. However, in a separate case, *the court found that the Oil and Gas Law did not preempt a local agencies zoning on commercial and industrial development*.³⁶ In that case, the court found that the zoning ordinance served a different purpose than the Oil and Gas Act.

In another case, a court held that an ordinance adopted by Morgantown, West Virginia that banned fracking within one mile of the city was preempted by state law. The court held that the city did not have the authority to completely ban fracking because the industry is regulated solely by the West Virginia Department of Environmental Protection which had issued permits for the wells found to violate the city's ordinance.

Dozens of cities in the East Coast that sit over the Marcellus Shale, in New York and Pennsylvania, such as Buffalo, Ithaca, and Geneva in New York and Pittsburgh, Cresson and Washington Township in Pennsylvania have banned

³⁰ Id.

³¹ Id.

³² Id.

³³ See 35 No. 2 Zoning and Planning Law Report 1 (2012).

³⁴ See 35 No. 2 Zoning and Planning Law Report 1 (2012).

³⁵ Id.

³⁶ Id.



fracking. Additionally, the following counties have banned fracking on County land, including in New York and Mountain Lake Park, Maryland. Several of these bans are under legal challenge.

e. City of Carson Moratorium

Based on our review of the above described cases, the statutes empowering DOGGR (Cal. Pub. Resources Code sections 3000, et seq.), and the case law on State preemption of city land use regulations, we do not believe that the State statutes and regulations preempt the City from adopting zoning and land use regulations related to oil and gas drilling. At least one provision in the State's oil and gas laws provides the following:

This chapter shall not be deemed a preemption by the state of any existing right of cities and counties to enact and enforce laws and regulations regulating the conduct and location of oil production activities, including, but not limited to, zoning, fire prevention, public safety, nuisance, appearance, noise, fencing, hours of operation, abandonment, and inspection.

(Pub. Resources Code section 3690.)

While there *may* be a legal argument that the City is preempted from *mandating a type of drilling method or how to prepare, conduct or perform a drilling method or technique*, it is our considered legal opinion that the City is *not be barred from adopting an ordinance placing a moratorium on the issuance of new development permits for oil and gas uses in the City while the City considers the appropriateness of those land uses and their impacts to public health, safety and welfare to the City's residents*. Additionally, we note that development moratoriums have been routinely upheld by the courts for purposes of aesthetics and preserving a quality of life, as well as particular health or safety impacts.

D. Moratorium Procedures and Effect

a. Procedures

Government Code section 65858 ("Section 65858") sets forth the statutory authority for cities to adopt moratoriums on development. Under that section, a moratorium may be imposed through the adoption of an "interim ordinance." A city is limited to adopting a moratorium that prohibits uses that may be in conflict with a "contemplated general plan, specific plan or zoning proposal," which the city intends, or plans, to study within a reasonable period of time.

In particular, Section 65858 provides the following:

- Section 65858 allows a city to adopt, as an urgency measure, an interim ordinance *prohibiting for up to 45 days any uses which may be in conflict with a contemplated general plan, specific plan, or zoning proposal which a legislative body is intending to study within a reasonable time.* The urgency measure must be approved by a *four-fifths vote* in order to be adopted. No notice or hearing is required for the first adoption. (*Beck Dev. Co. v. Southern Pac. Transp. Co.* (1996) 44 Cal.App.4th 1160.)
- Before adopting or extending an interim ordinance, the City Council must make the finding that there is a *current and immediate threat to the public health, safety, or welfare*, or that the approval of additional subdivisions, use permits, variances, building permits, or the like, would result in such a threat. The findings must be contained in the ordinance. The finding must be based upon specific articulable facts that are included in any urgency ordinance. (*216 Sutter Bay Assocs. v. County of Sutter* (1997) 58 Cal.App.4th 860.)
- To support a lawful moratorium, the Council must be able to state in good faith that it is suspending development in order to “consider a contemplated general plan, specific plan, or zoning proposal that the legislative body is considering or studying or intends to study within a reasonable time.” That “good faith” needs specific facts to support the same. (Gov’t Code Section 65858(a).)
- Ten days prior to the expiration of the ordinance, the City Council must issue a written report describing the measures taken to alleviate the condition that led to the adoption of the ordinance. (Gov’t Code Section 65858(d).)
- If an interim ordinance is initially adopted without notice and a hearing, the ordinance is effective for 45 days. (Gov’t Code Section 65858.) The City Council may extend the interim ordinance once for 10 months and 15 days, and a second time for one additional year, both extensions would require notice and a hearing.
- Like the ordinance itself, any extension requires a four-fifths vote and requires findings justifying the same. These findings *must also include specific articulable facts* to support them. The maximum total time for the moratorium, as extended, to be in place in *two years.* (*Id.*)

b. Effect on Current Projects and Applications

A moratorium may be implemented during the pendency of proposed development projects that are under review. At least one court has found that an interim ordinance could cancel a development agreement after it was approved by the city council but before its effective date. (*216 Sutter Bay Assoc. v. County of Sutter* (1997) 58 Cal.App.4th 860, 870-71.)

c. Taking Issues

In their recent e-mail, OXY's legal counsel also raised the issue that the adoption of a moratorium on oil and gas drilling in the City would amount to an unlawful taking. For OXY to successfully allege a takings claim, they have to pass many hurdles. First and foremost, they have to invalidate the City's Moratorium. Next, while courts may award temporary takings damages for the loss of property value while a property owner is prevented from developing their property, the standards for a temporary taking are generally pretty high.

To demonstrate a temporary taking, OXY would need to show they have no other use they can make of their property and the court would have to invalidate the moratorium. Also, generally, moratoriums will not support a taking claim, as they are by their nature temporary. Should this City Council wish to discuss the "takings" legal issues in more detail that should be done in a closed session which is available on tonight's agenda at the discretion of the City Council.

V. FISCAL IMPACT

There is no fiscal impact on the adoption of an interim urgency ordinance implementing a moratorium.

VI. EXHIBITS

Ordinance No. 14-1534U. (pgs. 20-24.)

Prepared by: William W. Wynder, City Attorney

City of Carson

Report to Mayor and City Council

March 18, 2014

Reviewed by:

City Clerk	City Treasurer
Administrative Services	Public Works
Community Development	Community Services

Action taken by City Council

Date _____	Action _____



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April 9, 2014

via email

Ms. Sunny K. Soltani, Esq.
Aleshire & Wynder, LLP
18881 Von Karman Avenue, Suite 400
Irvine, California 92612

RE: **Report on Potential Risks of Stimulants and/or Additives in Oil Production**

Dear Ms. Soltani:

Pursuant to your request on April 2, 2014, I am pleased to present for your review this report regarding the potential risks to human health, safety, and the environment from using stimulants and/or additives in oil production.

Background

The oil and gas industry has used stimulants to improve production for decades. Stimulation is performed on a well to increase or restore production and consists of hydraulic fracturing, matrix acidizing and acid fracturing. Using acids to improve well performance by removing or bypassing damage has been a common practice for a long time, nearly as long as the existence of the oil industry. In 1895, the Ohio Oil Company used hydrochloric acid (HCl) to treat wells in a limestone formation. Production from these treated wells increased by several fold, unfortunately, so did casing corrosion, resulting in a cessation of acidization stimulation for about 30 years (Al-Harthy et al. 2009).

Acidizing in limestone reservoirs experienced a rebirth in 1931 with the discovery that arsenic inhibited the corrosive action of HCl on wellbore tubulars (Crowe et al. 1992). However acid treatments for sandstones required a different approach. HCl does not react easily with minerals that reduce sandstone permeability, but hydrofluoric acid (HF) does. Early attempts to use HF in sandstones failed due to plugging from secondary reactions. This problem was solved by using a combined HCl-HF treatment. The HF in the combination dissolves mineral deposits in sandstones that inhibit production, while the HCl controls precipitates. These acidizing techniques have evolved over time but the goal has not changed, to create or restore production pathways close to the wellbore in a new or existing well (Al-Harthy et al. 2009).

Other acids used as stimulants include acetic acid, formic acid and sulfamic acid. The use of acid stimulants creates a number of well problems. Acid may: (1) release fines that plug the formation, (2) form emulsions, (3) create sludge, and (4) corrode steel. Additives are used to correct these and other problems. Additives include surfactants, suspending agents, sequestering agents, anti-sludge agents, corrosion inhibitors, alcohol, fluid loss control agents and diverting or bridging agents (http://www.most.gov.mm/techuni/media/PE_04026_7.pdf). Halliburton 2012) and are common in hydraulic fracturing as well as matrix acidizing and acid fracturing.

Historically the low recovery rate and high extraction costs from shale formations caused oil producing companies to focus elsewhere. However in 1999-2000 a new technique consisting of large-volume HF matrix



acidizing was tested on horizontal shale wells and this technique increased the flow volume of the test wells considerably while decreasing the extraction costs making extraction from shale formations in California profitable (Trehan et al. 2012). As this is a relatively new technique there are unknown effects that the State of California has required the Department of Conservation, Division of Oil, Gas and Geothermal Resources (DOGGR) study.

Senate Bill 4

Governor Brown signed into law Senate Bill 4 on September 20, 2013. SB4 requires DOGGR to regulate well stimulation treatments defined as hydraulic fracturing and other treatments that increase the flow of hydrocarbons (oil and natural gas) to wells and then to the surface for recovery. DOGGR's implementation of SB4 includes: (1) Interim Well Stimulation Regulations effective January 1, 2014, (2) permanent Well Stimulation Regulations for 2015, (3) preparation of an Environmental Impact Report (EIR) by July 1, 2015, and (4) posting well stimulation permits online for public access.

City of Carson Moratorium Ordinance No. 14-1534U

The City Council of the City of Carson passed a 45-day temporary moratorium on the drilling, redrilling or deepening of any wells within the jurisdiction of the City of Carson that are associated with oil and/or gas operations on March 18, 2014.

Potential Risks Associated with Stimulants and/or Additives

Hydrogen sulfide, a poisonous gas, may be produced from the reaction of acid on sulfate scale. High concentrations of hydrogen sulfide can paralyze olfactory nerves and respiratory nerves (http://www.most.gov.mm/techuni/media/PE_04026_7.pdf).

Arsenic inhibitor is poisonous if swallowed. Contact of arsenic with aluminum or magnesium may produce arsine gas in dangerous concentrations. Arsine gas is an inhalation hazard. Arsenic inhibitors are toxic to the environment (http://www.most.gov.mm/techuni/media/PE_04026_7.pdf). Arsenic is persistent in the environment and a known human carcinogen (DTSC 2005, OEHHA 2005).

Acetic anhydride used in formulating acetic acid produces vapors which are very irritating and can cause burns upon direct contact. If water or dilute acid is added to acetic anhydride an explosion may occur (http://www.most.gov.mm/techuni/media/PE_04026_7.pdf).

Hydrofluoric acid is a very strong inorganic acid that can be poisonous if inhaled, swallowed or touched. (<http://www.nlm.nih.gov/medlineplus/ency/article/002499.htm>).

Hydrochloric acid is corrosive to the eyes, skin and mucous membranes. Acute inhalation exposure may cause eye, nose, and respiratory tract irritation and inflammation and pulmonary edema in humans. Acute oral exposure may cause corrosion of the mucous membranes, esophagus, and stomach and dermal contact may produce severe burns, ulceration, and scarring in humans. Chronic occupational exposure to hydrochloric acid has been reported to cause gastritis, chronic bronchitis, dermatitis, and photosensitization in workers (<http://www.epa.gov/ttn/atw/hlthef/hydrochl.html>).

Accidents due to transporting the stimulants and/or additives to the well head, or onsite mixing or onsite application of stimulants and/or additives may impact the health and safety of the workers and residents of nearby urban communities. Exposures may include inhalation of vapors and dermal contact.

Leaking of onsite storage containers, onsite storage pits or ponds, or spills of stimulants and/or additives may potentially impact the environment, including but not limited to the soil, interstitial pore space within the subsurface and groundwater (Rahm and Riha 2014).



Previously abandoned oil wells in the oil field in which stimulants and/or additives are used may act as conduits wherein the stimulants and/or additives may return to the surface and expose onsite workers and nearby residents in the urban environment to concentrations of chemicals that may cause a negative health effect. Conduits within the casing string of the previously abandoned oil wells may act as pathways for the stimulants and/or additives to enter groundwater and potentially contaminate drinking water aquifers. Faulty casings may allow stimulants, additives and the extractable hydrocarbons to infiltrate groundwater and impact groundwater quality (Davies et al. 2014, Fontenot et al. 2013).

The Dominguez Oil Field has 600 previously abandoned oil wells, several of which were abandoned prior to DOGGR requirements of isolating the upper hydrocarbon zone, the lower hydrocarbon zone and the base of the freshwater during abandonment procedures. Abandonment procedures acceptable to DOGGR have changed during the time the wells in the Dominguez Oil Field were abandoned. Casings filled with aggregate concrete and/or wooden poles would no longer be acceptable as abandoned to current DOGGR standards as these materials degrade over time creating conduits within the casings for substances to migrate to the surface.

Air quality may be impacted by nitrogen oxides, volatile organic compounds, ozone, hazardous air pollutants, and methane as pollutants of concern related to oil and natural gas extraction activities. These pollutants can contribute to air quality concerns and they may be regulated in ambient air, due to human health or climate concerns such as greenhouse gas emissions (Field et al. 2013, Gold 2014).

Findings


Given the potential risks due to stimulants and/or additives used in oil production it is reasonable for the City of Carson to wait until DOGGR, as mandated by SB 4, completes their investigations, assessments and studies, including but not limited to the EIR, and potentially passes regulations to address any issues or concerns before permitting oil and/or gas operations in the jurisdiction of the City.

Given the relatively new technique of large-volume HF matrix acidizing on horizontal wells in shale formations in California it is wise for the City of Carson to wait until DOGGR, as mandated by SB 4, completes their investigations, assessments and studies, including but not limited to the EIR, and potentially passes regulations to address any issues or concerns before permitting oil and/or gas operations in the jurisdiction of the City.

It is equally reasonable for the City of Carson to formulate their own opinion of the investigations, assessments and studies, including but not limited to the findings of the EIR after completion by DOGGR, and determine whether such findings sufficiently address the concerns of the City of Carson or if there remain issues not evaluated by DOGGR such as land use that would require the City of Carson to develop their own ordinance, before permitting oil and/or gas operations in the jurisdiction of the City.

Should you have any questions or desire additional information, please contact me at your earliest convenience at 310.403.1921.

Sincerely,

X 

Susan L. Mearns, Ph.D.



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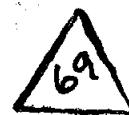
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- EDUCATION:** Ph.D., Environmental Toxicology, University of Kansas, 1989
M.S., Zoology/Fishery Biology, Oklahoma State University, 1985
B.S., Zoology/Fishery Biology, Oklahoma State University, 1979
- REGISTRATION:** National Registered Environmental Assessor No. 165249
- TRAINING:** USEPA OSHA 40-hour Basic, 8-hour Supervisory, and annual 8-hour Refresher health & safety courses for hazardous waste sites
- EMPLOYMENT:** Santa Monica College Instructor 2000 - present
UCLA Instructor 1998 - 2000
University of Phoenix Instructor 1999 - 2000
Mearns Consulting LLC 1996-present
Montgomery Watson 1994-1996
Woodward-Clyde Consultants 1989-1994
Springborn Laboratories 1985-1989

PROFESSIONAL EXPERIENCE:

I have 28 years of environmental management and consulting experience. My experience ranges from commercial building sites to small industrial sites to large Superfund sites. I have worked on and directed environmental investigations, assessments, remediations, risk assessments, and wetlands delineations for private sector, municipal and military clients throughout the United States. I have designed and implemented investigations at diverse sites such as landfills, dry cleaning facilities, agricultural chemical manufacturers, gasoline stations, metal plating facilities, armed services depots and bases; and managed multiple-site portfolios of over 1,250 sites.

RISK ASSESSMENT EXPERIENCE:

Performed risk assessments to evaluate the impacts to human health or the environment of chemicals released via air borne emissions, from end-of-pipe discharges, from spills resulting from emergency releases, and from retrofit or demolition activities. Conducted risk assessments to derive appropriate cleanup goals at Superfund sites, and for remedial actions. Presented below are a few examples of projects for which I prepared human health and ecological risk assessments in addition to project management, assessments, investigations and remediation.

- Working for a municipality on several Brownfields redevelopment projects of varying sizes; from less than 1-acre to 7-acres of oil fields. Typically the projects involve previously abandoned oil wells in addition to soil impacts from historic oil fields use as well as impacts from different current site uses. Proposed future uses range from low income housing to automobile dealerships. These projects require assessment, investigation, human health and environmental risk assessment expertise and remediation.



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- Working for a municipality on two Brownfields redevelopment projects to extend the Drake Chavez Greenbelt and provide much needed open space to the under-served, very-low and low income residents. The former uses of the sites were industrial and the soils were impacted with total petroleum hydrocarbons, metals, pesticides, volatile organic compounds and semi-volatile organic compounds. Assessment, investigation, human health and environmental risk assessment and remediation expertise was required for each site.
- Worked for a private business to redevelop a former oil field into a transfer and recycling station. The project required assessment, investigation, human health and risk assessment and possible remediation. Several previously abandoned oil wells require testing and possible reabandonment to current specifications.
- Worked for a non-profit, non-government organization to redevelop a site in New Orleans, Louisiana using green building and sustainability technologies to place single family residences and a multi-family residence in the Ninth Ward. Assessment, investigation, human health and environmental risk assessment, and remediation expertise is required.
- Worked as part of team of consultants for a municipality that obtained USEPA funding for Brownfields redevelopment of a 56-acre oil fields site. The project requires both an EIR and EIS. The objective of the work scope is to ensure the site is safe for the future intended use using human health risk-based clean up goals. The site requires investigation, assessment and possibly remediation.
- Worked for a municipality since 2005 regarding the realignment of the I-5 interchange in Burbank, California. I am providing environmental review of documents produced by consultants retained by Caltrans for inspections and assessments and by Lockheed Martin, the former responsible party, regarding soil contamination.
- Worked as part of a team of consultants in an oversight capacity for a municipality that is redeveloping an 11-acre parcel formerly used in the aerospace industry. The project requires an EIR. The applicant's consultants and the municipality's consultants are working together to ensure the final work product is acceptable to all stakeholders. The site requires remediation prior to development.
- Working for two municipalities on several former industrial sites less than 1-acre in size slated for redevelopment. The objective is to investigate, assess and possibly remediate using human health risk-based clean up goals to obtain regulatory agency sign-off.
- Worked as part of a team of consultants retained by a commercial real estate developer in Northern California. A residential development was under construction on an old Army Airfield base when it became apparent that volatile organic compounds (VOCs), in addition to methane, were migrating from a landfill adjacent to the planned residential development into the development. Participated in the investigation and assessment of the soil vapor. Assessed the risk to human health of the VOCs. Participated in several homeowners' meetings.
- Managed two proposed school sites through the California Environmental Protection Agency, Department of Toxic Substances Control (DTSC) School Investigation Unit, Preliminary Endangerment Assessment (PEA) Process. Working with the school district and the regulators to ensure the sites are appropriate for the construction of new schools.



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- Managed a proposed school site through DTSC's PEA process as part of a proposed redevelopment of a shopping complex that is within the jurisdiction of the California Environmental Quality Act (CEQA). Challenge is to try and facilitate two separate processes with separate timelines and different regulatory requirements such that the project can be completed on time.
- Managed a Brownfields Pilot Project for a municipality that obtained funding from the USEPA. The objective is to locate environmentally-impacted sites within the municipality's jurisdiction that are attractive for redevelopment as green space or commercial enterprises and conduct environmental investigations, assessments and remediations such that the sites are viable redevelopment projects.
- Conducted two brownfield redevelopment projects in downtown Los Angeles. Both projects involved demolition of existing structures, excavation of footings, foundations and impacted soils and obtaining risk-based closure from California Environmental Protection Agency Department of Toxic Substance Control (DTSC). The sites were enrolled in DTSC's voluntary cleanup program and risk-based closure was obtained by following the preliminary endangerment assessment guidelines. The chemicals of concern included metals in soils to a depth of 25 feet below ground surface.
- Completed a risk assessment used to obtain risk-based closure for a former pesticide manufacturing facility in Orange County. Remediation was conducted to remove soil containing elevated concentrations of contaminants. Resultant risk assessment conducted in accordance with DTSC's voluntary cleanup program indicated cleanup was complete and the site no longer posed an unacceptable risk to human health. Future intended use of the property is a retirement community.
- Completed several risk assessments following DTSC's preliminary endangerment assessment guidance in accordance with DTSC's voluntary cleanup program to obtain risk-based closure for former dry cleaning sites in Los Angeles County and Orange County.
- Performed a statistical risk assessment to derive exposure concentrations and ultimate impacts to humans through the inhalation exposure route for an airborne release from a refinery in Northern California. The chemicals of concern included a known human carcinogen, the frequency of exposure was very low (the release was acute) and the release although widespread was diffuse, as the wind direction was variable throughout the release.
- Risks of exposure to total petroleum hydrocarbons, benzene, toluene, ethylbenzene, total xylenes, polycyclic aromatic hydrocarbons, chlorinated volatile organic compounds and metals for human receptors and groundwater quality were evaluated in accordance with DTSC and USEPA guidelines at a state Superfund site in Southern California. Chemical fate and transport models were used to predict the migration of the chemicals in soil to groundwater and to air. Health risks for industrial use of the site were determined to be below acceptable levels.
- Reviewed and provided comments on the risk assessments prepared for the Palos Verdes Shelf Superfund project. The chemicals of concern included DDT and metals. The impacted medium is sediments and the impacted receptors are fish, invertebrates and shellfish.
- Conducted the ecological risk assessment at Naval Air Station (NAS) Moffett Field. The risk assessment included a site-wide ecological assessment of the air station. The assessment endpoints included protection of surface water and wetland habitats and protection of individual special status species. The chemicals of potential concern included organochlorine pesticides, heavy metals, petroleum products and polynuclear aromatic hydrocarbons.



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- Prepared the work plan for the ecological risk assessment at Defense Depot Region West (DDRW) Tracy on behalf of the Army Corps of Engineers. The risk assessment followed a phased approach that allowed the risk assessor to evaluate whether next steps are required during implementation of the risk assessment process.
- Completed an ecological risk assessment for a 1,100 acre refinery in Rodeo, California. The chemicals of concern were heavy metals, the ecological receptors were birds of prey, and the assessment endpoint was to evaluate the potential chemical effects emanating from the refinery on the terrestrial ecosystem.
- Performed an ecological risk assessment at a former pesticide formulation facility in Georgia. The Superfund site was active in the 1950s through the 1970s and was a formulation facility of organochlorine pesticides (including DDT), organophosphate pesticides, and chlorinated herbicides in addition to handling solvents (including toxaphene). The effects of the chemicals of concern on two distinct terrestrial habitats on-site were evaluated.

LITIGATION SUPPORT/EXPERT WITNESS EXPERIENCE:

Provided expertise in both human health and ecological risk assessments, including risk communication skills and project management skills to clients requiring litigation support services. Provided this expertise in mediation testimony, jury trial testimony, litigation support, litigation strategy, rebuttal, and toxic torts.

- Provided expertise for the plaintiff in four real estate transactions of contaminated land. One suit was settled after depositional testimony, the others went to jury trial. Testified on behalf of the municipality regarding the actual costs of assessment, investigation and remediation conducted on the land in question. Jury found for the plaintiff in all three cases tried.
- Provided expertise for the defendant in a real estate transaction when the buyer alleged that potential mold on the ceiling of the foyer had been improperly abated prior to the sale. Buyer contended the sale should be null. Testified on behalf of the seller that the potential mold had been abated correctly. Sale was judged valid and suit was settled.
- Provided expertise for the defendant in a wrongful termination suit brought by a contractor who was terminated by the defendant after allegedly exposing students and teachers to lead dust during renovation activities.
- Provided expertise for the plaintiff regarding the timing and implementation of risk assessments in the remedial investigation/feasibility study phase of the characterization process of assessing petroleum product contamination to the vadose zone and groundwater.
- Provided expertise for the defendant in a tenant's mold claim case. Tenant alleged mold grew in her ceiling as a result of plumbing leaks and this mold caused health effects in her teenage son.
- Completed working on a plaintiff's case regarding the alleged dumping of waste material in a clarifier by the previous property owner, prior to the plaintiff taking possession of the property. Testified with regard to the fate and transport of materials in a clarifier and whether concentrations of waste materials pose a risk to human health or the environment.
- Worked for the defendants on two building defect cases involving the potential for mold growth attributable to building defects to have occurred in residential town homes. Cases were settled.



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- Worked for the defendant regarding the potential for mold in an apartment complex to impact the health of the tenants. Case was settled.
- Provided expert services in an oversight capacity for the prospective purchaser of a condominium that had detectable mold spores in the air, in addition to mold detected in the wallboard of the bathroom.
- Provided expert services for a defendant in a cross-complaint. Potential health effects from exposure to resin were investigated as were the applicability of federal and State regulations governing worker health and safety and the transport and disposal of potentially toxic products.
- Provided expert services for a plaintiff alleging health effects from exposure to manganese in potter's clay. Route of exposure by which manganese poisoning occurs is via inhalation. As product was packaged for intended use, i.e., pre-mixed with water, plaintiff was exposed to manganese in the product, through intended use of the product, via dermal contact, only.
- Provided expert services for a defendant that manufactured solder used in jewelry repair. The plaintiff received a complaint alleging a Proposition 65 violation regarding the inhalation of cadmium, a component of the solder, during the intended use of the product. Conducted personal air monitoring sampling and indoor air sampling in the room where the soldering was used to measure the amounts of cadmium to which the employees could potentially be exposed.
- Provided expert services for defendants for an asbestos product liability case. The defendants received complaints alleging health impacts from the normal wear and tear of vinyl floor tile in schools. Evaluated the sampling conducted by the plaintiffs, provided opinions regarding the sampling and potential friability of the products.
- Provided risk assessment expertise for the defendant in a lawsuit regarding alleged health effects due to exposure to chrysotile fibers in spray-on acoustical ceilings in an apartment complex. Tenants alleged adverse health effects due to curtain rods causing the acoustical material to become friable over time. Provided consultation services.
- Provided risk assessment expertise for the defendant in a lawsuit regarding alleged health effects claimed by the plaintiff due to exposure to human sewage from a broken sewage pipe in Glendale, California. Alleged health impacts claimed by the plaintiff involved exposure to *Escherichia coli*, common bacteria in the human gut, and arsenic and nickel. The source of the alleged contaminants was the broken sewer pipe that crossed the plaintiff's property. Provided expertise in collection of samples, selecting the appropriate analyses, interpretation of the data and in assessing potential risk. Case was settled.
- Provided risk assessment/risk communication expertise for the defendant in Rodco, California. The defendant released an unknown quantity of a proprietary chemical mixture intermittently for 14 days. Two communities were alleging health impacts, and decreased property values. A \$1 billion class action lawsuit was filed on behalf of the residents of the communities. I led several community meetings in an effort to communicate to the residents the risks due to exposure to the air emission release.
- Provided risk assessment/risk communication expertise for the defendant in Carson, California. The defendant released a scrubbing mixture from their stacks for three days. Sensitive populations potentially impacted by the air emission release included schools, nursing homes and hospitals. Community meetings were held to communicate the risks of the release to the residents and sensitive populations.



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- Provided risk assessment expertise for a case in Alameda, California. Defendant was a former site owner. Plaintiff was seeking damages from defendant associated with defendant's past disposal practices of paint sludges. Plaintiff alleged that past practices by defendant caused diminution in property value and environmental liability. Evaluated toxicological risk to workers health and safety, and toxicological risk to terrestrial and aquatic organisms.
- Provided risk assessment expertise for plaintiff in Northridge, California. Plaintiff was on-site during maintenance of the pump and treat remediation system installed by the defendant's contractors to cleanup groundwater contaminated by the defendant. Plaintiff was exposed to volatile organic compounds (VOCs) from the unsecured wellhead. Plaintiff was not briefed by defendant prior to entering the site that potential exposure to VOCs may occur. Although the risk to the plaintiff's health was negligible due to exposure to VOCs from the unsecured wellhead, proper protocol regarding dissemination of toxic information and the health and safety plan was not followed by the defendant.
- Performed a health risk assessment for a residential homeowner with an autoimmune disorder in Mission Viejo, California. Former property owner had applied chlordane to the property as a form of ant control mitigation. Current homeowner was concerned that residual concentrations of chlordane may be contributing to the autoimmune disorder she suffered and may place others in contact with the soil, such as, gardeners, visitor's children, and pets, at risk.
- Provided expert services for the municipality (the plaintiff) in a case involving an assessment of the effects of stormwater runoff carrying waste from dairy farm waste storage lagoons into Lake Elsinore, California. Evaluated the laboratory analytical methodology, the sampling strategy used to collect the data and the data results. Specifically examined the data collected by the municipality from Lake Elsinore for trends reflecting nutrient-loading in excess of the carrying capacity of the lake.
- Provided expert services for the defendant regarding potential contamination of a local drinking water source in Kansas. Established a sampling schedule to examine the effects of multiple point sources, i.e., farmers applying fertilizers to their row crops in addition to the storage of large quantities of fertilizer by the defendant, on the potentially impacted surface water and groundwater. Determined that a pattern of nitrites expressed as nitrogen in groundwater was associated with the seasonal application of fertilizer to farmer's fields.

VOLUNTEER AND COMMUNITY INVOLVEMENT:

Served as Director of Judging for the California State Science Fair 2000-2002

Served as Section Chair and science fair judge for the Senior Division of Toxicology & Pharmacology at the California State Science Fair 1997-1999

Member of the City of Santa Monica's Task Force on the Environment.

REFERENCES

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