



The Override

Every Landman Wants One!

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September, 2014



Los Angeles Association of Professional Landmen



Presidents Message

**Jason Downs, RPL, President
Breitburn Management Company LLC**

When someone takes issue with oil & gas production, I would hope they have a solution to propose. However, that tends not to be the norm in Los Angeles and for the most part, California. After recently attending a public hearings for the implementation of SB4 with the Department of Oil, Gas & Geothermal (DOGGR) it was astounding the amount of people who attend with an interest only to complain about oil & gas in their feeble attempt to outlaw the practice of oil & gas production all together. Therefore I ask; why the hatred here in California when other places in the

country accepts and advocates for oil & gas development?

A good place to start is by looking at the laws regarding oil & gas production and how they differ in California vs. other tradition oil producing states. I believe the main culprit is **“The Rule of Capture.”**

History Lesson: “The rule of capture or law of capture is common law from England,^[1] adopted by a number of U.S. jurisdictions, that establishes a rule of non-liability and ownership of captured natural resources including groundwater, oil, gas, and game animals. The general rule is that the first person to "capture" such a resource owns that resource. For example, a landowner who extracts or “captures” groundwater, oil, or gas from a well that bottoms within the subsurface of his land acquires absolute ownership of the substance, even if it is drained from the subsurface of another’s land.

^[2] The landowner that captures the substance owes no duty of care to other landowners.^[3] For example, a water well owner may dry up wells owned by adjacent landowners without fear of liability, unless the groundwater was withdrawn for malicious purposes, the groundwater was not put to a beneficial use without waste, or (in Texas) "such conduct is a proximate cause of the subsidence of the land of others".^[4] A corollary of this rule is that a person who drills for groundwater, oil, or gas may not extract the substance from a well that bottoms within the subsurface estate of another by drilling on a slant.

Theories of Ownership: When presented with oil and gas cases, early common law jurists were somewhat reluctant to recognize a corporeal possessory interest in substances they



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Meeting Luncheon Speaker

“HOW TO HANDLE ENFORCEMENT ACTIONS: THINGS EVERY LANDMAN SHOULD KNOW”



Ernest Guadiana, Esq., Managing Associate, is a member of Dentons' Energy sector team. He primarily represents oil and gas

and other energy companies in litigation and transactional matters, including regulatory compliance matters and oil and gas disputes and negotiations.

Ernest has extensive experience in all aspects of energy law, including the wide range of operational problems faced by energy producers operating in California and in other states, such as obtaining permits for oil and gas exploration, production and enhanced recovery operations, as well as resolving issues with environmental regulators.

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Opinionated Corner

Mike Flores, Legislative Affairs
Luna/Glushon

JOINING AAPL IS A NO BRAINER

We asked our distinguished Override Publishing/Newsletter Co-Chairs, Randall Taylor, RPL, and Joe Munsey, RPL, if I could write about the benefits of joining the American Association of Professional Landman (AAPL). Since July 2012, I have been your LAAPL representative for the AAPL Board of Directors. The area we represent is Region VIII, which also includes Bakersfield (who also has a representative). When we first arrived I have to admit feeling like an outsider, admittedly LAAPL is not the AAPL's largest association, in fact, it is one of the smallest.

But once we arrived, I was welcomed with open arms. Admittedly, we were shy about expressing ourselves at first while at the same time trying to get the political and social lay of the land. AAPL holds quarterly meetings which consist of two weekend days, including a reception on Saturday night and a 7 – 9 hour meeting on Sunday depending on the agenda. There are 45 Board members who attend, plus around 10 Committee Chairs who generally show up; then add four APPL staff members who join the meetings - well, this a lot of people for me to remember in my 60 plus year old memory bank.

But immediately we were struck by three things, 1.) the professionalism of each Board member, 2.) the passion for the Landman profession, and 3.) these were really genuine friendly people. I have served on over 15 Boards during my lifetime and this Board is the best we have ever served on. Why? Like everything else in life, it's about the people. These women and men from

across the country care passionately about Landmen. They are dedicated to making sure the professional Landman is given every opportunity to be successful and will fight whatever foe that stands in their way.

So today, as I write this, we proudly serve as Chair of the LEG/REG Committee and also sit on the Industry Public Relations Committee AND we write the California Field Report for *Landman2*. All this brings me great joy knowing the Board and I are all in the same foxhole.

If you haven't done so, please join the other 23,000 plus AAPL members from across the USA as we work together to make the Landman a successful and proud profession.

Below are the membership benefits as listed on the AAPL website:

Networking – AAPL events bring together thousands of landmen from around the world to provide outstanding opportunities for members to network with nearly 20,000 landmen. With our job bank and member directory, AAPL provides access to qualified landmen across North America through the largest job network in the energy industry.

Educational Meetings – AAPL hosts more than 80 educational programs, meetings and institutes nationwide each year to help members stay competitive in an ever-shifting industry, and we're adding more each year. For example, our 2011 Annual Meeting in Boston offered 17 hours worth of educational seminars to the more than 1,000 members who attended. AAPL also offers flexible learning tools such as virtual and home study courses.

Publications – AAPL publications include our bimonthly magazines, *Landman* and *Landman 2*; the AAPL membership directory; books – such as the *Oil and Gas Land Reference Volume* – and institute research papers. In addition to subscriptions to *Landman*, *Landman 2*, Landman's Directory and the Annual Report included in your

annual membership dues, AAPL offers reference guides and text books to both members and nonmembers at friendly costs. Visit AAPL's Bookstore to order any of its highly-touted publications. Full versions of *Landman* and *Landman 2* magazines as well as the article archive are available online to AAPL members. The archive allows members to search for articles printed in past issues by author, title and keywords.

Resources – AAPL provides resources that help make landmen effective, including access to industry forms as well as our bookstore. Through www.landman.org, members can access electronic versions of *Landman* and *Landman 2*, browse our presentation database, view our events calendar, search the membership database, download educational materials and more.

Professional Certifications – AAPL offers three certifications that are recognized throughout the industry as indicators of competency, proficiency and professionalism. Not only do our certifications enhance a member's credibility, they are proven to increase earning potential for landmen. Our certifications include the Certified Professional Landman (CPL), Registered Professional Landman (RPL) and Registered Landman (RL).

Legislative Advocacy – Membership in AAPL makes you a part of a united voice to seek what is best for the energy industry. AAPL supports the interests of landmen by being proactive on key legislative issues such as licensing and taxes.

AAPL Group Insurance Program – AAPL offers other benefits for members, such as optional insurance coverage for health, life, automobile and errors and omissions for landmen in the United States and abroad.





**2013–2014
Officers, Board of Directors &
Chairs**

- Jason Downs, RPL
President
Breitburn Management Company LLC
213-225-5900

- Ernest Guadiana, Esq.,
Vice President
Law Firm of Dentons US
213-623-9300

- Paul Langland, Esq.
Past President
Independent
310-997-5897

- Cliff Moore
Secretary
Independent
818-588-9020

- Sarah Downs, RPL
Treasurer
Downchez Energy, Inc.
562-639-9433

- Joe Munsey, RPL
Director
Southern California Gas Company
562-624-3241

- L. Rae Connet, Esq.,
Director
President, PetroLand Services
310-349-0051

- Mike Flores
Region VIII AAPL Director
Luna Glushon
310-556-1444

- Newsletter/Publishing Chair
Joe Munsey, RPL, Co-Chair
Randall Taylor, RPL, Co-Chair

- Communications/Website Chair
Odysseus Chairetakis
PetroLand Services
310-349-0051

- Membership Chair
Cambria Henderson, J.D.
California Resources Corporation
562-495-9373

- Education Chair
James D. Pham, J.D.
Independent
(310) 349-0051 Ext 112

- Legislative Chairs
Olman Valverde, Esq., Co-Chair
Mike Flores, Co-Chair
Luna & Glushon
310-556-1444

- Golf Chair
To be determined

- Nominations Chair
To be determined

- Hospitality Chair
Chip Hoover, Independent
310-795-7300
Leah Hoover, Independent
310-795-2272



Chapter Board Meetings

**Cliff Moore, Independent
Chapter Secretary**

The LAAPL Board of Directors and Committee Members held a conference call meeting at the request of LAAPL President Jason Downs, RPL. The matters discussed at the July meeting are as follows:

- Updating the website to show new directors, etc.
- Legislative Affairs Co-char Mike Flores reported on AAPL and the new regulations in SB4.
- Recognizing the fabulous work Joe Munsey, RPL, and Randy Taylor, RPL, have done with the newsletter
- Other issues pertinent to the operations of LAAPL

The LAAPL Board of Directors and Committee Chairs normally hold its Board Meetings in the same room as the luncheon meeting after the speaker has wowed us. We encourage our members to attend the meetings to see your Board of Directors and Committee Chairs in action.

**Scheduled LAAPL Luncheon
Topics and Dates**

September 18th

Ernest Guadiana, Esq., Managing Associate
Dentons US LLP

November 20th
TBD

January 22nd
[4TH Thursday]

Annual Joint Meeting with
Los Angeles Basin Geological Society

March 19th
TBD

May 21st
TBD

Officer Elections



**Treasurer's
Report**

As of 4/1/2009, the LAAPL account showed a balance of	\$ 18,403.02
Deposits	\$ 11,715.00
Total Checks, Withdrawals, Transfers	\$ 7,294.07
Balance as of 4/30/2009	\$ 21,262.43
Merrill Lynch Money Account shows a total	\$ 11,096.90

New Members and Transfers

**Cambria Henderson, J.D.
California Resources Corporation
Membership Chair**

Welcome! As a Los Angeles Association of Professional Landmen member, you serve to further the education and broaden the scope of the petroleum landman and to promote effective communication between its members, government, community and industry on energy-related issues.

New Members

None to Report

Transfers

Wes Marshall

From:
Venoco, Inc.

To:

California Resources Corporation
Land Manager – Southern Region
111 W Ocean Blvd. Suite 10
Long Beach, CA 90802
(805) 385-1903

New Member Requests

Jessica Bradley

Land Services and Regulatory
Compliance Specialist
Warren E&P, Inc.
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Lauren Feccia

Attorney/ Paralegal
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Suzy Husner

Landman
PetroLand Services
(310) 349-0051



Lawyers' Joke of the Month

Jack Quirk, Esq.
Bright and Brown

Wife's Diary:

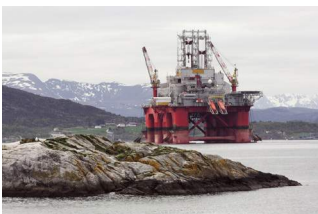
Tonight, I thought my husband was acting weird. We had made plans to meet at a nice restaurant for dinner. I was shopping with my friends all day long, so I thought he was upset at the fact that I was a bit late, but he made no comment on it. Conversation wasn't flowing, so I suggested that we go somewhere quiet so we could talk. He agreed, but he didn't say much.

I asked him what was wrong; He said, "Nothing." I asked him if it was my fault that he was upset. He said he wasn't upset, that it had nothing to do with me, and not to worry about it. On the way home, I told him that I loved him. He smiled slightly, and kept driving. I can't explain his behavior. I don't know why he didn't say, "I love you, too."

When we got home, I felt as if I had lost him completely, as if he wanted nothing to do with me anymore. He just sat there quietly, and watched TV. He continued to seem distant and absent. Finally, with silence all around us, I decided to go to bed. About 15 minutes later, he came to bed. But I still felt that he was distracted, and his thoughts were somewhere else. He fell asleep; I cried. I don't know what to do. I'm almost sure that his thoughts are with someone else. My life is a disaster.....

Husband's Diary:

A two-foot putt.....who the hell misses a two-foot putt?



Presidents Message continued from page 1

considered to be fugacious or "wild and migratory," and therefore subject to loss by drainage.^[7] Among U.S. states, two different theories of ownership of oil and gas arose. Some states, such as Texas, have adopted the "ownership-in-place" theory for oil and gas that a landowner owns a corporeal possessory interest (similar to a fee simple) in the substances beneath his land, but his ownership is a determinable fee subject to the rule of capture.^[8] Other states, like California and Oklahoma, have adopted the "exclusive-right-to-take" theory that a landowner does not own the substances that underlie his land, but merely retains the exclusive right to capture the substances, a non-corporeal interest.^[9] The difference between the two theories is primarily of import in determining remedies.^[10]

"The defense to the Rule of Capture is: the Rule of Capture. Thus there is a great incentive to drill wells to prevent another party from draining your property and to produce from such wells as rapidly as possible."^[11]

This is my best attempt to be a true "Californian" and complain why Rule of Capture doesn't work. (It however works extremely well for a select few.) I will dodge your bullets if this happens to be your sacred cow.

So where should we start looking for a solution? I have a few abstract thoughts, though I doubt any of these will ever become reality in California. So this exercise is just for fun and I will continue discussing the topic in future 2014-15 President's Messages.

1: Create a law that attributes a small royalty to the landowners of record. (I.E. Canada) To be discussed in November's President's Message.

2: Create laws aimed to pool mineral owners with their respective pools being drained. (I.E. Texas pooling) To be discussed in January's President's Message.

3: Create land use laws that may help

the producers and residents Co-exist. (I.E. Drilling Districts & DOGGR) To be discussed in March's President's Message.

4: Any additional comments, questions or ideas brought up by The Override readers. To be discussed in May's President's Message.

I look forward to serving the LAAPL members for 2014-15 and continuing to conserve the great legacy left before me. My goal for LAAPL this year is to be present & available; provide & serve the prospective, current and future members of LAAPL & AAPL.

1. *Acton v. Blundell*, 12 Mees. & W. 324, 354, 152 Eng. Rep. 1223, 1235 (Ex. Ch. 1843)
2. See, e.g., *Ohio Oil Co. v. Indiana*, 177 U.S. 190, 203 (1900)
3. *Acton v. Blundell*, 12 Mees. & W. 324, 354, 152 Eng. Rep. 1223, 1235 (Ex. Ch. 1843)
4. *Friendswood Development Co. v. Smith-Southwest Industries, Inc.*, 576 S.W.2d 21 (Tex. 1978)
5. *H. Williams and C. Meyers, Oil and Gas Terms* 737 (5th ed. 1981)
6. See also *Nunez v. Wainoco Oil & Gas Co.*, 488 So. 2d 955, 958 (La. 1986)
7. See, e.g., *Hammonds v. Central Kentucky Natural Gas Co.*, 75 S.W.2d 204 (Ky.1934)
8. *Michel T. Halbouty et al., v. Railroad Commission of Texas et al.*, 357 S.W.2d 364 (Tex. 1962)
9. See generally *E. Kuntz, A Treatise on the Law of Oil and Gas*
10. http://en.wikipedia.org/wiki/Rule_of_Capture
11. *Kramer & Martin, Pooling and Unitization*, 1 §2[1]

2014 West Coast Landmen's Institute - Las Vegas Style

This year's WCLI is set for October 22nd, 23rd and 24th at the Flamingo in Las Vegas. The tentative topics will be presented in two parts. Part I – Land and Legal. Part II – Industry/Political Updates. Of course, our annual Dave Kilpatrick updates. See Registration Form and Speaker Lineup at the end of the newsletter.





LAAPL 2014 - 2015 ELECTED OFFICERS

At our May luncheon, the LAAPL members voted in for office:

OFFICE	ELECTED CANDIDATE
President ¹	Jason Downs, RPL BreitBurn Management Company
Outgoing President ²	Paul Langland, Esq., Independent
Vice President	Ernest Guadiana, Esq., Law Firm of Dentons US
Secretary	Cliff Moore Independent
Treasurer	Sarah Downs, RPL, Downchez Energy
Director	Joseph D. Munsey, RPL, Senior Land Advisor Southern California Gas Company
Director	L. Rae Connet, Esq., President PetroLand Services

¹Per Section 7(3) the Vice President shall succeed to the office of the President after serving his or her term as Vice President and shall hold the office of President for the next twelve (12) months.

²Per Article 8 (2) the outgoing President shall serve as director.



VENOCO, INC.

Venoco, Inc. is an independent oil and natural gas company founded in 1992. Venoco is continually recognized for practices that exceed safety and environmental compliance, thanks to the hardworking and experienced employees.

www.venocoinc.com

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CONTACTS

Thomas E. Clark: RPL, Executive Land Manager
Patrick T. Moran: RPL, Senior Land Negotiator
Wes Marshall: CPL, Land Manager
Unconventional Resources
Sharon Logan: CPL, Senior Landman



Chapter President Announces Committee Chairs & AAPL Region VIII Director

Our newly elected Chapter President, Jason Downs, RPL, announces his Committee Chairs for the 2-14 – 2014 term and AAPL Region VIII Director for a two year term. Most of last year’s Committee Chairs have returned to serve the Chapter President. However, Chapter President Downs has created one new Committee Chair which has been underlined below. The Los Angeles Association of Professional Landmen will be greatly served by the following members:

Membership Chair

Cambria Henderson, J.D., Land Negotiator
California Resource Corporation
(562) 495-9373 (office)
Cambria_Henderson@oxy.com

Hospitality Chair

Chip Hoover, Independent
(310) 795-7300 – Cell
choover@petrolandservice.com

Leah Hoover, Independent
(310) 795-2272 – Cell
lhoover@petrolandservice.com

Education Chair

James D. Pham, J.D.
Independent
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(949) 500-0909 – Cell
jdpham@email.com

Publishing/Newsletter Chair

Randall Taylor, RPL, President
Taylor Land Services
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randall@taylorlandservice.com

Joseph D. Munsey, RPL, Senior Land Advisor
Southern California Gas Company
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jmunsey@Semprautilities.com

Website/Communications Chair

Odysseus Chairtakis, Contract Landman
PetroLand Services
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odysseus@petrolandservice.com

AAPL Region VIII Director

Mike Flores, Legislative Affairs
Luna/Glushon
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mflores@lunaglushon.com

Legislative Chair

Mike Flores, Legislative Affairs
Luna/Glushon
(310) 990-8657 – Cell
mflores@lunaglushon.com

Olman Valverde, Esq.,
Luna/Glushon
310-556-1444
ovalverde@lunaglushon.com

Mickelson Golf Classic Chair

TBD

Nominations Chair

TBD



TELL THE STATUS QUO TO WATCH ITS BACK.



AT PURPLE LAND MANAGEMENT, WE BELIEVE THERE'S A DIFFERENT WAY TO PROVIDE LAND SERVICES. A WAY THAT BUCKS INDUSTRY CONVENTIONS IN FAVOR OF NEW IDEAS THAT ACHIEVE BETTER RESULTS. A WAY THAT USES THE LATEST TECHNOLOGY TO DRIVE DOWN COSTS AND AMP UP EFFICIENCIES. A WAY THAT SEES OUR WORK AS PART OF A REVOLUTION DESIGNED TO MAKE OUR COMMUNITIES AND OUR COUNTRY BETTER. THIS WAY IS THE **PURPLE WAY**- AND IT'S THE HEART AND SOUL OF WHO WE ARE, WHAT WE DO AND HOW WE DO IT.

OUR SERVICES



LEASE NEGOTIATION & ACQUISITION



GIS CONSULTING



RIGHT-OF-WAY ACQUISITION



COMPLEX CURATIVE



TITLE SERVICES



ACQUISITION DUE DILIGENCE



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Legislative Update



by Mike Flores & Olman Valverde, Esq.
Luna & Glushon



As the California legislative session comes to the end on September 30, what started as a possible disruptive legislative year for our industry, two hard hitting bills, AB1132 (HF Moratorium) and SB 1071 (Oil Severance Tax), both went off into that graveyard where bills never get out of committee.

Multiple Water Bills Passed

Because of the state-wide drought, the use and conservation of water now becomes an even more important element of oil & gas development than previously. On the last day the Legislature can propose bills this session, it passed a series of bills related to a new regulatory paradigm: “regulation of groundwater throughout the state.”

Senate Bill 1281 (Pavley) increases transparency and water conservation in oil production by requiring that oil well operators disclose the amount and source of their water. During droughts, operators would be required to use recycled water in new oil and gas wells. Oil production consumed more than 80 billion gallons of water in 2013, the equivalent amount used by about 500,000 households.

Assembly Bill 1739 (Dickinson) and Senate Bill 1168 (Pavley) cleared both houses and have moved on to the Governor’s desk for his signature or veto. If the bills are signed into law, California would become the last state on the West coast to regulate groundwater. AB 1739 seeks to achieve sustainable groundwater levels within twenty years of the plan’s adoption. This bill would improve local and regional groundwater management levels, especially in high and medium risk overdraft basins and sub-basins. The California Farm Bureau Federation denounced Dickinson’s bill and said the measure “severely threatens existing water rights” and could spur litigation. Opponents of the legislation continue to point out that the bills will not “help advance sustainable groundwater management.”

Rail Transportation of Oil Bills on the Governor’s Desk

Senate Bill 1319 (Pavley) Enhances the state’s oil spill prevention and response program in light of a projected surge in the amount of crude oil transported into California by rail. The bill helps update the state’s oil spill prevention and response program to address all modes of transport, including rail.

Assembly Bill 380 (Dickinson) would protect communities from rail accidents involving crude oil. The bill would require that rail carriers communicate information about the movement and characteristics of crude oil and other hazardous materials, in order to better prepare emergency response officials in the case of an accident.

Monterrey Shale Recoverable Oil Downgraded

A May 2014 report by the United States Energy Information Administration (EIA) has dealt a serious blow to the long-term growth of California's oil and natural gas industry. Based on new resource evaluations, EIA has severely downgraded recoverable reserve estimates in the state's Monterey shale formation, which was earlier thought to contain more oil than any other American unit.

The reserves were downgraded by 96 percent, from 13.7 billion barrels estimated by a government-funded report in 2011, to just 600 million barrels.

"The EIA concluded that the technical recoverability of Monterey shale did not look as strong in 2014 because of the industry's difficulty in producing from the region," EIA head Adam Sieminski told reporters in New York. Technically recoverable reserves are often a moving target, changing as new drilling techniques develop and the price of oil fluctuates. Further drilling will likely provide clearer evidence of the Monterey's true reserves, the EIA said.

Horizontal drilling and hydraulic fracturing has unlocked vast amounts of oil and gas in recent years from other shale plays like the Bakken in North Dakota and the Marcellus centered in Pennsylvania, transforming the estimated amount of recoverable oil over the last decade.

*Legislative Update
continued on page 9*



Legislative Update
continued from page 8

But HF alone has failed to produce the same results in the geology of the Monterey shale in central California, dampening expectations for a resource once thought to rival other giant U.S. shale deposits and seen as an economic boon for the state.

California currently ranks 3rd among the states in crude oil output according to EIA monthly production statistics. At a daily average of about 535,000 barrels, the state is just slightly ahead of Alaska, but considerably distant to No. 2 North Dakota's more than one million barrel per day average.

Gas Prices will go up on January 1, 2015 according to CARB

The vast expansion of California's cap-and-trade system coming January 1, 2015, when gasoline and diesel used by millions of consumers and businesses will be regulated for the first time under the state's cap and trade program causing gas prices to go up.

According to economic analysis by the California Air Resources Board (CARB), this expansion of cap and trade will increase gasoline prices by as little as 4 percent and as much as 19 percent. With gasoline prices currently averaging around \$4 a gallon, that is a price impact of 16 cents to 76 cents.

BLM Resumes Auctions in California After CCST Report is Released

The California Council on Science and Technology, which authored the report on which the Bureau of Land Management based its decision to resume auctions of oil and gas leases on federal lands in California, has released the report online.

"Responsible decision making requires good science to balance economic potential with environmental concerns," CCST Executive Director, Dr. Susan Hackwood said in a statement. "This report provides the most objective, up-to-date, peer-reviewed assessment available to inform thoughtful policy making in California, while also characterizing issues that require further study."

The CCST released both the full 400 page report and a 32-page Executive Summary. Both can be viewed at the CCST website at ccst.us.

Bill to Assist San Joaquin Valley Energy Workforce Awaits Governor Signature

Assembly Bill 1910 (Gray) would establish the San Joaquin Valley Regional Economic Planning and Preparedness Council (SJVREPPC), a special committee within the California Workforce Investment Board (CWIB) that would identify the programs, policies, partnerships and workforce needs of the emerging energy economy in the region.

If the Governor signs AB 1910, the SJVREPPC would be able to invest in, train, and prepare workers for future oil recovery jobs throughout the Valley.

AB 1910 requires the CWIB to convene local public and private sector representatives to help create an oil and gas strategic initiative addressing the growing need for highly skilled, well-trained workers. The new SJVREPPC would identify funding, programs, policies, partnerships and opportunities that will help form recommendations and strategies to fill the skills gap, and provide policy guidance for job training programs to prepare at-risk youth, displaced workers, veterans and others facing employment barriers.

Mexico Opens Up To Foreign Oil Companies

Mexico's vast reserves of oil and natural gas will be open to exploration by foreign companies beginning in 2015, thanks to a historic change proposed by President Enrique Peña Nieto and approved by Mexico's Congress on August 6.

The change, which required a revision to Mexico's constitution, opens the way for global oil companies to access untapped oil reserves that state-owned Pemex (Petroleos Mexicanos) has estimated at 113 billion barrels worth \$11 trillion.

In addition, Pemex estimates that five shale fields it has identified hold 460 trillion cubic feet of natural gas, worth \$2.2 trillion. One of those fields is just across the border from the richly productive Eagle Ford field in Texas.





Mickelson Golf Classic



2014 MICKELSON GOLF CLASSIC



The 10th Annual LAAPL Mickelson Golf Classic held at Elkins Ranch Golf Club on Friday, August 4th was another major success to benefit the R.M. Pyles Boys Camp. "Pyles" has been a favored beneficiary of the LAAPL annual golf tournament for several years now.

Established in 1949 by Mr. Pyles, a Huntington Beach oilman, R. M. Pyles Boys Camp is dedicated to the task of building healthier and happier generations of productive young Americans, firmly endowed with the ideals and principles of this Nation. Pyles Boys Camp gives a new confidence in life through a high quality and challenging High Sierra wilderness camp experience. R.M. Pyles Boys Camp continues to follow up with year-round programs to support and reinforce values learned at camp.

With the generosity of those who supported the tournament through gifts and sponsorships, the Los Angeles Association of Professional Landmen is happy to announce that it will be contributing the entirety of the tournament net proceeds to Pyles in the amount of \$4,394.60.

The Elkins Ranch Golf Club, located in Camarillo, California, was sunny and perfect weather this year. With a shotgun approach, an estimated 32 LAAPL members and guests enjoyed the tri-tip dinner and raffle. The tournament committee rounded up a variety of raffle prizes (along with raffle contributions from several members) so most of those in attendance left with a special gift.

Our first place team included Michael Rider of Aera, Josh Baker of Day Carter Murphy, JR. Billeaud of FMI, and Erik Vasquez of Vaquero, who each carried off a new golf trophy to add to their already sizable collection.

Of course the young men who attend the R.M. Pyles Boys Camp were the real winners of the day, thanks to the generous contributions of southern California's professional landmen and their respective employers who sponsored this year's LAAPL charity golf event. The LAAPL Membership and Golf Committee extend their sincere appreciation and gratitude to each and every sponsor, attendee, and volunteer for their support and generous contributions to this year's fundraiser.

MPI

MAVERICK PETROLEUM, INC.

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Lease Availability Checks
Title Searching
Title Curative
Drillsite Title Reports
Lease Negotiations
Surface Damage Negotiations
In House Support

Division Orders
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Case of the Month - Right of Way



CLEAN AIR ACT RULING MAY CURB SUITS

Kelly M. Percival, Esq.
Law Firm of Nossaman LLP

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In early Spring of this year, the 9th U.S. Circuit Court of Appeals declined to re-hear en banc a decision handed down last October by a three-judge panel, thereby leaving in place a decision that could be a major hurdle for plaintiffs in future environmental lawsuits aimed at reducing climate change.

In *Washington Environmental Council v. Bellon*, 732 F.3d 1131 (9th Cir. 2013), the Washington Environmental Council and the Sierra Club brought a citizens' suit against state agencies responsible for implementing the Clean Air Act (CAA), seeking to compel the agencies to regulate greenhouse gas emissions from Washington state's five oil refineries. The groups alleged that the state agencies had failed to enforce the state's CAA implementation plan, which requires the agencies to define reasonably available control technologies (RACT) for greenhouse gases and to apply RACT standards to oil refineries. The district court held, and the 9th Circuit affirmed, that the groups did not have standing to compel the state agencies to issue oil refinery regulations.

Standing is a constitutional prerequisite to seeking judicial relief for an alleged injury in federal court. In order to have standing, a plaintiff must show that he or she has suffered an injury, that the injury is caused by the defendant's actions, and that the injury will likely be redressed if the court grants the requested relief. The three judges on the 9th Circuit panel found that, as a result of climate change, the environmental plaintiffs had suffered a variety of injuries ranging from flooded farmlands to a diminished ability to enjoy the ski slopes of Washington state. The panel also found, however, that any link between those injuries and the failure of the state agencies to regulate greenhouse gas emissions was too attenuated to satisfy the causation element needed for standing because "a multitude of independent third parties are responsible for the changes contributing to [their] injuries."

In a strikingly contentious opinion, while a vocal minority dissented, a majority of 9th Circuit judges declined to rehear the panel's decision. *Washington Environmental Council v. Bellon*, 2014 DJDAR 1405 (9th Cir. Feb. 3, 2014).

Agreeing with the majority, and defending the panel decision which he had originally authored, Judge Milan D. Smith penned a concurrence essentially stating that the 9th Circuit panel had merely followed *Lujan v. Defenders of Wildlife*, 504 U.S. 555 (1992), a U.S. Supreme Court case discussing the standard for standing when private groups seek to compel state agencies to regulate third parties such as oil companies. Specifically, Smith stated that, under *Lujan*, the plaintiff groups were required to show both that injunctive relief would cause the state agencies to promulgate new regulations in the groups' favor and that the new regulations would actually cause the oil companies to change their conduct in a manner that would redress the plaintiffs' injuries.

In order to do so, Smith said the plaintiffs needed to produce evidence in support of four hard-to- prove facts: (1) that the state agencies would promulgate emission standards that demand cleaner technology than the oil companies already use; (2) that the oil companies would comply with the new standards; (3) that the oil companies' compliance would reduce greenhouse gas emissions; and (4) that the lower emissions would mitigate global climate change.

Notably, Smith's concurrence distinguished the facts from those in *Massachusetts v. Environmental Protection Agency*, 549 U.S. 497 (2007), in which the Supreme Court, after applying a more lenient standing standard, held that the state of Massachusetts had standing to sue the Environmental Protection Agency to compel the it to promulgate CAA regulations of greenhouse gas emissions from motor vehicles. Smith stressed two reasons why use of a more stringent standing standard than that used in *Massachusetts* was appropriate. First, *Massachusetts* had brought a procedural claim seeking the EPA's reconsideration of a rulemaking petition under the CAA, whereas the Washington Environmental Council and the Sierra Club had brought a substantive claim for an injunction seeking to compel the promulgation of regulations. A litigant bringing a procedural claim, unlike one bringing a substantive claim, need not show that receiving the requested procedure will necessarily change any substantive result. Second, *Massachusetts* is a sovereign state that has a special interest in the condition of its environmental resources, while the environmental groups in this case were private individuals.

Case of the Month - ROW
continued on page 14

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Case of the Month - ROW
continued from page 12

In a passionate dissent joined by two other judges, Judge Ronald M. Gould wrote that, in holding that the plaintiffs lacked standing, the panel had misapplied Massachusetts to "essentially read private citizens out of the equation when it comes to using courts to address global warming." In doing so, he argued, the decision prevents citizens from urging their states to take corrective action against global warming and "relegates judges - and the general public - to the sidelines as climate change progresses." Gould interpreted Massachusetts to be a Supreme Court endorsement of the principle that individuals seeking to induce state action to protect the environment have standing to do so, just as the plaintiffs in this case had.

While a refusal to rehear a panel decision holds no legal precedence, in this instance, at least in the 9th Circuit, it shores up an onerous standard that applies to plaintiffs seeking to compel public agency regulation of third parties under the CAA and other 'environmental laws. This means that, in future suits raising a substantive challenge, environmental groups will likely have to overcome the significant burden associated with. Proving (1) that an agency's failure to regulate a third party has caused climate change, (2) that, if the agency does regulate the third party, the third party will follow the law, and (3) that the third party's following of the law will actually mitigate climate change.

Environmentalists seeking to continue the fight against climate change will no doubt cite to Gould's strong dissent, which, at a minimum, indicates that at least three judges on the 9th Circuit believe lawsuits aimed at curtailing greenhouse gas emissions are a matter of exceptional public importance that should not require meeting the high standing standard set by the 9th Circuit panel.

Ms. Percival can be reached at kpercival@nossaman.



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LAAPL Appoints AAPL Region VIII Director



Chapter President Jason Downs, RPL, has re-appointed for another two years Mike Flores, Legislative Affairs Co-chair, of Luna and Glushon, as the LAAPL's Region VIII AAPL Director. For the past two years Mike has given the LAAPL a high profile within the AAPL organization performing the duties of the office.

The LAAPL appreciates Mike's fine record as the chapter's Region Director. We look forward to Mike keeping the AAPL informed of all things LAAPL. The chapter would like to acknowledge the support Luna and Glushon gives Mike as he performs his duties as Region VIII AAPL Director.



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Case of the Month - Oil & Gas

CO₂ SEPARATION ANXIETY—IS THE COST OF SEPARATING CO₂ FROM CASINGHEAD GAS A “PRODUCTION” OR “POST-PRODUCTION” COST FOR PURPOSES OF CALCULATING ROYALTIES IN TEXAS?

By

**George A. Bibikos, Esq., Partner ~ Cleve J. Glenn, Esq., Associate
& Travis L. Brannon, Esq., Associate
Law Firm of K & L Gates, LLP**

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In a recent decision, the Supreme Court of Texas concluded that the cost of removing carbon dioxide (“CO₂”) from casinghead gas after completing enhanced oil recovery operations is a “post-production” cost, thus clarifying that royalty owners may be charged their proportionate share of such costs before receiving royalties.

In most states, including Texas, the general rule is that royalties are free of “production” costs (i.e., the costs incurred by the lessee for activities necessary to extract oil or gas).^[1] However, absent lease language to the contrary, both the lessor and lessee may share proportionately in any “post-production” costs (i.e., those costs incurred for activities at any point between the wellhead on the surface and the sales point that render oil or gas more marketable).^[2] The classification of the cost of activities as either production or post-production costs triggers many disputes between royalty owners and their lessee-operators.

The distinction between production and post-production is particularly significant with respect to enhanced oil recovery projects that involve injecting CO₂ into reservoirs to aid in the extraction of oil. In certain oil fields with wells that have experienced a decline in production rates, operators sometimes engage in enhanced oil recovery operations by injecting CO₂ into the reservoirs to increase well productivity. As a consequence of the recovery operation, however, wells sometimes produce “casinghead gas” (gas associated with recovered oil) that may be heavily laden with CO₂ that should be removed.

Until recently, it was unclear whether the removal of CO₂ from casinghead gas after enhanced oil recovery qualified as a production cost or a post-production cost. In *French v. Occidental Permian Ltd.*, --- S.W.3d ---, 2014 WL 2895999 (Tex. June 27, 2014), the Supreme Court of Texas resolved the question.

The French case involved oil and gas leases that granted the lessors royalty “on gas, including casinghead gas or other gaseous substance produced from said land and sold or used off the premises or in the manufacture of gasoline or other product therefrom” equal to “the market value at the well of one-eighth (1/8th) of the gas so sold or used.” In addition, one of the leases at issue granted a royalty of “1/4 of the net proceeds from the sale” of “gasoline or other products manufactured and sold” from casinghead gas “after deducting [the] cost of manufacturing the same.”

Under both leases, the lessors shared in the post-production costs associated with the sale of casinghead gas. In addition, the lessee pooled the leases in 1954 pursuant to a unitization agreement which gave the lessee the discretion to use casinghead gas as part of its enhanced recovery operations.^[3] As is typical of many royalty clauses regarding gas use, the parties agreed that no royalty would be paid on the use of such gas for operations.^[4]

The lessee in French initiated a tertiary recovery operation in 2001 to stimulate oil wells and remedy the long decline in production in the oil field that included the leased properties at issue. As a result of this process, the wells resumed economically viable production, and the operator recovered oil that would have been lost otherwise. However, as a consequence of the recovery operation, the wells produced casinghead gas that was heavily laden with CO₂. The lessee entered into an agreement with a third party, whereby the third party would process the gas and extract a majority of the CO₂. The lessee agreed to pay the third party a monetary fee and an “in-kind” fee equal to 30 percent of the natural gas liquids and all of the residue gas extracted from the stream. When the lessee paid royalties, it deducted the value of the in-kind payment in proportion to the royalty owners’ interest as it would with other post-production costs.

The royalty owners sued, alleging the lessee underpaid royalties by deducting the value of the in-kind fee. They claimed that royalties should have been paid on all the gas that came out of the well and not the gas remaining after the CO₂ was removed (which was a much smaller quantity of gas).

The trial court agreed with the royalty owners and awarded \$10.5 million in compensation for underpaid royalties.

The Texas Eleventh Court of Appeals reversed the decision of the trial court and the \$10.5 million judgment. Among

*Case of the Month - O & G
continued on page 17*



other rulings regarding the sufficiency of expert testimony to estimate market value of casinghead gas infused with CO₂, the court treated the CO₂ extraction as a post-production activity that may be shared by the royalty owners. The court reasoned as follows: “Because we have held that it is necessary to render the stream marketable, we also hold that it is a cost of manufacturing that must be deducted in order to determine the net proceeds from the sale, and thus the royalty.”^[5]

The Supreme Court of Texas granted the royalty owners’ petition for review in January 2014^[6] on whether the costs of removing the CO₂ deducted by the lessee were properly considered to be production costs or post-production costs.^[7]

Noting that the issue was one of first impression, the Supreme Court affirmed the appellate court’s conclusion that the CO₂ separation is a post-production activity that may be shared by royalty owners and lessees if the lease so provides. The court noted that the injected CO₂ remained the lessee’s property and the royalty owners were entitled to a royalty based only on the non-CO₂ portion of the casinghead gas.^[8] The court reasoned that, “under the parties’ agreements, [the royalty owners], having given [lessee] the right and discretion to decide whether to reinject or process the casinghead gas, and having benefitted from that decision, must share in the cost of CO₂ removal.”^[9] As a result, the lessee properly deducted the value of the in-kind payment from royalties.

CO₂ floods, and other enhanced recovery projects, are integral to the successful management and production of valuable oil and gas resources in the state of Texas and in other jurisdictions. The French decision clarifies how those costs should be treated when calculating royalty payments pursuant to a lease that authorizes the parties to share in post-production costs. The decision reflects the potential challenges that lessees may face when sharing costs with royalty owners for necessary operations that enhance the value of production but do not fit neatly into the “production” category or “post-production” category. In addition, while the issue may be resolved in Texas, the question remains open in other jurisdictions. Lessees may wish to consider a review and analysis of their leases to identify possible areas of dispute with royalty owners over proper cost-sharing for activities that fall into a gray area between production and post-production.

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Notes:

^[1] Heritage Res., Inc. v. NationsBank, 939 S.W.2d 118, 121-122 (Tex. 1996) (citing Martin v. Glass, 571 F.Supp. 1406, 1410 (N.D.Tex. 1983), aff’d, 736 F.2d 1524 (5th Cir. 1984)).

^[2] Delta Drilling Co. v. Simmons, 338 S.W.2d 143, 147 (Tex. 1960).

^[3] French, 2014 WL 2895999 at *2.

^[4] Id.

^[5] Id. at 224.

^[6] 57 Tex. Sup. Ct. J. 154 (Jan. 15, 2014).

^[7] French, 2014 WL 2895999 at *1.

^[8] Id. (citing Humble Oil & Refining Co. v. West, 508 S.W.2d 812, 816-19 (Tex. 1974) (holding natural gas stored in a reservoir to prevent destruction of the field was not subject to a royalty interest upon its production with native natural gas).

^[9] Id. at *7-8.

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Educational Corner

EDUCATIONAL CORNER

James D. Pham, JD, Independent
Education Chair

Listed below are continuous educational courses available for the fourth quarter of 2014. The American Association of Professional Landmen (AAPL) is committed to providing education seminars and events that support our membership base. In addition, you can generally earn credits by attending our luncheons based upon speaker and subject matter.

The West Coast Landman's Institute will also be held between October 22 -24, 2014 in Las Vegas, NV.

If you would like more information, please contact LAAPL's Education Chair James Pham, JD. at (949) 500-0909 or jdpham@email.com.

September 2014

Oil and Gas Land Review, CPL/RPL Exam

When: September 9 - 12, 2014

Where: Houston, TX

RL/RPL Continuing Education Credits: 18.0

CPL Recertification Credits: 18.0

CPL/ESA Ethics Credits: 1.0

Ethics 360 Seminar

When: September 12, 2014

Where: Casper, WY

RL/RPL Continuing Education Credits: 3.5

CPL Recertification Credits: 3.5

CPL/ESA Ethics Credits: 2.0

Santa Fe Land Institute

When: September 15, 2014

Where: Oklahoma City, OK

RL/RPL Continuing Education Credits: 7.0

CPL Recertification Credits: 7.0

CPL/ESA Ethics Credits: 1.0

Field Landman Seminar

When: September 17, 2014

Where: Woodville, MS

RL/RPL Continuing Education Credits: 2.0

CPL Recertification Credits: 2.0

CPL/ESA Ethics Credits: 0.0

RPL & CPL Exam Only

When: September 19, 2014

Where: Greeley, CO

RL/RPL Continuing Education Credits: 0.0

CPL Recertification Credits: 0.0

CPL/ESA Ethics Credits: 0.0

Pooling Seminar

When: September 19, 2014

Where: Oklahoma City, OK

RL/RPL Continuing Education Credits: 5.0

CPL Recertification Credits: 5.0

CPL/ESA Ethics Credits: 0.0

Texas Land Institute

When: September 22, 2014

Where: Houston, TX

RL/RPL Continuing Education Credits: 7.0

CPL Recertification Credits: 7.0

CPL/ESA Ethics Credits: 1.0

Field Landman Seminar

When: September 25, 2014

Where: Casper, WY

RL/RPL Continuing Education Credits: 2.0

CPL Recertification Credits: 2.0

CPL/ESA Ethics Credits: 1.0



Educational Corner - continued

October 2014

2014 Appalachian Land Institute

When: October 2 - 3, 2014

Where: Washington, PA

RL/RPL Continuing Education Credits: 12.0

CPL Recertification Credits: 12.0

CPL/ESA Ethics Credits: 1.0

WI/NRI Workshop

When: October 2, 2014

Where: Midland, TX

RL/RPL Continuing Education Credits: 6.0

CPL Recertification Credits: 6.0

CPL/ESA Ethics Credits: 0.0

WI/NRI Workshop

When: October 3, 2014

Where: Fort Worth, TX

RL/RPL Continuing Education Credits: 6.0

CPL Recertification Credits: 6.0

CPL/ESA Ethics Credits: 0.0

Fund. of Land Practices & OPTIONAL RPL Exam

When: October 6 - 7, 2014

Where: Denver, CO

RL/RPL Continuing Education Credits: 7.0

CPL Recertification Credits: 7.0

CPL/ESA Ethics Credits: 1.0

Field Landman Seminar

When: October 8, 2014

Where: Dickinson, ND

RL/RPL Continuing Education Credits: 2.0

CPL Recertification Credits: 2.0

CPL/ESA Ethics Credits: 1.0

Applied Land Practices

When: October 10, 2014

Where: Houston, TX

RL/RPL Continuing Education Credits: 7.0

CPL Recertification Credits: 7.0

CPL/ESA Ethics Credits: 1.0

RPL & CPL EXAM ONLY

When: October 11, 2014

Where: Canfield, OH

RL/RPL Continuing Education Credits: 0.0

CPL Recertification Credits: 0.0

CPL/ESA Ethics Credits: 0.0

Oil & Gas Land Review, CPL/RPL Exam

When: October 14 - 17, 2014

Where: Shreveport, LA

RL/RPL Continuing Education Credits: 18.0

CPL Recertification Credits: 18.0

CPL/ESA Ethics Credits: 1.0

WI/NRI Workshop

When: October 16, 2014

Where: Lafayette, LA

RL/RPL Continuing Education Credits: 6.0

CPL Recertification Credits: 6.0

CPL/ESA Ethics Credits: 0.0

Field Landman Seminar

When: October 16, 2014

Where: Traverse City, MI

RL/RPL Continuing Education Credits: 0.0

CPL Recertification Credits: 0.0

CPL/ESA Ethics Credits: 2.0

Due Diligence Seminar

When: October 20, 2014

Where: Odessa, TX

RL/RPL Continuing Education Credits: 5.0

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CPL/ESA Ethics Credits: 0.0

West Coast Land Institute

When: October 22 - 24, 2014

Where: Las Vegas, NV

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CPL Recertification Credits: TBD

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Field Landman Seminar

When: October 23, 2014

Where: Oklahoma City, OK

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CPL/ESA Ethics Credits: 0.0

Gulf Coast Land Institute

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CPL Recertification Credits: 11.0

CPL/ESA Ethics Credits: 1.0

One-Day JOA Workshop

When: October 28, 2014

Where: Oklahoma City, OK

Field Landman Seminar

When: October 30, 2014

Where: Greeley, CO



Educational Corner - continued

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CPL/ESA Ethics Credits: 0.0

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CPL Recertification Credits: 1.0
CPL/ESA Ethics Credits: 1.0

WI/NRI Workshop

When: October 31, 2014

Where: Farmington, NM

RL/RPL Continuing Education Credits: 6.0

CPL Recertification Credits: 6.0

CPL/ESA Ethics Credits: 0.0

November 2014

Basics of Geographic Information Systems

When: November 4, 2014

Where: Pittsburgh, PA

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CPL Recertification Credits: 5.0

CPL/ESA Ethics Credits: 0.0

Negotiations Seminar

When: November 5, 2014

Where: San Antonio, TX

RL/RPL Continuing Education Credits: 5.0

CPL Recertification Credits: 5.0

CPL/ESA Ethics Credits: 0.0

Field Landman Seminar

When: November 6, 2014

Where: Heber City, Utah

RL/RPL Continuing Education Credits: 2.0

CPL Recertification Credits: 2.0

CPL/ESA Ethics Credits: 0.0

WI/NRI Workshop

When: November 7, 2014

Where: Evansville, IN

RL/RPL Continuing Education Credits: 6.0

CPL Recertification Credits: 6.0

CPL/ESA Ethics Credits: 0.0

Oil and Gas Land Review, CPL/RPL Exam

When: November 10 - 13, 2014

Where: Fort Worth, CA

RL/RPL Continuing Education Credits: 18.0

CPL Recertification Credits: 18.0

CPL/ESA Ethics Credits: 1.0

WI/NRI Workshop

When: November 13, 2014

Where: Bakersfield, CA

RL/RPL Continuing Education Credits: 6.0

CPL Recertification Credits: 6.0

CPL/ESA Ethics Credits: 0.0

WI/NRI Workshop

When: November 14, 2014

Where: Los Angeles, CA

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CPL Recertification Credits: 6.0

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RPL/CPL Exam Only

When: November 15, 2014

Where: Roswell, NM

RL/RPL Continuing Education Credits: 0.0

CPL Recertification Credits: 0.0

CPL/ESA Ethics Credits: 0.0

Pooling Seminar

When: November 18, 2014

Where: San Antonio, TX

RL/RPL Continuing Education Credits: 5.0

CPL Recertification Credits: 5.0

CPL/ESA Ethics Credits: 0.0

Fundamentals of Land Practices & OPTIONAL RPL Exam

When: November 20 - 21, 2014

Where: Oklahoma City, OK

RL/RPL Continuing Education Credits: 7.0

CPL Recertification Credits: 7.0

CPL/ESA Ethics Credits: 1.0

Applied Land Practices

When: November 24, 2014

Where: Midland, TX

RL/RPL Continuing Education Credits: 7.0

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Educational Corner - continued

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AGENDA

Wednesday, October 22nd

Noon	Golf- Rio Secco Golf Course
6:30 PM - 9:30 PM	Welcome Reception - Margaritaville

Thursday, October 23rd

6:30 AM - 7:15 AM	Registration
7:15 AM - 8:00 AM	BREAKFAST AND OPENING GENERAL SESSION Keynote: Mike Flores, Legislative Affairs, Law Firm of Luna & Glushon <i>Legislative Update [National and Local] "Landman2" Report Update - California</i>
8:10 AM - 8:20 AM	Opening Remarks, Agenda Adjustments, Etc.
8:20 AM - 9:20 AM	Michael N. Mills, Esq., Michael J. Sherman, Esq., and Thomas A. Henry, Esq, Stoel Rives LLP <i>Part I "Review of the 'Typical' California Oil and Gas Lease – Essential, Defensive and Administrative Clauses"</i> <i>Part II "Review of the 'Typical' California Oil and Gas Lease –Keeping Your Lease Alive"</i>
9:20AM – 9:30 AM	Break
9:30AM – 10:30 AM	Robert J. Burnett, Esq. Houston Harbaugh LP <i>"Oil and Gas Leases in the Era of Horizontal Drilling - How Horizontal Drilling Impacts the Traditional Lease Terms and Why the Traditional "Vertical" Lease is Inadequate"</i>
10:30 AM - 11:30 AM	Josh Baker, Esq., and Julie Carter, Esq., Day Carter Murphy <i>"Actual, Constructive, and Inquiry Notice When Conducting Title Due Diligence – Is it Ever Okay to Keep Your Head in the Sand?"</i>
Noon - 1:30 PM	LUNCH AAPL President Roger A. Soape, CPL, Roger A. Soape, Inc. <i>" American Association of Professional Landmen "</i>
1:30 PM - 2:30 PM	John Harris, Esq., Ernest Guadiana, Esq., and Rod Pacheco, Esq., Dentons US <i>"How to Respond to Governmental Agencies – What to Do and What Not to Do"</i>



Thursday, October 23rd (Cont.)

2:30 PM - 2:40 PM

Break

2:40 pm - 3:40 pm

Dennis Luna, Esq., P.E. and Olman Valverde, Esq., Law Firm of Luna/Glushon
“How Trusts Work Here in California - Title and Leasing Them”

3:40 PM - 4:00 PM

Break

4:00 PM - 5:00 PM

Jack Quirk, Esq., and Cecilia Rendon, Esq., Law Firm of Bright and Brown
“Recording Challenges in California Counties”

6:00PM – 7:00 PM

Hosted Cocktail Reception

7:00PM - 8:30 PM

Dinner Reception - The Wheel House

Friday, October 24th

7:15 AM - 8:00 AM

BREAKFAST AND OPENING GENERAL SESSION

Keynote: Edward S. Hazard

NATIONAL ASSOCIATION OF ROYALTY OWNERS

8:10 AM - 9:00 AM

PANEL DISCUSSION

Panel Host - Mike Flores, LAAPL’s Region Director, Luna/Gluson

Panelist - Blair Knox, Director of Public Affairs, CIPA, California Independent Petroleum Association

Panelist - Speaker TBD, WSPA, Western States Petroleum Association

Panelist - Anthony C. Marino, Esq., Slattery, Marino & Roberts

“Wells Stimulation Techniques - A Legislative Look at the Present and the Future.”

9:00 AM – 9:10 AM

Break

9:10 AM - 10:00 AM

Greg Watkins, Kurt Goepfner, Carbon Consultants, Inc.
“Carbon Credits”

10:00 AM – 10:50 AM

Dave Kilpatrick, Kilpatrick Energy
“Global Industry Overview and Predictions - 2014”

10:50 AM - 11:00 AM

Break

11:00 AM - 11:50 AM

John R. Russell IV, Esq., Lobbyist, Law of Dentons, Washington, DC
“Political Developments Affecting the Oil and Gas Exploration & Production Industry – An Insider’s View of the National Political Scene From a Washington, DC Perspective - 2014”

11:50 AM - Noon

Closing Remarks and Acknowledgements



WHY EVERY SERIOUS ENVIRONMENTALIST SHOULD FAVOUR FRACKING

RICHARD A. MULLER AND ELIZABETH A. MULLER

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SUMMARY

- Environmentalists who oppose the development of shale gas and fracking are making a tragic mistake.
- Some oppose shale gas because it is a fossil fuel, a source of carbon dioxide. Some are concerned by accounts of the fresh water it needs, by flaming faucets, by leaked “fugitive methane”, by pollution of the ground with fracking fluid and by damaging earthquakes.
- These concerns are either largely false or can be addressed by appropriate regulation.
- Shale gas is a wonderful gift that has arrived just in time. It can not only reduce greenhouse gas emissions, but also reduce a deadly pollution known as PM2.5 that is currently killing over three million people each year, primarily in the developing world.
- This air pollution has been largely ignored because PM2.5 was an unrecognised danger until recently; only in 1997 did it become part of the US National Ambient Air Quality Standards. It is still not monitored in much of the world.
- Greenhouse warming is widely acknowledged as a serious long-term threat, but PM2.5 is currently harming more people.
- Europe shares an ironic advantage with China – the high price paid for imported natural gas, typically US\$10 per million BTU (compared to US\$3.50 in the US). At those prices, the cost of shale drilling and completion can be much higher and still be profitable. Europe can therefore be the testing and proving ground where innovative technology can be tried and perfected while still profitable.
- As both global warming and air pollution can be mitigated by the development and utilisation of shale gas, developed economies should help emerging economies switch from coal to natural gas. Shale gas technology should be advanced as rapidly as possible and shared freely.
- Finally, environmentalists should recognise the shale gas revolution as beneficial to society – and lend their full support to helping it advance.



1. REDUCING PM2.5 AND GREENHOUSE GASES

1.1 PM2.5: the dirty secret

PM2.5 refers to particulate matter 2.5 microns or smaller, microscopic dust particles created directly from burning fuel but also by secondary chemical reactions from emitted sulphur and nitrous oxides (SO_x and NO_x). These particulates are so tiny that they penetrate deep into human lungs where they are absorbed into the blood and lead to cardiorespiratory disease. The US Environmental Protection Agency (EPA) estimates PM2.5 is responsible for about 75,000 premature deaths per year in the United States,¹ even though US measured air quality levels are typically ranked in the *good* to *moderate* categories, with an AQI (air quality index) of 0 to 100. [EPA 2010; Lepeule 2011].

To put this in perspective, yearly automobile deaths in the US in 2012 were less than half of that. European air pollution deaths were estimated at 400,000 per year by the European Environment Commissioner, more per person than in the US because the PM2.5 levels are significantly higher. [El Pais 2013].

It is not just PM2.5 that kills, but larger particles (PM10), ozone, sulphur and nitrous oxides and other pollutants. But the Air Quality Index (AQI) around the world is usually dominated by PM2.5.²

But US and European pollution levels are small compared to those in the developing world. In

¹ The EPA number is 63,000 to 88,000 at 95% confidence. See EPA 2010, Appendix G page 2.

² The AQI is defined separately for each pollutant, based on its estimated health effects. But, by convention, the total AQI is set to that of the leading component for the location. Recently that has almost always been PM2.5.

early 2013, the level in Beijing soared to an AQI of 866, far above the nominal *hazardous*³ threshold of 300. As we write this (November 2013) the level in Delhi India is 817. On 21 October 2013, Harbin, a city in northern China with 11 million people, turned on its centralised coal system and the pollution level surged off scale at 1,000. The city's official news site said, "You can't see your fingers in front of your face." [NYT 2013]. Airport visibility dropped below 10 metres. The government shut schools, airports and many highways, and told people to stay at home.

You can look up current PM2.5 levels on the internet.⁴ On the day we are writing this, most of the US is "good" (less than 50), most of the UK is "moderate" (50 to 100), Paris is "unhealthy for sensitive groups" at 114, and Vienna is "unhealthy" at 161.

PM2.5 is a horrific environmental problem. The Health Effects Institute estimated that air pollution in 2010 led to 3.2 million deaths that

³ Pollution categories for air quality and the colours used to depict them on maps are

- *good*: green, AQI 0-50, PM2.5 concentration 0-12 µg/m³
- *moderate*: yellow, AQI 51-100, PM2.5 12-35 µg/m³
- *unhealthy for sensitive groups*: orange, AQI 101-150, PM2.5 35-55 µg/m³
- *unhealthy*: red, AQI 151-200, PM2.5 55-150 µg/m³
- *very unhealthy*: purple, AQI 201-300, PM2.5 151-250 µg/m³
- *hazardous*: brown, AQI above 301, PM2.5 above 250 µg/m³

Note: for PM2.5 above 500, AQI and PM2.5 are essentially identical.

⁴ For China and India, see aqicn.org (also try the map link); for Europe, see aqicn.org/map/europe/; for the US see airnow.gov (with many map choices) or commons.wikimedia.org/wiki/File:Pm25-24a-super.gif.



year, including 1.2 million in China and 620,000 in India. [O’Keefe 2013, Yang 2013]. And the pollution is getting worse as global use of coal continues to grow.

The most dramatic and compelling new result linking coal pollution to death comes from the Huai River Study. [Chen 2013]. In this investigation, scientists took advantage of a Chinese government policy that for 30 years supplied free coal north of the Huai River for heating and cooking, and forbade such coal in homes south of the river. The study determined that the 250 million people who live north of the river were exposed, on average, to an additional $184 \mu\text{g}/\text{m}^3$ of particulates, and that they lost, on average, 5.5 years of life from the extra pollution. As a rule of thumb, they estimate that each average added exposure of $100 \mu\text{g}/\text{m}^3$ will reduce average lifetime by three years. From this we can calculate that the level reached in Harbin, an AQI of 1000 (which for such high levels also means $1000 \mu\text{g}/\text{m}^3$) should lead to a thousand excess deaths *from just one day of exposure*.⁵

China not only has the greatest yearly death toll from air pollution, but is also key for mitigating global warming. China surpassed the US in CO₂ production in 2006; growth was so rapid that by late 2013, China’s CO₂ emissions are nearly twice those of the US. If its growth continues at this rate (and China has averaged 10% GDP growth per year for the

past 20 years) China will be producing more CO₂ per person than the US by 2023. If the US were to disappear tomorrow, Chinese growth alone would bring worldwide emissions back to the same level in four years. To mitigate global warming, it is essential to slow worldwide emissions, not just those in the developed countries. And we feel this must be done without slowing the economic growth of the emerging world.

It is amazing that PM2.5 levels are not more widely addressed by environmentalists, by political leaders, by journalists, and by the general public. They should not, cannot, be ignored. PM2.5 kills more people per year than AIDS, malaria, diabetes or tuberculosis. We must do something. But what?

1.2 Energy conservation

The most effective way to keep pollution out of the air is to leave it underground, buried with the original coal. That can be done by using less energy – energy conservation – and that can be achieved without any lowering of productivity, comfort, or perceived standard of living, primarily by improving efficiency. Indeed, European nations, the US, China and other countries are working hard to do this.

China’s official goal is to have energy use grow at a rate 4% slower than that of their economy. That is a challenging but realistic goal; the US improved its energy conservation by 5% per year in the decade following the 1973 OPEC oil embargo, through higher miles-per-gallon for cars, better insulation in homes and buildings, and improved efficiency in engines and appliances.

The reason that such yearly improvement is feasible is that conservation can be highly profitable. In the US, homeowners who invest in conservation typically achieve a payback time

⁵ For 30 years of exposure of $100 \mu\text{g}/\text{m}^3$, based on the Huai River study, we expect 3 years lost per person. For one *day* at $1000 \mu\text{g}/\text{m}^3$, we expect $3 \times 10 / 30 / 365 = 0.0027$ years lost per person. For 11 million people, that is 30,000 person-years lost. If the average premature death takes place at age 35, then that amounts to 860 deaths. If the average premature death takes place at age 50 (loss of life of 20 years per affected person) then 1500 deaths are expected.



of five to ten years. If you think of it as an investment, then a five-year payback is a 20% annual return. A 10-year payback is a 10% return. And it is a tax-free return; you don't pay taxes on money not spent. Energy conservation is so profitable that it is worth doing regardless of its mitigation of air pollution and global warming [Muller, 2012].

However, if the prodigious growth rate of the Chinese economy continues, then even if they meet their conservation goals, their energy use will increase 6% per year. If they stick with coal, then their PM2.5 and greenhouse emissions will grow too. In 2013, China's economic growth slowed to between 7% and 8% per year. Even if that lower rate continues, slowing energy growth will not be enough by itself to stop the rapid rise of pollution. Energy conservation is an essential part of China's programme, perhaps the most important part, but it is far from sufficient.

1.3 Renewables

Two facts about China are often put forth to express optimism about renewables. One is that 20% of China's electric power already comes from renewables, and the other is that China's solar capability is growing rapidly: seven gigawatts (GW) capacity was added just last year. Thus China is a leader, setting an example that the rest of the world can follow.

We tend to think of renewables as environmentally benign, but according to the US Energy Information Administration (EIA), 86% of China's renewable energy in 2011 came from hydroelectric dams. The rest came from wind (9%), biomass (4%), with only 0.4% from solar.

Is more hydropower environmentally desirable? In China the recently completed Three Gorges Dam displaced 1.2 million people ("voluntarily", the government says), obliterated 1,350 villages,

140 towns, and 13 cities. China is already planning extensive new dams on the Mekong River, with disastrous ecological impacts expected, not only in China but also Burma, Laos, Thailand, Cambodia, and Vietnam.

In 2012, there were 76 GW of wind capacity in China, but because of variability, the average power delivered was 22 GW, that is, about a 29% capacity factor. That amounted to 1.5% of China's electricity generation. The intermittency can be tolerated when wind is a small portion of total power generation, but it becomes a major problem when used on a large scale. Energy storage is still expensive, and so large-scale wind is not likely to do more than supplement coal, hydro, and other more reliable alternatives.

Biomass is a renewable, good for global warming, but it too produces PM2.5. Other renewables (geothermal, tidal, wave) offer little hope of significant coal displacement in China [Muller2012].

Solar, at 0.4% of China's electricity, is far behind other renewables. The recent addition of 7 GW solar capacity is easily misinterpreted. Capacity refers to peak power, the power that can be delivered when the sky is clear and the sun is directly overhead. Average in night and day, and you lose half the output. Grazing light at dawn and dusk halves output again. Finally, experience in US and China indicates that cloudy weather halves output yet again; it will be worse in cloudy parts of the UK and Europe. This means that in 2012 China produced an *average* solar capacity under 1 GW. And that production rate may decrease now that Wuxi Suntech Power, the major Chinese producer, defaulted on a \$541 million bond and was placed into insolvency in March 2013.

Compare that 1 GW of new solar to the expansion of Chinese coal, which has added an average capacity of 50 GW per year over



the past several years, a gigawatt per week, enough added each year to power seven new New York cities. Solar is being left in the dust by coal.

Nuclear power is not a renewable, but like wind and solar, it produces essentially no PM2.5 or CO₂. China is currently planning 32 new nuclear plants. But these require high capital investment, and that makes them less attractive for rapid large-scale deployment in the developing world.

The developed world has the financial resources to subsidise solar and wind, at least for peak power purposes in their own countries. But developing countries are not wealthy enough to do that, and yet their expected energy growth is too big for the developed world to subsidise. The recent retreats from subsidising renewables in Spain and Germany demonstrate how fragile and fickle government support can be. There is a general rule which is especially true for developing economies: *If it isn't profitable, it isn't sustainable.*

1.4 Scrubbers

In principle, scrubbers in coal smokestacks can remove many of the pollutants, and they are widely but not universally used in the US and Europe. US regulation requires them eventually to be installed, but retrofitting and operating such scrubbers has often proven more expensive than simply shutting down the coal plants and switching to natural gas. A 2008 report from the China Energy Group at MIT illustrates the severity of the cost problem in the developing world. Even when scrubbers have been installed, local coal power plant operators in China consistently turn them off because of the expense of operation. [Steinfeld 2008].

1.5 Shale gas

Natural gas offers a practical and relatively quick way to stem the rise of PM2.5 air pollution. At the same time, as an alternative to coal, it offers an important opportunity to significantly slow the growth of CO₂ emissions.

Shale gas is natural gas, mostly methane, tightly trapped inside shale rock. *Conventional* natural gas is the small fraction that has slowly leaked out of the shale over millions of years and became concentrated in easily reached geologic pockets. But shale gas is the *source*, and as such is much more abundant than conventional gas. Its existence has been known for a long time, but most geologists thought its extraction was economically unfeasible, until recently. Over the past two decades, geologists discovered they can release it in vast quantities by using horizontal drilling (which can follow a deeply-buried thin shale bed for over a mile) and multi-stage *fracking* (hydraulic fracturing – pumping water into the rock at pressures of a thousand atmospheres). In the US, shale gas production has grown by a factor of 17 in the last 13 years. It now supplies 35% of US natural gas.

In the US, substitution of shale gas for coal power was driven in large part by the fact that old coal plants needed to be retrofitted with expensive scrubbers; it was often cheaper to decommission them and build a new combined cycle gas plants instead. The cleanliness shale gas delivers is intrinsic. Compared to coal, shale gas results in a 400-fold reduction of PM2.5, a 4,000-fold reduction in sulphur dioxide, a 70-fold reduction in nitrous oxides (NO_x), and more than a 30-fold reduction in mercury. [EIA 1999, EIA 2009]. As a result of this coal-to-gas transition, over the last 15 years, the electric power derived from coal in the US has dropped by 1/3, replaced by



shale gas power. This reduction, in turn, is responsible for much of the unanticipated drop in US greenhouse gas emissions during that same period. [Hausfather, 2013].

China became a net importer of natural gas in 2007, and by 2012 the imports grew to 29% of its gas consumption. [EIA 2013]. And yet it is believed that China has enormous reserves of shale gas, perhaps 50% larger than those of the US. [EIA 2011]. If that shale gas can be utilised, it offers China a wonderful opportunity to mitigate air pollution while still allowing energy growth.

And shale gas can help address the global warming issue too. When burned to produce energy, natural gas produces typically half the CO₂ of coal (depending on the grade).⁶ In addition, when the heat energy is used to produce electricity, natural gas can produce electricity with 50% higher efficiency than can coal, even when the coal is burned in the most efficient way, in a pulverised supercritical power station. The net result is that CO₂ produced per kilowatt-hour of electricity from gas is only one third to one half that of coal. And, the capital cost of such a gas-fired plant is much less than that of a similarly sized coal-fired plant.

⁶ The CO₂ produced in burning coal depends on the grade, that is, on how much of the coal is carbon and how much is complex hydrocarbons. Natural gas consists primarily of methane, CH₄, and when methane is burned more than half of the energy comes from the hydrogen which burns into harmless H₂O – water. (Although H₂O is a greenhouse gas, the amount produced is overwhelmed by natural H₂O.) In contrast, when carbon burns, all the energy comes from creating carbon dioxide.

2. IS SHALE GAS ENVIRONMENTALLY BENIGN?

Despite the immense potential environmental value of shale gas, the list of potential environmental negatives is also significant. We need to sort out which threats are real and which ones are based on misunderstanding; the rapid development of shale gas has been matched by an equally rapid growth of misinformation about the potential dangers. The following paragraphs go through these one by one and explain why, although all of them must be addressed, none of them are showstoppers.

2.1 Shale gas production depletes limited supplies of fresh water

A large amount of fresh water is normally used in US fracking operations, typically about a 1 gallon of water for each million BTUs of shale gas produced. (1 million BTUs of energy requires 1,000 cubic feet of gas, or about 30 cubic metres.) For a single well, that can amount to two to five million gallons of water, enough to fill several Olympic-sized swimming pools.

Yet viable alternatives exist. Virtually all of the shale gas regions have abundant resources of deep brines – salty water – well below the shallow depths where fresh water is found. This is not accidental; the same sedimentary geology that trapped shale gas provides barriers that trap rainfall. Potable water is typically found from the surface to a depth of about 100 metres; below that, the water is too salty for any commercial purpose – other than fracking. At 300 to 500 metres, still relatively shallow compared to the shale layers, abundant saline water can be extracted. Moreover, most of the water that flows back from the well can be treated and reused.

A gas and oil company named Apache has been on the forefront of reducing fresh water



use. They first did this at the Horn River formation in Canada where brines proved not only practical but cheaper than use of fresh water. Then they eliminated fresh water use in fracking operations in Irion County, Texas; this year they have used only recycled produced water from fracking operations and oil fields together with brackish water obtained from the Santa Rosa formation at 800 to 900 feet depth [Reuters 2013]. In all of Apache’s hydraulic fracturing operations in the Permian Basin, more than half the water is sourced from non-fresh water sources, about 900 wells.

In the US, many farmers and ranchers prefer that fresh water be used since they can make additional income by selling it. Saline water requires different additives to address viscosity, corrosion, scaling, and bacteria, but the required chemicals are not substantially more expensive than those for fresh water. In his book on shale gas, Vikram Rao, the former CTO at Halliburton, recommends that brines completely replace fresh water for fracking operations. [Rao 2012].

2.2 *Flaming faucets! Fracking pollutes ground water*

The famous “flaming faucets” shown in the movie *Gasland* (and on *YouTube*) were not due to fracking, despite what that movie suggests. The accounts were investigated by state environmental agencies, and in every case traced to methane-saturated ground water produced by shallow bacteria. Indeed, the movie *FrackNation* includes a clip in which the *Gasland* producer, writer, and star Josh Fox admits that flaming faucets were common long before fracking was ever tried.

Nonetheless, there have been suggestive correlations between local water contamination and well locations. In cases in which contamination has been documented as

coming from the wells, it has not come from the fracking (which typically takes place at depths of two to four kilometres), but from improper wastewater disposal or from leaking shallow casings in old drill holes. Properly designed drilling, fracking, and completion regulations, coupled with effective monitoring, can ensure that shale gas production has small or zero detrimental effect on the environment.

This leakage issue is not particularly linked to shale gas wells; the same dangers occur for conventional gas and oil wells. The reason for legitimate concern is that with shale gas, the number of wells in a region can be large, so the risk of contamination is higher.

The solution lies in regulating shale at least as stringently as conventional oil and gas. If ground water contamination occurs, fine the perpetrator enough to make it highly unprofitable. Monitoring can be done both through government and community inspections; the threat of stiff fines will drive all operations to use industry best practice.

2.3 *Fugitive methane – a powerful greenhouse gas*

Methane, the dominant component in natural gas, is a much more powerful greenhouse gas than carbon dioxide. The initial scare of the danger of “fugitive” (leaked) methane came from mistaken use of the fact that its “greenhouse potential” is 83 times that of CO₂, kilogram per kilogram.⁸ That makes it seem that even 1% leakage would undo its advantage over coal. But if you take into account the fact that methane is rapidly

⁸ This value and the subsequent values are the those used in the latest report of the International Panel on Climate Change. The value 83 is for a 20 year time frame.



destroyed in the atmosphere (with a much shorter lifetime than CO₂), then the potency is reduced to about 34 times. And the fact that methane weighs less (molecule per molecule) than CO₂ means that leaked methane is only 12 times more potent for the same energy produced.⁹ Because natural gas power plants are more efficient than those of coal, even with leakage rate of up to 17% (far higher than even the most pessimistic estimates), natural gas still provides a greenhouse gas improvement over coal for the same electricity produced. [Muller, 2013; Cathles et al. 2011].

How much methane leaks in actual practice? Initial analysis by Howarth [2011] suggested that it might be as high as 8%. That is well below the coal equivalent percentages, but it certainly makes natural gas less attractive from a global warming perspective. However, Howarth's original work made assumptions for parameters that were not directly measured, and many of these were "conservative estimates" – which means prejudicial against natural gas. It took two years, but finally a calibrated study of 190 wells showed that the leakage from shale gas production averaged about 0.4%. [Allen, 2013; Hausfather & Muller 2013]. If we add in leakage in pipelines and storage, the maximum is still only 1.4%, and the greenhouse advantage over coal is large. A recent report by Miller et al. [2013] suggests the rate could be twice that; but even if this new report is more accurate than the EPA value, fugitive methane is still a vast greenhouse gas improvement compared to coal.

⁹ A kilogram of methane produces 2.75 kg of CO₂ when burned. That means that to calculate what happens if methane leaks, we have to compare the potency of 1 kg of methane to the potency of the 2.75 kg of CO₂ that otherwise would have been put into the atmosphere. That reduces the ratio from 30 to 30/2.75=11.

In retrospect, that low number of 1.4% for leakage is not surprising. Any producer who leaks 8% of his gas (the Howarth number) is throwing away 8% of the revenue, and a much larger percentage of the profit.

2.4 Poisoning the ground with fracking fluid

A few years ago, one of the competitive secrets to fracking was in the choice of chemical additives to the fracking water. Environmentalists worried about the potential harm that such additives could do to the underground rocks and if accidentally released to the surface and mixed with groundwater.

To alleviate concerns, over 55,000 wells in the US are now disclosing the fluids they use; the compositions are published online at fracfocus.org. Additives include friction reducers, oxygen scavengers, corrosion and scale inhibitors, and biocides. Some companies have gone further: executives of the firms have drunk fracking fluid at press conferences to demonstrate how harmless it is.

The concern of harming the ground needs to be put in perspective. The shale is already full of nasty chemicals, including the very hydrocarbons the drillers are trying to obtain (gasoline, kerosene), carcinogenic compounds known as PAHs, as well as arsenic and heavy metals including mercury and lead.

Nobody drinks the flowback water. It is bad stuff, due to what comes out of the ground rather than what was pumped down, and it must be handled appropriately. About 30% of the water injected into the ground comes back, a combination of fracking fluid and produced water from the ground. At least 90% of this water can be recycled and put back into future wells. That leaves 3% or less to be disposed of. Regulation should require that residual waste water not be released into the surface environment, but be trucked away; if liquid,



then buried in disposal wells. Such practices are already in use in the US as well as in Sichuan Province of China. Southwestern Energy, one of the largest US shale gas companies, states on its website that it recycles 100% of its waste water.

2.5 Earthquakes induced by fracking

Injecting water into the ground can induce earthquakes. In 2011, a magnitude 5.6 earthquake triggered by water injection in Oklahoma destroyed 14 homes and injured two people. A good review was recently published in *Science*. [Ellsworth, 2013].

No large earthquakes have been associated with fracking but rather with “disposal wells”. There are about 30,000 such wells in the US, most used for conventional oil and gas wastewater burial. Of these, most show no injection-induced seismicity; the ones that do are the ones that dispose of very large volumes or dispose of water directly into faults.

Fracking does not inject similarly huge amounts of water, and for that reason has not been the cause of large earthquakes. Typical earthquakes generated directly by fracking are magnitude one to two, too small for a human to feel although detectable by seismometers. The energy factor for a one-magnitude difference is typically 30, so a magnitude two fracking earthquake is smaller than a magnitude five disposal earthquake by $30 \times 30 \times 30 = 27,000$ times, the same energy ratio as for a match compared to ten pounds of TNT.

We can prevent disposal earthquakes by recycling water to minimise injection volumes and by taking care in the choice of disposal well locations.

2.6 Shale gas is a fossil fuel

True. And as such, it contains substantial amounts of carbon, and eventually we need to stop injecting CO₂ into the atmosphere. But the increases in atmospheric CO₂ that we are observing is coming largely from expanding coal use in developing countries. If their increased energy needs can be met from natural gas instead of coal, we can slow global warming by a factor of two to three. That means that instead of having 30 to 50 years before we reach twice the preindustrial carbon dioxide levels in the atmosphere, we might have 60 to 100 years or more. In that time, the cost of solar, wind, energy storage and nuclear could drop to a level at which they can be afforded by the developing world; we may even have fusion energy, or something we have yet to dream of. In fact, with the hoped for economic growth, there may be little of developing world that is undeveloped in 50 years, and the whole world could afford to use zero carbon energy sources even if the cost of solar and wind were to remain high.

2.7 Cheap natural gas will slow the development of solar and wind

If natural gas is available, then it reduces the pressure to develop inexpensive renewable technologies. For some environmentalists, this is their most serious concern. With natural gas providing a cheap alternative, the pressure to produce cheap solar and wind is reduced.

Yet cheap natural gas can also make it easier for solar and wind energy to further penetrate electricity markets by providing the rapid back-up that those intermittent sources require. In addition, natural gas is the only base load fuel that can be downscaled into microgrids and distributed generation networks to provide that same flexibility and reliability for solar energy on rooftops and in



buildings, expanding the market for urban solar systems. Particularly for areas focusing on distributed generation, natural gas can be an enabler of wind and solar.

And there is a real danger that if shale gas is not developed, then the main competition to solar and wind will be cheap coal. That is difficult to avoid even in the developed world. Because of Fukushima, Japan is shutting down many of its nuclear plants. As a result it expects to expand its coal use by 23% in 2014. Ironically, one of the larger coal plants it will open is in Fukushima. In Germany, also shutting down nuclear, the greatest energy expansion is coming in coal. In 2012, coal accounted for 45% of Germany's electric power, and in 2013 it has already grown to 50%. Solar in Germany is at 14%. Moreover, if it is to grow substantially and supply more than just peak power needs, solar needs good energy storage systems. Letting a perfect renewable future be the enemy of a good short- to medium-term transition from coal to gas would probably result in a world with more overall greenhouse gas emissions and deaths from air pollution.

2.8 Shale Gas Development Industrialises Rural Lands

The large-scale and long-term structures used to deliver solar and wind power are much more likely to interfere with the local environment. Many people are already complaining about "industrializing the landscape" with wind turbines. Wind farms off the coast of Cape Cod in the US have been opposed by environmentalists who considered them unsightly and worry that they interfere with sea life.

In contrast, the drilling derrick for a natural gas well is normally portable, and is in place for only one to three months. Then it is replaced with a much smaller work-over rig for a few weeks, and then replaced with a small

"Christmas tree" of pipes, valves, and gas/liquid separator in a fenced platform about 30 metres square. In China, half of the concrete drilling platform is removed when production starts, and recovered land is restored to agriculture and homes. A single well can extract gas from a mile of shale, and multiple wells (different underground locations and depths) are now being drilled from a single platform both in the US and in China, and that reduces the number of platforms needed in a given area.

A serious but temporary local impact can come from the heavy truck traffic needed to bring in pumps and materials, particularly in areas where roads are poor. In China, local communities benefit from the road improvements that the gas companies make to bring in materials and equipment, and so they are tolerant of the temporary disruptions. Indeed, agreements are negotiated between the gas companies and the local communities.

3. SHALE GAS CAN BE THE SOLUTION

The argument up to now can be summarised as follows: shale gas is urgently needed to address the greatest human-caused environmental disaster of our time, rising levels of air pollution, currently causing over three million deaths per year worldwide. At the same time it can dramatically slow the rate of global warming, and, as a bridging fuel, provide the time we need to develop truly sustainable non-carbon energy sources. The main dangers of shale gas can all be addressed by regulation to ensure that development is done using industry best practice, with heavy fines for malefactors.

But why is shale gas needed in the developed world – a world that can afford to pay the premium for solar and wind? The fundamental reason is speed. Europe can develop shale gas far more rapidly than it can move to solar and



wind, largely because of the low cost, the absence of an intermittency problem, and good existing gas infrastructure. To the extent that shale gas replaces coal, it will save hundreds of thousands of deaths each year, lives that will be lost if we choose the slower and more expensive transition to renewables. In addition, shale gas can enable Europe to quickly follow the US lead to lowering greenhouse gases. Coal use is still widespread in Europe. In 2009, it produced 28% of the electric power in the UK, 56% in the Czech Republic, and 42% (more recently up to 50%) in Germany.

Shale development in the US was facilitated by the fact that the US is blessed with some geologic regions in which the underground formations were most amenable to the new technology, not only in Texas but also in Pennsylvania and North Dakota. Shale layers tended to be at modest depths and unbroken by faults and other structures that complicate the shale formations in China and Europe.

It is not just the presence of shale gas that determines economic viability. Drilling a shale gas well is a complex operation. Each well typically costs between US\$3 million to US\$6 million; initial exploration wells can be twice as expensive. Even if they are productive, the bottom line is whether they produce enough to yield a profit. China and Europe have the “advantage” (for development) that they are importing natural gas at a high price, which makes locally produced shale gas competitive. (In the US, facilities designed to import liquefied natural gas are now being converted to export facilities.) China and Europe need inexpensive gas if they are to substitute clean shale gas energy for coal.

In fact, a number of shale formations in the US were economic failures. Many people have heard of the great successes: the Barnett, the

Marcellus, the Bakken. But virtually nobody outside the shale gas community knows of the Caney in Oklahoma, the Conesauga in Alabama, the Mancos in New Mexico, the Mowry in Wyoming, or the Kreyenhagen in California. These were failed efforts, sites that were drilled but have not yet led to development.

Chinese shale gas development has been proceeding slowly, in part because their geology is complex, and in part because of their inexperience with free enterprise. China’s first attempts at introducing competition, based on open bidding for shale gas leases, have been very disappointing; many of the winning companies do not have the technical or financial capability for the rapid and innovative development that was needed. China has found it difficult to decontrol prices, a key step towards making shale gas competitive. Until China masters the free-enterprise system (and it has a long way to go), rapid technological advances are far more easily achieved in the West through competition and iteration, and then exported to China.

Shale gas mining in the West is undergoing rapid technological development that is bringing down the cost. We already mentioned the use of brines in place of fresh water. Perhaps equally important is the improvement of extraction efficiency. Industry experts believe that the cubic metres of gas recovered from a given well can be doubled in the near future by better design of the fracking stages to match geologic formation characteristics. And they also believe that number could double again in the next decade. Soon that will mean four times the production for only a minor increase in cost. Such an advance is expected to turn currently difficult fields into major producers, to open up fields in China, Europe, and the US that are currently unprofitable.



The main impediment to the advance of technology in the US is the low price obtained for natural gas (under US\$3.50 per million BTU, at the time of writing). As a result, few new gas wells are being drilled; emphasis is on wells that yield more valuable heavy hydrocarbons and oil. The price is still low in the US because of limited demand increase and the large number of shale gas wells already drilled and producing – over 100,000. After an initial surge of production, shale gas wells continue to produce at a low level for decades. But demand is rising as more US coal plants switch to natural gas and as the petrochemical industry moves back to the US (from places like Qatar) because of the newly low price of feedstock. We can expect the price to rise a bit (to US\$4.50? US\$5.00?) and that will encourage additional innovation.

As mentioned above, Europe shares the ironic advantage of China – the high price it is accustomed to pay for imported natural gas, typically US\$10 per million BTU (compared to the US\$3.50 in the US). At those prices, the cost of shale drilling and completion can be much higher and still be in the profitable range. That means that Europe can be the testing and proving ground where innovative technology can be tried and perfected while still profitable.

It is not just a matter of low cost and clean air, but an issue of energy security. Europe is far more dependent on Russian gas than it likes, and the Russian shutdown of the Ukrainian pipeline in 2009 clearly made Europeans recognise their vulnerability.

4. CONCLUSION

The air pollution crisis in China and in the rest of the developing world is only beginning. We observed on recent trips to China that many people mistakenly believe any level of pollution below an AQI of 250 is just “haze” and rarely bother to put on masks. When the PM2.5 levels rise above this, the government issues radio alerts and most residents mask up. The average AQI in Beijing¹⁰ this year has been 159, in the *unhealthy* range; the US mean is 45. As the pollution grows it will soon be a mask day every day. Foreign businessmen who recently flocked to China as the land of opportunity now spend as much of their time as possible out of the country. Air pollution makes it an unattractive place to raise a family. Chinese citizens who have the capability of living abroad are doing so. The Chinese government is deeply concerned about this brain drain. And their worst fear is social disharmony, a force that could disrupt their very rule.

We must help the world switch from coal to natural gas. This is not just a public health issue but a humanitarian one. We need to advance shale gas technology as rapidly as possible and to share it freely. We are in the midst of the greatest environmental catastrophe of modern times, but we are also in the midst of an energy revolution, comparable in significance to the 1849 US gold rush. Shale gas, with its near-total reduction of PM2.5 pollution provides a solution to the pollution. It can be a clean technology, and even though it will not halt global warming, only energy conservation offers a more affordable way to slow it. Environmentalists should recognise the shale gas revolution as beneficial to society and lend their full support to helping it advance.

¹⁰ The historic Beijing hourly PM2.5 record since 24 January 2013 has been recorded by Andy Young at <http://young-0.com/airquality/>



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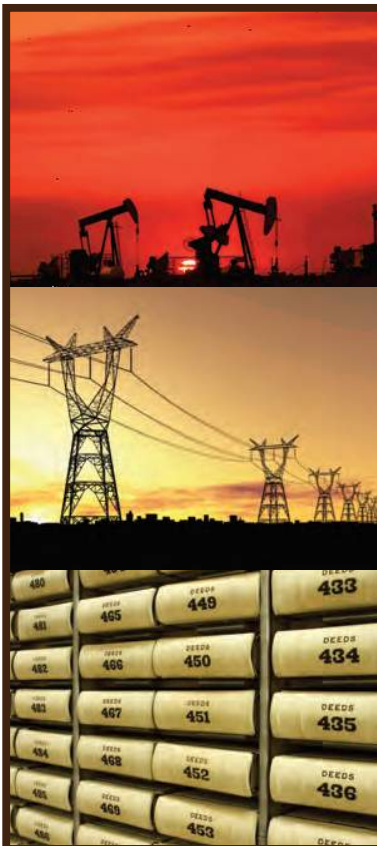
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Most recently, Jennifer was a paralegal and underwriting assistant to the Senior State Underwriter for First American Title Insurance Company, focusing on high liability land acquisition and development transactions. Her experience includes real estate and oil & gas title examinations, legal research and case analysis in the oil &

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As in the past, this year's Institute should prove to be a superb learning opportunity for all land professionals, attorneys, and other professionals who work in the oil and gas industry.

Registration Fees: Members of the BAPL or LAAPL is \$250 (\$300 if received after September 15th); non-members \$300 (\$350 if received after September 15th); and true "Independents**" a reduced rate of \$200 (\$300 if received after September 15th). These Fees include Institute papers, the Wednesday and Thursday evening receptions, Thursday lunch and a plated breakfast each morning.

**In this context, an Independent Landman is defined as any individual who receives compensation for their services, either on a per diem or hourly basis (1099), and who does not routinely employ other Landmen to work on a contract basis for their benefit. In other words, Brokers and Independents who have assistants do not qualify as an Independent Landman for the discounted registration fee.

The AAPL will award RL/RLP Continuing Education Credits or CPL Recertification Credits, for participation in this Institute. AAPL Attendance Affidavits will be available at this event (see confirmed Speaker Line-up on next page). Day Carter Murphy will be coordinating CLE credits for the legal profession.

Registrants should make overnight accommodations directly with *Flamingo Las Vegas*, by calling 888.373.9855 (Group Name: West Coast Landmens Institute Annual Meeting) and reference the code SFWCL4 or online at <https://resweb.passkey.com/go/SFWCL4> for the West Coast Landmen's Institute (WCLI).

We have a limited number of rooms secured at an all inclusive Group rate of \$92.96 per night at *Flamingo Las Vegas*, but you must book your reservation by

Monday, September 15, 2014 to take advantage of this reduced rate, and room availability is not guaranteed after this date!

Independents: Share a room with another and save!

Individuals will be responsible for their own reservations. You have 72-hours prior to your arrival date in which to cancel your reservation. All no shows and cancellations within this period will be charged to the individual. We have guaranteed a minimum number of rooms each night, so we ask you to consider using our block of rooms at *Flamingo Las Vegas* if you plan to rent your lodging in the area for this event. Early arrival and late departures may be requested at the applicable Group rate at the time reservations are made. The applicable Group rate will be extended 3 days prior and 3 days following our event, based on availability. These rates will not be available past the September 15th deadline.

We have reserved a limited number of tee times (with an anticipated 12:00 pm Shotgun Start) for golf on Wednesday at the Rio Secco Golf Course (prior to the WCLI) for our participants (\$225 per player and includes a box lunch and drinks from Noon - 2 pm). Please remember to complete the attached Sponsor/Registration form if you wish to play golf or attend the WCLI.

This year we will be holding a raffle on the last day of the Conference in appreciation of our Industry's growth. We are requesting raffle items for donation, so whether your Company is Fortune 500 or a small Independent, this is a great opportunity to contribute to show your appreciation and promote your business.

If interested in donating, what we need: Donations of Golf, Gift Baskets, Gift Certificates or anything else you think is of interest.

Each Attendee will receive two raffle tickets upon arrival with the opportunity to purchase additional tickets to increase their odds throughout the week. For further information please contact R. Michael McPhetridge @ rm@rmmenergypartnersllc.com or Yvonne Hicks @ yvonne@mavpetinc.com.



32nd ANNUAL WCLI REGISTRATION FORM

****Please Register Early As There Is Limited Space****

Complete name and company information requested below. If you plan to play golf on Wednesday afternoon, please check the appropriate box and make your payment along with your registration fees. Mail this section with your check payable to: BAPL, Attn. Mary Costa, PO Box 10525, Bakersfield, CA 93389.

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\$300 paid after 9/15

\$350 paid after 9/15

\$175 per Spouse/Significant Other, or non-participating guest fee (includes both receptions, breakfasts and luncheon). One price for participating either one or both days. Number of additional guests _____

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Wednesday Reception at Margaritaville , 10/22

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Thursday Breakfast, 10/23

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Payment for golf must be received in advance! Please include payment with your registration.

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Please note: The WCLI retains cancellation rights. In the unlikely event of cancellation, the WCLI Committee will make every attempt to notify pre-registrants. Refund requests within two(2) weeks of the Institute will be assessed a \$50 Administrative Fee.



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- Attendee registration: <https://squareup.com/market/bakersfield-association-of-professional-landmen/west-coast-landmen-s-institute-registration>
- Golf registration: <https://squareup.com/market/bakersfield-association-of-professional-landmen/west-coast-landmen-s-institute-golf-tournament>
- Sponsorship: <https://squareup.com/market/bakersfield-association-of-professional-landmen/west-coast-landmen-s-institute-sponsorship-opportunities>

For online *Sponsorships, golf and registration*, please use **Google Chrome** or **Safari**, there are problems if you use Internet Explorer

Please list the participants attending under your Sponsorship

Note: Complimentary Registrants must indicate as such on their registration form.