23" ANNUAL TEXAS ENVIRONMENTAL SUPERCONFERENCE



TO: Attendees

FROM: Planning Committee

DATE: August 4, 2011

On behalf of the Environmental and Natural Resources Law Section of the State Bar of Texas, the Air and Waste Management Association-Southwest Section, the Water Environment Association of Texas, the Texas Association of Environmental Professionals, the Auditing Roundtable, and the American Bar Association Section of Environment, Energy & Resources, welcome to the 23rd Annual Texas Environmental Superconference, entitled --"Oh, the Places We'll Go!" As Dr. Seuss so aptly noted:

Congratulations! Today is your day. You're off to Great Places! You're off and away!

As always, there are evaluation forms for the program. We appreciate your taking the time to complete them. The organizers of this program take these forms into account in planning next year's conference. In addition, if you have an interest in having a particular topic presented or in speaking on a particular topic, the evaluation form is the appropriate place to provide that information. We also would appreciate suggestions for themes for next year's conference, which is scheduled for August 2-3, 2012. Please mark your calendars.

This year, our Wednesday evening program entitled, "Wacky Wednesday," focused on air quality. If you have suggestions for next year's Wednesday evening program, please let us know.

Please provide any comments or suggestions to any member of the Planning Committee at the conference, or, thereafter, to Jeff Civins at (512) 867-8477 or jeff.civins@haynesboone.com.

Thanks!

23RD ANNUAL TEXAS ENVIRONMENTAL SUPERCONFERENCE "Oh, the Places We'll Go"

Thursday-Friday, August 4-5, 2011

Thursday, August 4, 2011

8:00 - 8:40	REGISTRATION/CONTINENTAL BREAKFAST – "Green Eggs and Ham"		
8:40 - 9:00	OPENING REMARKS – "Great Day for Up!"		
	Jeff Civins, Texas Environmental Superconference		
	Peter Gregg, Environmental and Natural Resources Law Section,		
	State Bar of Texas		
	Cindy Smiley, Air & Waste Management Association, Southwest		
	Section		
	Brad Castleberry, Water Environment Association of Texas		
	Ed Fiesinger, Texas Association of Environmental Professionals		
	Michael Byington, Auditing Roundtable		
	Danny Worrell, ABA Section of Environment, Energy &		
	Resources		



	Moderator:	Cindy Smiley, Kelly Hart & Hallman LLP
TAB 1	9:00 - 9:45	LEGISLATIVE UPDATE – "Hooray for Diffendoofer Day" The Honorable Glenn Hegar, Texas Senate – Chairman, Sunset Advisory Commission Mike Nasi, Jackson & Walker
TAB 2	9:45 - 10:15	GROUNDWATER REGULATION – "I Can Lick 30 Tigers Today" Carolyn Ahrens, Booth, Ahrens & Werkenthin

10:15 - 10:30 Break

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[First Skit]

	Moderator:	John Jacobi, U.S. Department of Transportation
TAB 3	10:30 – 11:30	WATER QUALITY – "One Fish, Two Fish, Red Fish, Blue Fish" Molly Cagle, Vinson & Elkins LLP Lauren Kalisek, Lloyd Gosselink Rochelle & Townsend PC Jim Murphy, Guadalupe-Blanco River Authority
TAB 4	11:30 - 12:00	VAPOR INTRUSION – "In A People House" Susan Litherland, Weston Solutions, Inc.

[Second Skit]

12:00 -1:15 LUNCH – "Scrambled Eggs Super!"



[Turn in "Match the Quote to the Book" Quiz] [Third Skit]

	Me	oderator:	Cindy Bishop, Gardere Wynne Sewell, LLP
TAB 5	1:15 - 2:15	Air Qua (MACT/N	lity – " <i>NOX n' SOX"</i> VESHAP/NAAQS/MSS/ETC.)
		Terry Sa Jeff Sait Rod Joh	llem, Staff Attorney, TCEQ as, Saitas and Seales nson, Brown McCarroll, L.L.P.
TAB 6	2:15 - 3:30	COOPERA Wendy V Bill Cob Texas At John Cr (formerly Natural F	ATIVE FEDERALISM – Did I Ever Tell You How Lucky You Are?" Wagner, University of Texas School of Law – Moderator b, Deputy Attorney General for Civil Litigation, Office of torney General uden, President, Environmental Law Institute 7 Deputy Assistant Attorney General, Environmental and Resources Division, U.S. Department of Justice)
	3:30 - 3:45	Break	
			[Fourth Skit]
TAB 7	3:45 - 4:45	Environ " Melinda Mark M Dr. Ken	MENTAL CONSEQUENCES OF ENERGY CHOICES – Horton Hears a Who" Taylor, University of Texas School of Law – Moderator acLeod, Environmental Defense Fund neth Green, American Enterprise Institute
TAB 8	4:45 - 5:15	NUCLEAR Rick Jac	R POWER " <i>The Butter Battle Book</i> " obi , Jacobi Consulting
	[Annou	nce "Mate	ch the Quote to the Book" Winners] [Fifth Skit]
	5:15 - 6:00	RECEPTIC Receptio	DN – "Happy Birthday to You!" n Sponsored by Weston Solutions, Inc.

Friday, August 5, 2011

- 8:00 8:30 BREAKFAST "Horton Hatches the Egg"
- 8:30 8:35 OPENING REMARKS "I am NOT Going to Get Up Today"



[Sixth Skit]

Mo	derator: Debra	Tsuchiyama Baker, Connelly Baker Wotring, LLP
TAB 9	8:35 - 9:05	GREENHOUSE GAS REGULATORY UPDATE – "If I Ran the Circus" Rich Alonso, Bracewell & Giuliani LLP
TAB 10	9:05 - 9:35	VIEW FROM LDEQ – " <i>The King's Stilts</i> " (LDEQ Overview and Involvement in Macondo Spill) Peggy Hatch , Secretary, Louisiana Department of Environmental Quality
TAB 11	9:35 - 10:05	VIEW FROM TCEQ – " <i>The 500 Hats of Bartholomew Cubbins</i> " Bryan Shaw , Chairman, Texas Commission on Environmental Quality
	10:05 - 10:20	Break

DREAK



[Seventh Skit]

Mo	derator: Pam (Giblin, Baker Botts L.L.P.	
TAB 12	10:20 – 12:00	 10:20 – 12:00 OIL & GAS REGULATION, ENFORCEMENT, AND LITIGATION – "There's a Wocket in My Pocket" Michael Mazzone, Haynes and Boone, LLP Steve Ravel, Kelly Hart & Hallman LLP Patrick Rankin, EPA Region 6 David Cooney, Texas Railroad Commission Jim Bradbury, James D. Bradbury, PLLC 	
		[Eighth Skit] [Turn in Dr. Seuss Trivia Quiz] [Turn in Skit Quiz]	
	12:00 - 1:15	LUNCH—"On Beyond Zebra"	



[Announce Dr. Seuss Trivia Quiz Winners]

	1:00 - 1:15	Environmental and Natural Resources Law Section Meeting
Mo	derator: Peter	Gregg, Fritz, Byrne, Head & Harrison, PLLC
TAB 13	1:15 – 1:45	VIEW FROM EPA HEADQUARTERS – "Hop on Pop" Avi Garbow, Deputy General Counsel, EPA DC
TAB 14	1:45 – 2:15	VIEW FROM EPA REGION 6 – "Bartholomew and the Oobleck" Alfredo Armendariz, Regional Administrator, EPA Region 6
TAB 15	2:15 - 2:45	PRODUCT STEWARDSHIP – " <i>The Lorax</i> " Lydia Gonzalez Gromatzky, Beveridge & Diamond, PC
TAB 16	2:45 - 3:45	 ENVIRONMENTAL LITIGATION – ETHICAL ISSUES – <i>"The Cat in the Hat"</i> Heather Corken, Fulbright & Jaworski, L.L.P. Tobias Smith, Strasburger & Price, LLP James Payne, Guida, Slavich & Flores, P.C.
		[Announce Skit Quiz Winners]
	3:45	ADJOURN – "Marvin K. Mooney Will You Please Go Now!" ICE CREAM SUNDAES – "Mr. Brown Can Moo! Can You?"
	COMMEN	Γ CARD DRAWING – You must be present to win]

CYNTHIA C. SMILEY Partner KELLY HART & HALLMAN LLP 301 Congress Avenue, Suite 2000 Austin, Texas 78701 (512) 495-6441 cindy.smiley@khh.com



Professional Work:

A major part of Cindy Smiley's practice is devoted to counseling clients on federal, state and local environmental and administrative laws. She represents clients before the Texas Commission on Environmental Quality, the U.S. Environmental Protection Agency, groundwater conservation districts and other state, federal and local agencies on matters involving waste, surface water, groundwater, water quality, and other regulatory issues.

Education:

J.D., The University of Texas School of Law, 1981

B.A. (with highest honors), Plan II (liberal arts honors program), The University of Texas at Austin, 1978

Professional Experience:

Kelly Hart & Hallman LLP, Austin, Texas, May 2004 to present Baker Botts L.L.P., Austin, Texas, October 1994 to April 2004 Jones, Day, Reavis & Pogue, Austin, Texas, 1988 to September 1994 Texas Water Commission/Texas Department of Water Resources, Austin, Texas, 1983 to 1988 Exxon Company, U.S.A., Houston, Texas, 1981 to 1983

Professional Organizations:

Chair-Elect, Executive Committee, Environmental and Natural Resources Law Section, State Bar of Texas
Director, Southwest Section of Air & Waste Management Association
General Conference Vice Chair, 2012 Annual Conference & Exhibition (San Antonio), Air & Waste Management Association
Austin Bar Association In addition to his other appointments, Senator Hegar is a member of the Environmental Flows Advisory Group and a member of the Legislature's Rural Caucus and the Legislative Sportsman's.

Senator Hegar is a true conservative, who fights for our interest and strongly defends the values of faith, family and freedom. In a few short years, he has reduced government inefficiencies, saved taxpayer dollars, and provided common sense solutions to problems facing everyday Texans.

In 2009, Glenn was recognized for his strong stand on 2nd Amendment rights by being awarded the Doc Brown Legislator of the Year Award for 2009 from the Texas State Rifle Association and Texans for Lawsuit Reform recognized him with the Civil Justice Leadership Award for his work on ensuring Texas retains a world class justice system. In recognition of his pro-business voting record, the Texas Association of Business named Glenn as a "Champion for Free Enterprise", the Texas Mining and Reclamation Association named him Legislator of the Year and the Texas Municipal Police Association awarded him the Legislative Excellence Award. In prior sessions, he was recognized as Best Legislator and the Rookie of the Year for the 80th Session by Capitol Inside, received the Legislative Excellence Award from the Texas Municipal Police Association, Stars for Rural Texas from the Texas Farm Bureau, and the Perfectly Pro-Life Award from Texas Right to Life.

Honors and Awards:

- Doc Brown Legislator of the Year Award for 2009 from Texas State Rifle Association
- Civil Justice Leadership Award from Texans for Lawsuit Reform
- Best Legislator and Rookie of the Year, from Capitol Inside;
- Badge of Honor, from the Texas Municipal Police Association;
- 2008 Distinguished Young Alumnus Award from St. Mary's University School of Law;
- Legislator of the Year, from the Texas Grain and Feed Association;
- Smart on Crime Award, from Texas Criminal Justice Coalition;
- Champion of Free Enterprise Award by the Texas Association of Business;
- Stars for Rural Texas Recognition, from Texas Farm Bureau;
- Katy Citizen of the Year, from Katy Chamber of Commerce;
- Legislative Excellence Award, from the Texas Municipal Police Assoc;
- Legislator of the Year, from the Justices of the Peace and Constable's Association of Texas;
- Cattleman's Council Award, from the Independent Cattleman's Association of Texas;
- Perfectly Pro-Life Award, from the Texas Right to Life.

Legislative Experience:

•Member of the Texas House of Representatives, 2003-2007

•Member of the Texas Senate, 80th Legislature, 2007-present •Current Committee Membership:

- Texas Legislative Sportsman's Caucus, Chairman
- Sunset Advisory Commission, Vice Chairman
- Committee on Government Organization, Vice Chairman
- Committee on Natural Resources
- Committee on Nominations
- Committee on Criminal Justice
- Environmental Flows Advisory Group
- Texas Legislative Sportsman's Caucus, Chairman
- Rural Caucus

• National Conference of State Legislature's Committee on Agriculture, Environment, and Energy





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Mike Nasi is a partner with the Environmental and Legislative Affairs Practice Group in the Austin office of Jackson Walker L.L.P. where he manages the firm's air quality and electric generation practice areas. As part of the firm's Environmental and Energy practice groups, Mike secures environmental permits for and is active in state and federal policy development on behalf of corporations, governmental entities, and cooperatives in the electric power generation, mining, oil & gas, steel manufacturing, and recycling industries. Mike has been practicing before state and federal environmental and energy agencies and the Texas Legislature for over 17 years in Austin.

Mr. Nasi was recognized in 2010 by *Environmental Law 360* as one of the "Top 10 Environmental Attorneys in America Under 40" and has been honored in *Who's Who – Texas* for Environmental Law, in *The Best Lawyers in America* under Environmental Law, as a "Rising Star" by *Texas Monthly Magazine*, and as an "Up and Coming" leader by *Chambers U.S.A.* in the area of Environmental Law.

Mike serves as Secretary of the State Bar of Texas Environmental and Natural Resources Law Section and Chairs the Austin Chamber of Commerce State Issues Committee. He authors chapters for the Texas Environmental Law Handbook in West's Texas Practice Series, is a guest lecturer at the University of Texas School of Law and is frequently an invited speaker at seminars and conferences related to his areas of specialty in Texas and across the U.S.

Mike donates his time and legal services to the Salvation Army, where he Co-Chairs the Development Committee for the Austin area Command, as well as the Austin Clean Cities Program and the Sustainable Biodiesel Alliance. Mike is also an active member of the Tarrytown United Methodist Church. He is married to his wife of 18 years (Thresa) and they have 3 children (Ella, Anna, and Wilson).

Update on the 82nd Legislative Session: *The Butter Battle*

By: Michael J. Nasi and Deidra Garcia, Jackson Walker L.L.P.

Introduction: How Do You Butter Your Bread?

On the last day of summer, ten hours before Fall...my grandfather took me out to the wall. For a while he stood silent. Then finally he said, with a very sad shake of his very old head, "As you know, on this side of the Wall we are Yooks. On the far other side of this Wall live the Zooks." Then my grandfather said, "It's high time that you knew of the terribly horrible thing that Zooks do. In every Zook house and in every Zook town every Zook eats his bread with the butter side down!" "But we Yooks, as you know, when we breakfast or sup, spread our bread," Grandpa said, "with the butter side up."

While Dr. Seuss's *The Butter Battle Book* may be a story about the Cold War arms race between the United States and Russia, it more broadly speaks to the matter of disagreements between groups and individuals and how they can often escalate without resolution.

This past regular legislative session, disagreements over how to sufficiently balance the state budget was forefront and much of the conflict came from within one Party. Although not as trivial as to which side of the bread is buttered, opposition relating to the budget gave perspective on our state legislators' relations and how disagreements between individuals and parties can, at times, yield unfavorable results.

The Sessions: Not Praying for Rain

Conservative commentator, Jonathon McClellan, may have said it best in his blog, *The Right Side of Austin: a Conservative View from Liberal Austin on Texas Politics*, by dubbing the 82nd Texas Legislative Session a "Session of Prayers," since pray is all one might do to survive the 140 days the legislature meets.

A forecast for rain in Texas and faced with the state's largest budget deficit to date, an estimated \$27 billion, legislative and congressional redistricting, the Sunset review of more that 28 state agencies, and a long list of divisive matters relating to voter identification, sanctuary cities, abortion sonograms, and the Transportation Security Administration anti-groping bill, members of the 82nd Texas Legislature gathered in Austin, on January 11, 2011, to begin work that would extend past the 140-day session limit. Lawmakers were called back for a special session after Senator Wendy Davis filibustered key legislation critical to the enactment of the budget in the waning hours of the regular session.

The Republicans, although 101 strong, were not always united and their division ultimately resulted in a special session. Texas House Republicans controlled 101 seats, the first time one party controlled a super majority in the Texas House since the early 1980s. A clear advantage for Republicans to pass legislation, Republican bills could not be talked about endlessly, or "chubbed," by Democrats, who in 2009 successfully killed numerous bills, in an effort to prevent Voter ID legislation from being brought to the House floor. Despite the fact that one party controlled a supermajority in the Texas House, the Republican Party was not entirely unified.

After the 2009 Legislative Session, dissent among conservatives in Texas, partially due to rising property and business taxes and the economic decline, quickly divided the Republican Party. A rise in fiscal conservative groups paved the way for the Tea Party in Texas to gain momentum and recruit candidates to run for elected office.

In the 2010 election cycle, fiscal conservative groups were successful in helping elect more than a dozen new fiscal conservative members to serve in the legislature to help reduce the size of government and spending. However, as the newly elected freshman class began the task of balancing the state budget, Republican members representing rural parts of the state differed with those representing urban areas on how to evenly and adequately distribute state funds. It became evident that the supermajority that had worked collectively to pass legislation important to state leadership would struggle to coalesce to pass a measure vital to the budget.

During the regular session, important initiatives, many of which are discussed below, passed. As is often the case, other key initiatives were not so lucky. A total of 10,315 measures were introduced in the legislature, including bills, joint-resolutions, concurrent resolutions, and simple resolutions. Of the 10,315 measures, 5,796 were bills---3,865 House bills and 1,931 Senate bills. A total of 797 House bills passed through the legislature to make their way onto the governor's desk, with 17 of those bills vetoed. Likewise, 582 Senate bills passed and seven were vetoed by the Governor.

And on Energy and the Environment: Much Ado About [next to] Nothing

Amid all the turmoil of the interim elections and the influx of 38 new House members and two new Senators, energy and environmental law and policy was on center stage as an unprecedented number of natural resource-related agencies underwent "sunset" review simultaneously during the 2010-2011 interim and legislative session.

At the conclusion of the 2009 first, and only, called special legislative session, Sunset Advisory Commission Chairman, Carl Isett and Vice Chairman, Glenn Hegar successfully passed S.B. 2 which moved up review dates for several of the state's energy and environmental agencies. The designation of sunset review schedules for certain agencies is to help balance the workload of the Sunset Commission and to better align the reviews of state agencies by categorizing them by subject matter. Although set for an unprecedented amount of activity, policy implementation, and change for much of the energy and environmental community, the 2011 Regular Session fell short of expectations. Two of the three most vital environmental Sunset bills, the Public Utility Commission and the Railroad Commission of Texas, failed to pass. As a result of a culmination of factors, including the division within the Republican Party and legislature's focus on fiscal matters relating to the budget, many significant natural resources' reforms were not implemented.

This paper will discuss the environmental and energy related bills that did become law, as well as mention some sunset bills that failed to pass, but will be revisited in 2013. All of the bill numbers referenced below relate to the regular session of the 82nd Legislature.

Sunset Bills

In 1977, the Texas Legislature created the Sunset Advisory Commission to identify and eliminate waste, duplication, and inefficiency in government agencies. Thorough reviews of individual state agencies are conducted during the time the legislature is not in session and is a three to eight month process for each agency. After conducting a review, the Sunset Advisory Commission determines whether an agency should be continued and a final report of its findings is issued. Detailed recommendations to the agency are then used to develop legislation to implement the recommended changes in how each agency performs its mission.

The Texas Sunset Advisory Commission reviewed 28 of Texas' most important state agencies, including reviews of a number of natural resource-related agencies including the Public Utility Commission (PUC), the Texas Commission on Environmental Quality (TCEQ), and the Railroad Commission of Texas (RCT). While both the PUC and RCT Sunset bills failed to garner the support of both houses and ultimately did not pass, the TCEQ Sunset bill was enacted with several beneficial provisions in place.

Texas Commission on Environmental Quality

The most influential environmental legislation to pass during the 82nd Texas Legislative Session is House Bill 2694 (H.B. 2694), the Texas Commission on Environmental Quality (TCEQ) Sunset Bill. Authored by Representative Wayne Smith and sponsored by Senator Joan Huffman, H.B. 2694 reauthorizes the TCEQ for another 12 years and establishes transparency to TCEQ's enforcement processes by requiring the Commission to structure its approach to enforcement in rule that improves their ability to take appropriate enforcement action.

Although the bill does not fundamentally change the management and operation of the TCEQ, H.B. 2694 does strengthen TCEQ's public participation process by specifically charging the Executive Director to provide assistance and education to the public on environmental matters under the agency's jurisdiction. Enhancing the TCEQ's public assistance function, H.B. 2694 focuses the Office of Public Interest Council's (OPIC) work on representing the public interest in permitting, rulemaking, enforcement, and other matters, and requires the Commission to define what factors OPIC will consider in determining its case involvement.

On September 1, 2011, H.B. 2694 transfers to the Railroad Commission of Texas the authority for making groundwater protection recommendations regarding oil and gas drilling activities currently under the jurisdiction of the Railroad Commission. The bill further increases TCEQ's ability to effectively manage surface water rights by clarifying the Executive Director's authority to actively manage water rights permits and curtail water use during shortages or drought, in which they may temporarily suspend a water right and adjust a diversion of water between water right holders. The bill also directs the Executive Director to evaluate, at least once every five years, whether a watermaster should be appointed in water basins that are not currently covered by a watermaster and report recommendations to the Commission. Additionally, the Commission is given the means to prevent and remediate groundwater contamination from leaking in underground storage tanks through the establishment of the Petroleum Storage Tank Remediation Fee and set the fees in rule, at levels needed to cover program costs.

Other key provisions within the bill is the exemption of dams on private property, not located within a municipality, the creation of a structure for the Legislature to fund the Low-Level Radioactive Waste Disposal Compact Commission, and the expansion of the definition of agriculture to include aquaculture, for regulation of water rights. House Bill 2694 further creates timelines for TCEQ to review and approve certain water management plans by requiring the Executive Director to complete a technical review within one year of administrative completion, and extends time for notification of a rate change for a municipally owned utility, from 30 to 60 days, and allows for notice by email.

The bill will also create a significant change in the Executive Director's role and participation in contested case hearings moving forward. H.B. 2694 requires the TCEQ Executive Director to participate in contested case hearings both to provide information to complete the record and to support the Executive Director's position developed in the underlying proceeding.

H.B. 2694 created new discovery deadlines in contested case hearings and requires all discovery to be completed before the deadline for submission of prefiled testimony. This provision will effectively cut off discovery that in some cases now continues after prefiled testimony is filed.

Finally, H.B. 2694 makes changes to the contested case hearing process for permits, including prohibiting a state agency from contesting the issuance of a permit or license by the commission, as well as includes a provision that streamlines the permitting process for electric generating facilities that are required to amend their existing permits to make emissions reductions to comply with the EPA's Maximum Achievable Control Technology (MACT) standards. This provision will help electric generators install the required equipment quickly and clean Texas' air faster. Specifically, the bill added Section 382.059 of the Health & Safety Code, which included the following language:

(b) The commission shall provide an opportunity for a public hearing and the submission of public comment on the application in the manner provided by Section 382.0561.

(c) Not later than the 45th day after the date the application is received, the executive director shall issue a draft permit.

(d) Not later than the 30th day after the date of issuance of the draft permit under Subsection (c), parties may submit to the commission any legitimate issues of material fact regarding whether the choice of technology approved in the draft permit is the maximum achievable control technology required under Section 112 of the federal Clean Air Act (42 U.S.C. Section 7412) and may request a contested case hearing before the commission. If a party requests a contested case hearing under this subsection, the commission shall conduct a contested case hearing and issue a final order issuing or denying the permit amendment not later than the 120th day after the date of issuance of the draft permit under Subsection (c).

This new language provides an opportunity for a Title V style public hearing at subsection (b), and also provides for an accelerated-timeline contested case hearing regarding legitimate issues of material fact on whether proposed technologies comply with Clean Air Act maximum achievable control technology (MACT) standards. Given the short timeframe to issue an order and the language that the "commission shall conduct" the hearing, it appears to limit TCEQ's ability to transfer the contested case to the State Office of Administrative Hearings, requiring TCEQ to conduct the hearing internally.

Railroad Commission of Texas

The Railroad Commission of Texas (RCT) Sunset Bill was one of the most followed and contentious bills of this past session. Senate Bill 655 (S.B. 655), authored by Sunset Chairman, Senator Glenn Hegar, and sponsored by Representative Jim Keffer, failed to pass during the regular session when members in both chambers, and across party lines, struggled to find common ground and move forward to implement the recommended changes.

The Senate version of the bill abolished the Railroad Commission without requiring a constitutional amendment and created the Texas Oil and Gas Commission (Commission) governed by a single, elected commissioner, a recommendation adopted by the Sunset Advisory Commission. After an appointment by the Governor, S.B. 655 would phase in the elected Texas Oil and Gas Commissioner until the general election in 2012.

Another key initiative in S.B. 655 would require the Commission's oil and gas program to be self-supporting and expands the oil field cleanup fund to cover both regulation and cleanup. The bill would also strengthen the commission's enforcement process to protect the environment and public safety and would transfer enforcement and gas utility contested case hearings to SOAH.

The Texas Senate passed S.B. 655 by a vote of 29 to two and continued the commission for 12 years. Sent to the House for member approval, House lawmakers did not fundamentally agree with many of the provisions in S.B. 655 and began work on their own version of the bill.

The most significant differences in the House version of S.B. 655 provided that the newly created Commission be composed of three commissioners, elected at the general election for state and county officers. The bill further specified that the commissioners serve staggered six year terms, with one commissioner's term expiring December 31 of each even-numbered year. Additionally, the committee substitute required that the commissioner elected in the 2012 general election and every sixth year thereafter, serves as the chairman of the commission. Finally, the House version did not require SOAH to conduct contested case hearings in enforcement proceedings under a law administered by the agency, or conduct contested case hearings under the Gas Utility Regulatory Act.

Although substituted and passed by the Texas House, legislators were unable to reconcile differences and S.B. 655 subsequently died in conference committee. Failure to enact S.B. 655, the legislature passed a stop-gap measure to continue the agency, as is, for two years. Under provisions included in S.B. 652, the Sunset "safety net" bill, RCT is subject to a full review by the 2012-2013 Sunset Advisory Commission and the Texas Legislature.

Public Utility Commission

Created in 1975, the Public Utility Commission (PUC) oversees electric and telecommunications companies in Texas. Charged with regulating rates and services of monopoly providers, the PUC protects consumers in competitive markets through rule making, investigation, and enforcement.

This past regular session, the PUC, along with Office of Public Utility Counsel (OPUC), an independent agency established to represent the interests of residential and small commercial customers in state electric and telecommunication utility matters, and the Electric Reliability Council of Texas (ERCOT), the independent organization certified under Section 39.151, Utilities Code to manage the electric grid for most of Texas, underwent Sunset review.

As filed, Senate Bill 661 (S.B. 661) granted the PUC additional authority to regulate the electricity market, including power to require disgorgement of excess revenue due to a violation of reliability standards or market rules, and issue cease-and-desist orders. The bill also required the PUC to approve ERCOT's budget, allow for sale of Distributed Renewable Generation (DRG) power back to utilities in regulated markets, as well as define additional DRG technologies. Senate Bill 661 also included the transfer of regulation of water rates from TCEQ to the PUC.

Recognizing the need to regulate electric and telecommunications industries in Texas, S.B. 661 continued the agency for 12 years to ensure recommended changes to improve effectiveness and oversight is met. Disagreement within the Texas House, however, prevented the bill from passing. Included in S.B. 652, the Sunset "safety net" bill, the PUC will be subject to a rereview in 2012-2013.

The Texas Water Development Board

Senate Bill 660 (S.B. 660), by Senator Juan Hinojosa and Representative Allen Ritter, is The Texas Water Development Board (TWDB) Sunset Bill. The passed bill requires the TWDB and the TCEQ to provide a methodology and guidance for calculating water use and conservation developed under Section 16.403 of the Water Code, to be used in water conservation plans and reports, as part of the State Water Plan. S.B. 660 also directs municipalities and water utilities with more than 3,300 connections to implement reporting measures established by TWDB and TCEQ, and establish a process whereby non-self supporting general obligation water bonds could be removed from the Constitutional Debt Limit under certain circumstances.

Legislative Bill Summaries

A number of air quality, waste, water/water quality, energy, oil and gas, and other TCEQ- and RCT-related regulatory reform bills were filed during the 2011 Regular Legislative Session.

Air Quality

H.B. 1906 (D. Howard): Establishes reasonable penalties for locally enforced heavy-duty vehicle idling violations in unincorporated areas.

H.B. 1981 (W. Smith): Codifies TCEQ's Air Contaminant Watch List in statute.

H.B. 3268 (Lyne): Requires TCEQ to issue a standard permit or permit by rule for stationary "natural gas engines."

H.B. 3272 (Burman): Adds definitions of an electric vehicle and natural gas vehicle and amend the definition of a hybrid vehicle for purposes relating to the Low-Income Vehicle Repair Assistance, Retrofit, and Accelerated Vehicle Retirement Program (LIRAP).

H.B. 3399 (Legler): Revised several Texas Emissions Reduction Plan (TERP) and Clean Fleet requirements to enable Texas-based fleets to compete for grant funding, as well as streamlined these programs to expand the applicability provisions.

S.B. 20 (Williams): Created the Texas Natural Gas Vehicle (NRV) Grant Program, directing the TCEQ to create a rebate program that is streamlined and limited to NRVs.

S.B. 197 (West): Strengthens accountability and oversight of vehicle inspection stations and vehicle inspectors.

S.B. 385 (Williams): Created the Alternative Fueling Facilities Program, directing the TCEQ to create a grant program for alternative fueling stations.

S.B. 493 (Fraser): Allows "clean idle" engines, or an engine that emits no more than 30 grams of nitrogen oxide emissions per hour when idling, to idle in this state.

S.B. 875 (Fraser): Provides an affirmative defense for Texas businesses against enforcement actions citing nuisance and trespass claims arising from greenhouse gas if the operator of the facility is in "substantial compliance" with its air permit.

S.B. 1003 (Fraser): Authorizes TCEQ to asses a penalty for, and emergency orders suspending, the operation of a rock crusher or certain concrete plants without a current permit under the Texas Clean Air Act.

S.B. 1250 (Lucio): Provides restrictions on the location and operation of concrete crushing facilities.

Waste

S.B. 329 (Watson): Creates the Television Equipment Recycling Program and requires television manufacturers to take back and recycle a percentage of their Texas market-share.

S.B. 1258 (Duncan): Provides a process for the disposal of demolition waste from abandoned or nuisance buildings in certain areas.

S.B. 1504 (Seliger): Creates limits for imported low-level radioactive waste (LLRW) and defines "nonparty compact waste" and "waste of international origin."

S.B. 1605 (Seliger): Creates the Texas Low-Level Radioactive Waste Disposal Compact Commission as an independent entity, subjects to review under the Texas Sunset Act.

Water/Water Quality

H.B. 240 (Parker): Requires the Texas Commission on Environmental Quality (TCEQ) to adopt rules directing on-site sewage disposal systems to be designed to prevent accidental or unintentional access to the system.

H.B. 571 (Huberty): Provides the TCEQ with the ability to regulate certain aggregate production operations through registration and inspection.

H.B. 805 (Callegari): Requires certain water utilities located in Harris County ensure the emergency operation of their water systems during an extended power outage, as soon as safe and practicable after a natural disaster.

H.B. 1814 (Lucio III): Amends the Water Code to authorize a corporation to enter into a contract with a governmental entity to provide a water supply to a governmental entity or a volunteer fire department for use in fire suppression.

H.B. 1901 (Keffer): Establishes provisions relating to the applicability of bond approval by TCEQ to certain water entities.

H.B. 2507 (Chisum): Creates an offense for the installation of an irrigation system without holding a license issued by the TCEQ.

H.B. 3109 (Craddick): Amends rulemaking power of certain groundwater conservation districts.

H.B. 3372 (T. King) & S.B. 1073 (Jackson) (Identical companions): Allows the use of harvested rainwater that has used the appropriate cross-connection safeguards, to be used for potable indoor purposes.

H.B. 3391 (D. Miller): Requires procedural standards be adopted to promote the use of rainwater harvesting for both potable and nonpotable purposes at public and private facilities.

S.B. 181 (Shapiro): Requires the Texas Water Development Board (TWDB), in consultation with the Texas Commission on Environmental Quality (TCEQ) and the Water Conservation Advisory Council (WCAC), to develop a standard formula for calculating and reporting municipal water use in gallons per capita per day (GPCD).

S.B. 313 (Seliger): Increases the current period for possible priority groundwater management areas (PGMA) designation from 25 years to 50 years.

S.B. 333 (Fraser): Imposes specific procedures on water supply corporations to allow for a more open election process.

S.B. 512 (Hegar): Amends current law to require qualification as a supervisor of a fresh water supply district, the person must either own taxable property in the district or be a registered voter of the district.

S.B. 573 (Nichols): Allows a landowner to petition the Texas Commission on Environmental Quality to be released from a certificate of convenience and necessity (CCN) if the CCN holder is not providing service.

S.B. 691 (Estes): Amends the Water Code to clarify that a groundwater conservation district may not require a permit for a well used for domestic use, or for providing water to livestock and poultry, if the well is located on a tract of land larger than 10 acres and is incapable of producing more than 25,000 gallons of groundwater a day.

S.B. 692 (Estes): Amends current law relating to groundwater conservation district permit exemptions to clearly define the exemptions that apply to groundwater use and not to a specific well.

S.B. 693 (Estes): Requires a groundwater conservation district to contract with the State Office of Administrative Hearings to conduct a contested case hearing if requested by a permit applicant or other party to the hearing.

S.B. 737 (Hegar): Grants the executive administrator of a groundwater conservation district the authority to determine the amount of water that may be produced on an average annual basis for an established management plan.

S.B. 1082 (Hegar): Includes in the definition of a "district," a conservation and reclamation district operating under Chapter 49 of the Water Code that could enter into certain strategic partnerships with a municipality.

S.B. 1140 (Watson): Authorizes water control and improvement districts (WCID) to pay for actual property damages caused by the district's operation of a sanitary sewer system.

S.B. 660 (Hinojosa): The Texas Water Development Board (TWDB) Sunset Bill (discussed above).

Electricity

S.B. 365 (Ogden): Increases the production of electricity in Texas by opening the electric market for small power generators and allowing them to connect to the grid to sell power.

S.B. 943 (Carona): Clarifies provisions that relate to the classification, use, and regulation of electric energy storage facilities.

S.B. 1133 (Hegar): Requires the PUC to prepare a weather emergency preparedness report on the ability of the state's electric generators to respond to abnormal weather conditions.

H.B. 51 (Lucio III): Amends building efficiency standards for state buildings and allows municipalities the authority to require additional building standards.

S.B. 898 (Carona): Requires political subdivisions, institutions of higher education, and state agencies to set a goal of reducing the entity's electric consumption by five percent for each of the ten state fiscal years beginning September 1, 2011.

S.B. 924 (Carona): Requires municipally owned utilities and electric cooperatives to submit a report to SECO on the combined effects of the utility's or cooperative's energy efficiency activities. Additionally, S.B. 924 requires the Energy Systems Laboratory at Texas A&M University to analyze the date in the reports.

S.B. 1125 (Carona): Expands the PUC's energy efficiency goal program by focusing the goals on peak demand and by expanding the programs into the residential and commercial customer classes.

Oil & Gas

S.B. 1134 (Hegar): Requires the TCEQ to conduct a regulatory analysis regarding costs and alternatives and consider whether requirements for permits should be developed and tailored to different parts of the state before issuing any permit by rule or standard permit for oil and gas production facilities The requirements would also apply to permits by rule and standard permits for those types of facilities that are only related to planned maintenance, startup, and shutdown activities.

H.B. 3328 (Keffer): Requires the Railroad Commission to adopt rules that require an operator to disclose the composition of hydraulic fracturing fluids used in hydraulic fracturing of an oil or gas well.

S.B. 527 (Fraser): Modifies sections of the Health and Safety Code related to the New Technology Research and Development (NTRD) program within the Texas Emissions Reduction Plan (TERP) program and would require the installation of air monitors in the Barnett Shale.

Agency Operations/Public Participation/Procedural Processes

H.B. 444 (Creighton): Requires the executive director of the TCEQ to submit a copy of an application for a permit for an injection well disposing of industrial and municipal waste to the governing body of a Groundwater Conservation District (GCD).

H.B. 266 (Hilderbran): Requires state agencies to use address-matching software that meets certification standards under the Coding Accuracy Support System (CASS) adopted by the United States Postal Service.

H.B. 610 (Zerwas): Requires that TCEQ utilize electronic means of transmission for any notice it issues or sends a state senator or state representative, unless the senator or representative requests to receive notices by mail.

H.B. 726 (Sheffield): Modifies the Government Code to require that state agencies only send electronic notices to the Texas Legislature detailing publication availability.

H.B. 1781 (Price): Requires the executive director of each state agency to determine unnecessary reporting requirements.

H.B. 1812 (Phillips): Amends current law relating to the type of newspaper required for publication of notice in certain counties.

H.B. 2280 (Eiland): Provides that one member of the Permanent Advisory Committee for the Pollution Control Property Tax Abatement Program must be a representative of a school district or junior college district.

H.B. 2694 (W. Smith): Texas Commission on Environmental Quality (TCEQ) Sunset Bill (discussed above).

S.B. 701 (Watson): Requires state agencies to post high-value data sets, or data that is critical to the financial and programmatic function of state agencies, on an accessible agency website.

S.B. 791 (Duncan): Reduces the proliferation of paper by allowing the lieutenant governor, a member of the legislature, or a legislative agency to request electronic notices of proposed rules from the Office of the Secretary of State in place of paper copies.

S.B. 1179 (Nelson): Eliminates certain required reports prepared by state agencies and institutions of higher education.

S.B. 1478 (Hegar/Crownover): Requires the Surface Mining and Reclamation Division (SMRD) to meet certain timeframes for review of permits, renewals, or revisions. As passed, S.B. 1478 authorizes the SMRD to toll permit timelines while applicants respond to identified deficiencies, as well as gives applicants and SMRD the ability to extend the timelines if an applicant supplements its application on issues not initially identified as deficiencies by SMRD.

Conclusion

The 82nd Texas Legislative Regular Session concluded as it began, with a resounding bang and a heavy sigh, as legislators were called back for a Special Session to resolve unfinished business relating to the state budget. This was almost repeated once again, as a second special session was almost called when the House struggled to reach a compromise on the budget.

S.B. 1, the fiscal matters bill vital to the state budget, was initially voted down by the House with a vote of 79 to 64. S.B. 1 contained provisions cutting public education by \$4 billion causing tense disagreements not only between Democrats and Republicans, but also between the Republican members themselves. With the House at a standstill and the Senate unable to negotiate since it had already adjourned Sine Die, Republican members met in an emergency caucus to discuss and hash out their differences. It was after this that House members reconsidered their original vote, passed S.B. 1, and ultimately finalized a budget without using any Rainy Day Fund dollars.

Despite deep cuts to the state budget, and sometimes because of those cuts, significant fiscal and policy changes in all areas, including natural resources, were made. Although the TCEQ and Railroad Commission will be able to weather the storm, because of cuts made across the board, pain was certainly inflicted on programs that are not self-funded (and some that are).

Looking forward, the future looks equally tumultuous. Two of Texas' largest energy and environmental state agencies, the Railroad Commission of Texas and Public Utility Commission, will undergo a re-review by the Texas Sunset Commission and the Texas Legislature this interim and next session. Economic uncertainty and unforeseen fiscal implications of the budget will likely directly impact the ability for regulators to implement new and existing regulations and industry to build or expand new operations. Ever changing federal laws and regulations will also impact our state. Shale gas and electric utilities appear to be under attack from the federal government and continued litigation with the federal government is a near certainty. All of these factors set the stage for two years of activity, change, and uncertainty until the legislature once again convenes in 2013, for the 83rd Legislative Session.

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SPECIAL LAWS FOR PERMITTING GROUNDWATER USE IN TEXAS: THREE CASE STUDIES

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SPECIAL LAWS FOR PERMITTING GROUNDWATER USE IN TEXAS: THREE CASE STUDIES

I. INTRODUCTION

This discussion highlights the background, regulatory framework, and horizon issues for three groundwater districts: The Panhandle Groundwater Conservation District, the Edwards Aquifer Authority, and the Lone Star Groundwater Conservation There are approximately 100 District. districts currently authorized to regulate groundwater use in Texas, if you count two entities that were created as subsidence districts with particular powers. The three districts discussed here were chosen for their differences, and the choice highlights the diversity in regulation of critical groundwater resources in Texas today.

Despite their differences however, the three districts share a common challenge they all are called upon to manage shortage. Limitations on groundwater use are precipitated by projections of a future that would occur when growing population and increasing groundwater use collide with declining water levels. When a groundwater district implements its regulations, fortunes This is no small burden for shift. groundwater districts to bear. The case studies discussed are offered with high personal and professional regard for all of those charged with responsibility for the regulatory processes that govern groundwater production and management.

The discussion here also cannot adequately convey what is at stake in that process for the regulated community. For example. when historical access to groundwater is reduced, those who carry the responsibility to provide essential public utilities for their communities are faced with a challenge not wholly unlike a catastrophic loss of water supply, albeit with advance warning but also with permanent effect. Individual groundwater users may find themselves suddenly embroiled in regulatory controversies that they never imagined. There is no easy answer for managing shortage or living with it. Both the adoption and implementation of regulatory reductions and the search for alternative water supply solutions take place amidst all the pressures that local, and even statewide, politics have to offer.

Section II of this discussion provides some general context for considering groundwater use permitting and the forces that drive it. The case studies begin with Section III.

II. SOME TOOLS OF CONTEXT FOR GROUNDWATER MANAGEMENT IN TEXAS

A. The Nature of Groundwater Interests

This discussion of special laws for permitting groundwater use pertains to groundwater that "percolates" beneath the surface of the ground. The term groundwater does not include "underground rivers" or the underflow of state watercourses, both of which would be state water subject to the prior appropriation doctrine and the statewide jurisdiction of the Texas Commission on Environmental Quality. See generally, TEX. WATER CODE ANN. §§ 35.002(5), 36.001(5 (Vernon and Vernon Supp); 31 TEX. ADMINISTRATIVE CODE § 356.22(3) (Rules of the Texas Water Development Board). Water occurring naturally underground in Texas is presumed to be percolating. For more information on the classification of groundwater, see, e.g., Texas Co. v. Burkett, 296 S.W. 273 (Tex. 1927); Denis v. Kickapoo Land Co., 771 S.W. 2d (Tex. App.-Austin 1989, writ denied).

Texas has not assumed state ownership of groundwater nor enacted statewide regulation of groundwater production, and groundwater management in Texas is unique among the states in that regard. Ownership interests in groundwater are incident to the ownership of land as part of the surface estate, although, from a property rights perspective groundwater interests may be reserved or severed in the same way that mineral estates may be reserved or severed.

B. Rule of Capture

The rule of capture in Texas for addressing conflicts over groundwater pumpage dates back more than 100 years, and at least to *Houston & T.C. Ry. Co. v. East*, 81 S.W. 279 (Tex. 1904). That case is famous, or infamous, among water law practitioners for the following language that the Texas Supreme Court borrowed from the Supreme Court of Ohio: "[T]he existence, origin, movement, and course of [groundwaters], and the causes which govern and direct their movements, are so secret, occult, and concealed that an attempt to administer any set of legal rules in respect to them would be involved in hopeless uncertainty, and would, therefore, be practically impossible." *Id.* 281.

In essence, the rule of capture that the Supreme Court preferred in East is a common law theory of liability. It might better be described as a theory of nonconsidering that it allows liability, groundwater users to pump unlimited amounts of groundwater without concern for the effect on groundwater levels or other users. There are narrow exceptions, basically for waste, malicious harm, and land subsidence. See, e.g., Sipriano v. Great Spring Waters of America, 1 S.W. 3d 75 (Tex. 1999).

"Owners" of groundwater interests who have the right of virtually unrestrained pumping also have little or no protection from pumpage by others. Neighboring groundwater users from the same groundwater formation have only the "selfhelp" remedy of drilling deeper/bigger wells and pumping faster. Allowing the rule of capture to this result makes regulation of the resource potentially attractive both with regard to the reliability of supply and the ability to make commerce in water. In spite of the Texas courts' continued embrace of private groundwater ownership and the rule of capture, individual cases including Sipriano are clear that groundwater can be regulated by the State under the police power.

The Texas Legislature, when invited by the courts and others to address the merits of regulating groundwater use, has chosen to leave the necessary authority to regulate largely to local political entities. Today, the vast majority of groundwater pumpage comes from within local groundwater districts. Regulation within these districts is not inconsistent with the rule of capture as a theory of liability, since even within a groundwater district the rule would apply as between individual users. Outside of groundwater districts, the rule of capture and the corollary absolute ownership principle stand primary.

C. Authority for Regulation

Texas Water Code § 36.0015 directly speaks to local regulation by groundwater districts, stating that:

order to provide for In the conservation, preservation, protection, recharging and prevention of waste of groundwater, and of groundwater reservoirs or their subdivisions, and to control subsidence caused bv withdrawal of water from those groundwater reservoirs or their subdivisions, consistent with the objectives of Section 59, Article XVI, Texas Constitution, groundwater conservation districts may be created as provided in this chapter. Groundwater conservation districts created as provided by this chapter are the state's preferred method of groundwater management.

TEX. WATER CODE ANN., § 36.0015 (Vernon and Vernon Supp.) (emphasis added).

The referenced section of the Constitution commonly is referred to as the Conservation Amendment. In addition to declaring it a public right and duty for the Legislature to conserve and develop the natural resources of this State, the Conservation Amendment authorizes the creation of conservation and reclamation districts, as follows:

There may be created within the State of Texas, or the State may be divided into, such number of conservation and reclamation districts as may be determined to be essential to the accomplishment of the purposes of this amendment to the constitution, which districts shall be governmental agencies and bodies politic and corporate with such powers of government and with the authority to exercise such rights, privileges and functions concerning the subject matter of this amendment as may be conferred by law.

TEX. CONST. art. 16, § 59(b). The Conservation Amendment is the same constitutional authority that supports the creation of river authorities and other water districts.

Groundwater districts can be created by special act of the legislature, upon petition to the Texas Commission on Environmental Quality by landowners, or by the agency through the priority groundwater management area process. Most districts. however, have been created through the legislature and made subject to confirmation The special powers granted to elections. districts range very broadly, spanning the distance between districts that were created for very particular purposes and those that were created to exercise no more powers than the general law in Water Code Chapter 36 will support. Both Chapter 36 and the enabling legislation and orders for a district must be considered in tandem for examining issues related to particular regulations for the production of groundwater.

D. Local District Powers

Texas Water Code Chapter 36 addresses, but does not resolve, the relationship between groundwater users and groundwater conservation districts. Section 36.002 currently reads rather simply that:

Sec. 36.002. OWNERSHIP OF GROUNDWATER.

The ownership and rights of the owners of the land and their lessees and assigns in groundwater are hereby recognized, and nothing in this code shall be construed as depriving or divesting the owners or their lessees and assigns of the ownership or rights, *subject to rules promulgated by a district*."

TEX. WATER CODE ANN. § 36.002 (Vernon and Vernon Supp.) That provision was amended in the Regular Session of the 82nd Legislature amid some controversy, and will read as follows after September 1, 2011:

Sec. 36.002. OWNERSHIP OF GROUNDWATER.

(a) The legislature recognizes that a landowner owns the groundwater below the surface of the landowner's land as real property.

(b) The groundwater ownership and rights described by this section: (1) entitle the landowner, including a landowner's lessees, heirs, or assigns, to drill for and produce the groundwater below the surface of real property, subject to Subsection (d), without causing waste or malicious drainage of other property or negligently causing subsidence, but does not entitle a landowner, including a landowner's lessees, heirs, or assigns, to the right to capture a specific amount of groundwater below the surface of that landowner's land; and (2) do not affect the existence of common law defenses or other defenses to liability under the rule of capture.

(c) Nothing in this code shall be construed as granting the authority to deprive or divest a landowner, including a landowner's lessees, heirs, or assigns, of the groundwater ownership and rights described by this section.

(d) This section does not: (1) prohibit a district from limiting or prohibiting the drilling of a well by a landowner for failure or inability to comply with minimum well spacing or tract size requirements adopted by the district; (2) affect the ability of a district to regulate groundwater production as authorized under Section 36.113, 36.116, or 36.122 or otherwise under this chapter or a special law governing a district; or (3) require that a rule adopted by a district allocate to each landowner a proportionate share of available groundwater for production from the aquifer based on the number of acres owned by the landowner.

See Act of May 29, 2011, 82nd Leg., R.S., ch. 1233, 2011 Tex. Sess. Law Serv. ____ (Vernon) (to be codified as an amendment to TEX. WATER CODE ANN. § 36.002).

It is not within the scope of this discussion to attempt to resolve continuing issues regarding the nature of the property interest in groundwater, by reference to the amended law or otherwise. The most relevant principle for the author's purposes here is simply that groundwater districts *do* have the power to regulate the exercise of private interests in groundwater and the responsibility to perform certain duties set out under law.

While groundwater districts exercise many functions, their authority to regulate wells, including limitations on production, are at the core of their powers. In the absence of special district legislation authorizing certain rules, it is Water Code Chapter 36 that both grants the power for and limits a groundwater district's rulemaking authority. Water Code § 36.101, for example, provides that "A district may make and enforce rules, rules limiting including groundwater production based on tract size or the spacing of wells, to provide for conserving, preserving, protecting, and recharging of the groundwater reservoir or its subdivisions . . .". TEX. WATER CODE ANN. 36.101 (Vernon and Vernon Supp.).

In this framework of local special laws and regulations, a permittee's grievances most likely will be about whether a particular district with particular powers has gone too far. The standards which apply to how far groundwater district regulatory authority over wells and production may go legally have been articulated in various cases, and will no doubt continue to be tested. Chapter 36 in some instances runs short on guidance regarding how particular powers may be exercised. The general law does not, for example, include any specific guidelines for how to reduce existing levels of groundwater production, although a current example of adjustment regulations is discussed in one of the case studies below.

In general, a groundwater district may only exercise those powers granted by statute, together with those necessarily implied from the statutory authority conferred or duties imposed. See, e.g., Stauffer v. City of San Antonio, 344 S.W.2d 158, 160 (Tex. 1961); Guitar Holding Co. v. Hudspeth County Underground Water Conservation Dist. No. 1, 209 S.W.3d 146, 160 (Tex. App.—El Paso 2006), rev'd on other grounds, 263 S.W.3d 910 (Tex. 2008); South Plains Lamesa R.R., Ltd. v. High Plains Underground Water Conservation District No. 1, 52 S.W.3d 770, 779-80 (Tex. App.—Amarillo 2001, no pet.).

E. Planning

The general law requires groundwater districts also to undertake various planning activities, that in turn effect management of groundwater production. A district must, for example, develop a management plan in coordination with the Texas Commission on Environmental Quality and then implement the plan subject to review by the State Auditor's Office. See TEX. WATER CODE ANN. § 36.1071 (Vernon and Vernon Supp; see also 31 TEX. ADMIN. CODE Chapter 356 (Rules of the Texas Water Development Board). Districts must also participate in joint planning with other districts in designated groundwater management areas, and their work is linked to the regional water supply planning process that contributes to the State Water Plan.

planning Joint has been verv controversial in recent years leading up to the current requirements for designating "desired Water Code § 36.108 future conditions." requires that not later than September 1, 2010, and every five years thereafter, districts within the same groundwater management area must consider groundwater availability models and other data or information for the relevant aquifers within the management area. Id. § 36.108.

Identifying those conditions which are "desired," of course, can include some relatively subjective considerations. Districts *must* consider: (1) aguifer uses or conditions within the management area, including conditions that differ substantially from one geographic area to another; (2) the water supply needs and water management strategies included in the state water plan; (3) hydrological conditions, including for each aquifer in the management area the total estimated recoverable storage as provided by the executive administrator, and the average annual recharge, inflows, and discharge; (4) other environmental impacts, including impacts on spring flow and other interactions between groundwater and surface water; (5) the impact on subsidence; (6) socioeconomic impacts reasonably expected to occur; (7) the impact on the interests and rights in private property, including ownership and the rights of management area landowners and their lessees and assigns in groundwater as recognized under Section 36.002 of the Texas Water Code; (8) the feasibility of achieving the desired future condition; and (9) any other information relevant to the specific desired future conditions. See Tex. Water Code § 36.108, as amended, Act of May 29,

2011, 82nd Leg., R.S., ch. 1233, 2011 Tex. Sess. Law Serv. (Vernon).

Once desired future conditions have been adopted. submitted to Texas Water Development Board, and finalized, the Board will calculate estimates of what will be called modeled available groundwater based on them. "A district, to the extent possible, shall issue permits up to the point that the total volume of exempt and permitted groundwater production will achieve an applicable desired future condition." Id. Districts include these estimates of modeled available groundwater in their groundwater management plans. See TEX. WATER CODE ANN. § 36.1071(e)(3)(A) (Vernon and Vernon Supp.) Each groundwater conservation district also must "ensure that its management plan contains goals and objectives consistent with achieving the desired future conditions of the relevant aquifers as adopted during the joint planning process."

The statutory methods for challenging desired future conditions are considered by many to be unsatisfactory, although the recent Legislative Session did not resolve that debate. For now, desired future conditions will continue to lead the identification of groundwater shortages that in turn drive groundwater production management in Texas.

There are many worthy and more detailed published discussions regarding the nature of groundwater districts and the extent of their regulatory power. Among them are several chapters in the "Essentials of Texas Water Resources" published by the State Bar of Texas as a project of the State Bar's Environmental & Natural Resources Law Section. On the issue of desired future conditions, various presentations by Dr. Robert E. Mace, Texas Water Development Board also warrant particular mention. See, e.g., "A Streetcar Named Desired Future Conditions: The New Groundwater Availability for Texas (2006), available at www.twdb.state.tx.us/GAM/03-1 mace.pdf, and "A Streetcar Named Desired Future Conditions – Next Stop: The 82nd Legislature, presented at The Changing Face of Water Rights, 2011.

III. PANHANDLE GROUNDWATER CONSERVATION DISTRICT

A. Background

It would be fair to describe the Panhandle Groundwater Conservation District as a classic Water Code Chapter 36 district, even though the district actually precedes that particular codification significantly. Created in 1955 and expanded through the decades since, the district's jurisdiction now covers 6,309 square miles in Carson, Gray, Roberts and Wheeler Counties, and along parts of Armstrong, Hutchinson and Potter Counties. The District's economy is dominated by agricultural and petrochemical production.

The primary aquifer with the district's authority is the Ogallala. In the area of the district, this aquifer does not meaningfully replenish as recharge rates are relatively low due to high evaporation and a low infiltration rate. The Panhandle Groundwater Conservation District manages the groundwater resource with a goal of retaining, in 50 years, 50 percent of current supplies identified as a saturated thickness of the aquifer. The 50-year period began in 1998 and ends on December 31, 2048, although the District has a goal to extend the 50/50 trend line through at least 2058.

Within the District boundaries, there are over 4,400 irrigation wells capable of producing water to meet the needs of the agricultural community. The District has around 350 municipal or public supply wells and well over 400 wells for industrial use, and oil and gas secondary recovery operations. The remaining wells are registered, non-permitted water supplies for household and livestock consumption.

Faced with inevitably declining supplies, the districts' activities focus significantly on conservation and promoting efficient water use, enforcement and preventing waste, data acquisition, maintaining economic viability of the region, and even rainfall enhancement.

B. Regulatory Framework

Panhandle Groundwater Conservation District's rules are straightforward and relatively stable considering that managing aquifer depletion requires adaptation. The district's permitting rules depend on production rate and tract size. Any well drilled on less than 10 acres or producing more than 17.4 gallons per minute must be permitted, and other wells must be registered. The amount of water allowed to a well permittee is based on acre-feet of water per contiguous surface acre of water rights owned or controlled, and includes a maximum rate of production. For agricultural use, the current average is about 1.25 acre-feet per acre and municipal use from a well field is likely a little higher. Well-spacing requirements apply, and the district also considers whether a proposed use constitutes a beneficial use without waste and whether a permit applicant proposes to achieve water conservation, protection of groundwater quality, and other permitting criteria. Transportation of groundwater out of the district is permitted, subject to rules specific to that activity and a water transport fee.

Despite the goal of maintaining a 50/50 trend line, new wells and new production still are allowed. Rather than embracing an historical-use approach to allocating production, the district chose to implement depletion rules as a preferred strategy. Broadly speaking, a permittee's authorized production is subject to being reduced, regardless of when a well was permitted, the maximum quantity authorized in any permit, when production was initiated, or whether that production is not in excess of certain pumping rates.

To determine reductions, the district conducts annual evaluation of saturated thickness and calculates percent decline. For these calculations, the district's territory is considered in management sub-areas, delineated on recognizable natural and built features and political and property lines. The rate of decline within any such area should not exceed a maximum allowable decline of saturated thickness. Each area has an assigned floor rate ranging from 0.1 to 0.5 acre-feet per acre, below which the district will not reduce allowable pumping. Floor rates are based on the volume of water that could be produced per acre in the sub-area and still meet the 50/50 standard if all sections in the sub-area were producing.

In practice, adjustment would be based on a five-year rolling average but implemented in stair-step fashion so that the regulated community has time to adjust. The district's board of directors reserves the ability to consider economic hardship when it regulates groundwater withdrawals by means of spacing, production limits, and even depletion. Any user may appeal to the board for discretion in enforcement of the provisions of the water supply deficit contingency plan, for example, on grounds of adverse economic hardship or unique local conditions. The district's rules in their entirety are available at www.pgcd.us.

C. Horizon Issues.

Designating Conservation Areas. Panhandle Groundwater Conservation District's regulatory framework also contemplates that designating "conservation areas" for more restrictive limitations may become necessary. As of the time of this writing, no conservation areas have yet been delineated, although the district has held hearings regarding a designation in Roberts County, and will do so again in July, 2011. If and when the district does delineate a conservation area, the district's rules call for special production limitations in the area and the possibility of a moratorium on new wells. The rules also require installation of meters of all wells capable of producing 25,000 gallons ore more per day within the area at the well owners expense.

Desired Future Conditions Litigation. It's no surprise that planning for future water use can be controversial in the Texas Panhandle. As a member of Groundwater Management Area 1, Panhandle Groundwater Conservation District coordinates with three other districts. Area 1 was one of the first to complete the process of identifying "desired future conditions," but the designation of those conditions was challenged. Α groundwater enterprise proposing large-scale transportation of groundwater for sale, Mesa Water, LP, and others challenged Area 1's desired future conditions through the appeals process at the Texas Water Development Board. After the Board found the conditions to be reasonable, a petition was filed against the Board in Travis County District Court under docket number NO. D-1-GN-10-000819. The groundwater management area also was challenged through the Texas Commission on Environmental Quality with allegations that the participating districts have not met the requirements of amending their rules and updating their management plans. There is some expectation that all of these particular challenges will be resolved with the consummation of Mesa Water, LP's recent sale of water rights beneath 211,000 acres of land in seven counties north of Amarillo to the Canadian River Municipal Water Authority.

IV. EDWARDS AQUIFER AUTHORITY

The Edwards Aquifer Authority has what is likely the most specific statutory authority of all the groundwater districts in Texas. Nevertheless, it has been suggested that the authority also may have the dubious honor of having been involved in more litigation than any other groundwater district in the state. In fact litigation, itself, forced the Legislature's hand in creating the particular powers that the authority exercises today.

A. Background

The Edwards Aquifer Authority has jurisdiction over 8,800 square miles across eight counties in south-central Texas. including all of Uvalde, Medina, and Bexar counties, plus portions of Atascosa, Caldwell, Guadalupe, Comal, and Hays Counties. The City of San Antonio, located in Bexar County, has been historically dependent on the Edwards Aquifer for water supply. The Edwards Aquifer was the first "sole-source" aquifer designated nationally by the Environmental Protection Agency for water quality protection purposes. The designation is appropriate in areas that have no alternative drinking water source(s) that could physically, legally, and economically supply all those who depend upon an aquifer for drinking water.

The most defining issue for the Authority is the nature of the Edwards groundwater resource itself. The Edwards is unique among the state's most significant aquifers in that it is for the most part both highly rechargeable and highly transmissive. Categorized in general terms as a karst aquifer, its saturated limestone formations are marked by high porosity and flow that is measureable even to lay people in terms of "flow" and "velocity." (A failed attempt to designate the Edwards as an underground river and bring it within the appropriative "state water" system for has been published documented in various discussions.)

The characteristics of the groundwater resource that the Edwards Aquifer Authority regulates, then, is starkly different than those of the Ogalalla Aquifer. Speaking in general terms, the Edwards Aquifer is geohydrologically capable of continuing to be an extremely prolific water supply for the City of San Antonio and the surrounding communities, industries, and agricultural interests that pump groundwater. The authority's Comprehensive Water Management Plan estimates total water in storage to be in the neighborhood of 175 million acrefeet.

The story of shortage in the Edwards Aquifer is rooted in the fact that the aquifer is hydraulically connected to springs at the headwaters of the Comal River in New Braunfels and the San Marcos River in the City of San Marcos. Those two rivers and others join together in the Guadalupe River, and other systems that are a source of surface water supply for downstream communities. The correlations can be simply stated: aquifer levels drop when pumping and other discharges exceed recharge; while growth in demand for pumping trends relentlessly upward, recharge also decreases periodically with drought; and, when aquifer levels decrease, springflow decreases. All aquifer uses, human and environmental are stressed until such time as increased recharge replenishes the aquifer and springflow rebounds.

Conflicts in Central Texas over water use also are not new, and include a notable 1960s dispute when San Antonio and the Guadalupe-Blanco River Authority clashed over the right to build Canyon Reservoir to supplement existing water sources after the 1950's drought. The Texas Supreme Court ultimately upheld a grant of reservoir rights to the river authority, with emphasis on protecting in-basin use of water and some attention to evidence offered to show that the level of San Antonio's continued reliance on the Edwards Aquifer did not present a dire City of San Antonio v. Texas situation. Water Commission, 407 S.W.2d 752 (Tex. 1966).

The 1966 case settled an isolated water permitting issue, and it clearly had broader ramifications for the local politics of, and the psychology of, water supply. It did not, however, resolve regional competition for those supplies. With significant benefit for the downstream surface-water users, federal litigation under the endangered species act to protect critical habitat at the Edwards-fed springs became pivotal in the 1990s. Sierra Club v. Lujan, appeal dism'd Sierra Club v. Babbitt, 995 F2d 571 (5th Cir.1993) forced the Texas Legislature to move toward regional compromise and to craft the powers of the Edwards Aquifer Authority. The court ordered the State of Texas to limit groundwater use from the Edwards Aquifer and to take other measures necessary to protect the endangered spring species or risk additional federal supervision.

Legislation to create the Edwards Aquifer Authority (replacing also the existing Edwards Underground Water Conservation District) and to specifically craft its management goals was initially passed in The first state court litigation 1993. challenging the district soon followed. See. e.g., Barshop v. Medina County Underground Water Conservation District, 925 S.W.2d 618 (Tex. 1996). With this major case decided in its favor and certain voting rights issues also resolved, the Edwards Aquifer Authority became operational and was able to focus on its important regulatory mission despite various issues that remained active in the courts. In a meaningful nod to regional interests, enabling legislation for the Edwards Aquifer Authority also included creation of a South Central Texas Water Advisory Committee for advising the authority's board on downstream water rights and issues, and continuing legislative oversight.

B. Regulatory Framework

The Edwards Aquifer Authority is a water conservation and reclamation district under the terms of the Texas Constitution. and it is a groundwater district within the meaning of Chapter 36 of the Water Code. However, the authority's specific enabling legislation, including through various amendments now approaches seventy-plus pages. The Edwards Aquifer Authority Act is available on the Internet at www.edwardsaquifer.org. A proposed amendment to the authority's enabling legislation during the most recent regular session would have, among other things, expressed that Chapter 36 does not apply to the authority. That legislation did not pass.

See S.B. 1625 (82^{nd} R.S.) (Hegar). A provision was added to the session's primary groundwater ownership bill, however, to exclude the authority from application of Water Code § 36.002, quoted above.

The authority's regulatory framework has several elemental components. First, total permissible production of groundwater from permitted wells was initially quantified and then the resulting total guided certain features of the permitting process for individual users. To arrive at that production that would be allowed to an individual groundwater user, the authority conducted an extensive program of application procedures and deadlines, proving up actual historical use during a statutory test period, and applying regulatory allowables to achieve a corps of "initial regular permits." The authority does not limit production from exempt domestic and livestock wells, and total annual production from such wells can be substantial.

To the extent that the total amount of water determined to have been beneficially used without waste exceeded the amount of water available for permitting, the authority was directed to adjust the amount of water authorized for withdrawal under the permits proportionately to meet the amount available for permitting. An existing irrigation user, however, was assured two acre-feet a year for each acre of land the user actually irrigated in any one calendar year during the historical period. An existing user who has operated a well for three or more years during the historical period was to receive a permit for at least the average amount of water withdrawn annually during the historical period.

Each permit specifies the maximum rate and total volume of water that the water user may withdraw in a calendar year. Very significantly, initial regular permits are issued without a term, and such permits remain in effect until the permit is abandoned or cancelled. However, actual production can be further "interrupted" as necessary to accomplish the authority's management strategies, including to protect springflow. Among other things, the Edwards Aquifer Authority is required to steward a critical period management plan that distinguishes between discretionary and non-discretionary uses in consideration of declining aquifer levels.

Finally, the drilling of new wells is prohibited, except for replacement, test, or exempt wells or to the extent that the authority approves an amendment to an initial regular permit to authorize a change in the point of withdrawal under that permit. To the extent water might have been available for permitting after the issuance of permits to existing users, the authority was authorized to issue additional regular permits, subject to limits on the total amount of permitted withdrawals. However, there has been no water available for such permitting. Legislation also contemplated term permits, but those would require a board of directors resolution to activate rules for issuance and that has not occurred.

What has occurred most significantly is that the primary features of the Edwards Aquifer Authority legislation, together with the unique transmissivity of the Edwards Aquifer and the success of the authority's permitting and enforcement programs, have given rise to a robust regional market in groundwater rights. It is that market, now, that allows new groundwater-dependant uses to develop in the region. The aquifer's largest user, San Antonio Water System, has been an active participant in the groundwater market, an avid proponent of water conservation as a water management tool, and still on the hunt to further diversify its water supply portfolio.

Recommended reading regarding the Edwards Aquifer Authority prominently includes Chapter 14 of the Essentials of Texas Water Resources cited above in this discussion, authored by the authority's General Counsel, Mr. Darcy Frownfelter.

C. Horizon Issues

The "EARIP." The Edwards Aquifer Authority's enhanced management responsibilities include protecting endangered species and preventing further federal intervention in managing the Edwards Aquifer. In that regard, a deadline is embedded in the authority's enabling legislation and is looming large for regional water supply planning efforts. The Edwards Aquifer Authority Act requires the authority to implement and enforce water management practices, procedures, and methods to ensure that, not later than December 31, 2012, the continuous minimum springflows of the Comal Springs and the San Marcos Springs

are maintained to protect endangered and threatened species to the extent required by federal law.

Related to these duties to the species, the authority is participating in a multistakeholder initiative called the Edwards Aquifer Recovery Implementation Program, ("EARIP") that will prepare a habitat conservation plan to describe the anticipated effects of certain actions on the endangered species and how those effects will be minimized or mitigated. The plan is expected to include a flow regime to preserve the springs. The United States Fish and Wildlife Service will determine whether to approve the plan and whether to issue a permit for any incidental taking of the Edwards endangered species that may occur through pumping. Although the focus of this paper is groundwater production permitting, it is important to emphasis that a tremendous amount of effort and a great deal of money will be invested in strategies to avoid further mandatory reductions in authorized pumpage in order to achieve long-term biological goals for the species. Those strategies will range from habitat improvements, voluntary irrigation suspensions, and operating the San Antonio Water System's aquifer storage and recovery project in the Carrizo aquifer conjunctively with its Edwards pumpage to shift dependence to the stored supply during a severe drought. More severe critical plan management reductions in allowable pumpage would be implemented as an emergency measure.

More information regarding the EARIP process is available at a dedicated website, www.earip.org.

Continuing Litigation. Exercise of a groundwater district's regulatory authority, requires acting on private property rights in groundwater, whatever the extent of those rights may be. This remains true also for the Edwards Aquifer Authority, despite the complexity of its enabling legislation and the broad range of its responsibilities. A number of the court cases directly involving the authority have pushed this issue to one degree or another, including the Barshop case mentioned above. Most recently, the authority is defending a pivotal case that could affect the entire groundwater community, Edwards Aquifer Authority v. Day, 274 S.W.3d 742 (Tex.App. -San Antonio Aug 29, 2008) (NO. 04-07-00103-CV), rehearing overruled (Oct 17, 2008), review granted (Jan 15, 2010). The case is awaiting decision by the Texas Supreme Court.

As one would expect, the saga of the *Day* case began when the authority denied the authorization to produce groundwater, in that case by denying an application for initial regular permit. Underlying the case is a question regarding the extent to which a landowner's property right in groundwater exists "in place" or whether that interest "vests" only when the landowner has captured the groundwater and put it to a beneficial use. Finding against the authority, the San Antonio Court of Appeals issued its opinion that landowners have "some ownership rights" in groundwater beneath their property.

The Edwards Aquifer Authority explains in briefing its position to the Supreme Court that a holding that landowners have a constitutionally-protected ownership right in groundwater in place jeopardizes the ability of the Legislature to fulfill its mandatory duty under the Conservation Amendment of the Texas Constitution to provide for the regulation and management of groundwater resources. The authority also posits that the lower court's decision threatens the viability of the approximately 1,600 groundwater withdrawal permits issued under the Edwards Aquifer Authority Act and the market that has developed for the transfer of permitted rights.

Briefs in the *Day* case are available on the Internet on the Supreme Court's website, www.supreme.courts.state.tx.us, case #08-0964. Another case to watch is #04-11-00018-CV sent earlier this year to the Fourth Court of Appeals, styled Edward Aquifer Authority, and Karl Dreher in his official capacity as General Manager of the Edwards Aquifer Authority v. Glenn and JoLynn Bragg, also involving a regulatory takings claim.

V. LONE STAR GROUNDWATER CONSERVATION DISTRICT

The boundaries of the Lone Star Groundwater Conservation District are coextensive with those of Montgomery County, Texas, making that entity an example of a "single-county district." Water use in Montgomery County today is sourced almost exclusively from the Gulf Coast Aquifer, despite the dominant presence of Lake Conroe in the northwestern part of the county. Because of the groundwater district's new proportional adjustment rules for limiting historic and future groundwater use, the landscape for water use throughout the county is in an uneasy process of change.

A. BACKGROUND

Lone Star Groundwater Conservation District was created as a Water Code Chapter 36 district by the Texas Legislature in 2001 and confirmed by local voters in November of that year. See Chapter 1321, Acts of the 77th Legislature, Regular Session, 2001 (as amended). The district's enabling authority does include some expressed powers. For example a statutory amendment specified particular authority to adopt different rules for each aquifer, subdivision of an aquifer, or geologic stratum and for different geographic areas of an aquifer or subdivision of an aquifer if the district finds that conditions in or use of the aquifer differs substantially from one geographic area to another, or to promote better management of groundwater resources. However, this power is not unlike general authority in Chapter 36. See TEX. WATER CODE ANN. § 36.1216(d) (Vernon and Vernon Supp.).

Early on, the groundwater district engaged with the San Jacinto River Authority to jointly study options for both regulating groundwater production and making alternative water supplies available from the river authority's surface water supply in Lake Conroe. A "Regulatory Study and Facilities Implementation Plan for Lone Star Groundwater Conservation District and San Jacinto River Authority" was published in 2006. The study reflects that levels of drawdown from groundwater pumpage are not uniform in the county, which would be expected in a county with pockets of particular growth overlying an aquifer that formation does not have the transmissivity of the Edwards Aquifer. The 2006 report is available on the district's website at www.lonestargcd.org. Even though the study identified several more limited or staged approaches to regulation, the district opted for uniform, county-wide reductions in historical pumpage that would be crafted based on quantified recharge.

Contrast the regulatory approach of the Panhandle Groundwater Conservation District for managing depletion in subdivisions.

Although groundwater use in the County occurs from several formations identified together as the Gulf Coast aquifer, the district's regulatory framework, discussed below, is based on a concept of combined "aquifer sustainable yield," identified as a ratio of annual recharge to the Gulf Coast aquifer to the area of the groundwater district in acres. The Gulf Coast aquifer sustainable yield currently is calculated at 64,000 acrefeet per year.

Considering its aquifer recharge number, Lone Star Groundwater Conservation District mandated reductions in use of groundwater by a date certain based on general powers in its legislation and in Water Code Chapter 36. The district does not have any specially legislated powers for groundwater reduction planning, however. In this regard, one might compare the kind of authority expressly granted to the Harris-Galveston Subsidence District, under which that district's board may require a person to completely or partially discontinue the use of groundwater "only if the person is able to: (1) acquire an alternative water supply needed to replace the water supply covered by the order; or (2) participate in a groundwater reduction plan or other agreement approved by the board that complies with the district's regulatory requirements." SPECIAL DISTRICT LOCAL LAWS CODE ANN. § 8801.163 (Vernon and Vernon Supp.).

B. REGULATORY FRAMEWORK

The Lone Star instrument of Groundwater Conservation District's reduction mandate was promulgation of a District Regulatory Plan ("DRP"), adopted in phases. Taken as a whole, the DRP addresses not only the required groundwater reductions but also requirements related to obtaining alternative water sources that would replace the groundwater supplies to which access will be denied. The DRP is available on the district's website under the category of rules and bylaws. Terms in the discussion below, such as "conversion obligation," are used consistently with use of those terms in the DRP.

Phase II(B) of the DRP sets out the actual regulatory requirements according to which large-volume groundwater users for municipal and industrial purposes in the county must reduce groundwater production within five years. The reduction requirement is steep - commencing in 2016, the regulated users may produce only 70% of their 2009 permitted use, which in most cases exceeds actual historical use only slightly. Alternative supplies must be secured for the balance of existing historical use and all future growth demands.

There is no process proposed through which existing groundwater users can come forward to demonstrate particular circumstances that warrant variances or extensions of the conversion requirement. Also, new wells will continue to be allowed. However, when a municipal or industrial pumper will cross the threshold of "largevolume use," that pumper will come within the regulations of the DRP. The volume threshold is 10 million gallons per year.

Without intending to diminish at all the technical and managerial expertise that is involved in assessing available groundwater supplies and the impact of pumping, it seems fair to say that the reduction component of a groundwater reduction plan can be relatively straightforward. The more complex issues appear to exist in making the reductions achievable and in factoring how the reductions impact the regulated community and even the community at large.

In addition to quantifying the conversion obligation and requiring the implementation of groundwater reduction by a date certain, Phase II(B) sets out a process by which largevolume groundwater users must demonstrate their acquisition of alternative water supplies to the groundwater district's satisfaction. Detailed and sufficient groundwater reduction plans for each large-volume were required by April 1, 2011.

To be sufficient, a groundwater reduction plan must include, among other things:

- population and water demand projections for years 2016, 2025, 2035 and 2045;
- additional information regarding service area;
- a water reuse feasibility assessment;

- evidence demonstrating that alternative water sources will be adequate in volume;
- a description of each alternative water source and supplier and/or conservation project;
- documentation that any supplier relied on has supplies and sufficient legal rights and is willing to provide the volume and rate necessary;
- if supply is based on a contract expiring before 2045, then also renewal information and/or additional available alternatives;
- design, engineering, construction, legal, financial and technical components;
- a description of any feasibility studies for development, siting, easements, and construction;
- a report of preliminary engineering on facilities to be constructed through 2016 and conceptual engineering for how future demands might be met through averaging;
- how alternative water supplies will be financed; and
- a timetable with deadlines for completing various components of the project.

The groundwater reduction plan must be signed and sealed by a professional engineer.

There has been and continues to be a good deal of controversy in Montgomery County regarding the groundwater district's Some, for example, have regulations. strongly objected that a Chapter 36 groundwater district has no claim to the particular expertise or capabilities necessary to develop and manage a municipal water supply system. Nor does the groundwater district have any responsibility for acting in the particular best interests of other political subdivisions' constituents. Questions also have been raised regarding the modeling to support the framework for quantifying recharge and the reasonableness of the regulatory approach. For it's part, the district has made it clear that the regulated community should prepare for reduction percentages that significantly exceed 30% "sooner rather than later."

The search for alternative water supplies has also been controversial. If not for the efforts of the river authority to propose a groundwater reduction plan that would be open to all large-volume groundwater users in the county, it is likely that many of the groundwater users affected bv the groundwater district's reduction requirements would not be able to comply with those requirements. The river authority's countywide solution is feasible because the groundwater district's regulations allow for a kind of pooling under which some participants in a joint groundwater reduction plan over-convert to alternative supplies and others under-convert.

Another unknown, however, is whether or not absent the driving force of the groundwater district's alternative water supply requirements, the river authority's proposal to commence large-scale supply of surface water from Lake Conroe to support the river authority's countywide groundwater reduction plan would achieve critical mass. Some participants in the plan are required to take and pay for treated surface water, and others are not. All participants will pay a fee on the groundwater that they continue to produce and all will remain ultimately responsible for their total water supply. The amount of the fee, and the rate paid for treated surface water delivered is to be designed to approach equilibrium. The plan contract and historical documents related to it are available on the river authority's website at http://www.sjra.net/h2all/index.html.

A high percentage of the large-volume groundwater users affected bv the groundwater district's reduction requirements have signed the San Jacinto River Authority's contract. Other affected groundwater users have declared their intent to pursue paths for regulatory compliance that are independent of the river authority's groundwater reduction plan. Options are few, considering that Lake Conroe is the only surface-water supply source of significant quantity in the county, and the river authority has made it clear that it will not sell water from the reservoir outside of its groundwater reduction plan. Water reuse and groundwater pumped from formations that are not currently subject to adjustment proportional under the groundwater district's regulations remain as other supplies. (This latter source is discussed below as a horizon issue.)
C. HORIZON ISSUE

Deep and/or Brackish Groundwater Supplies. In defining "Alternative Water Source" to mean water other than groundwater produced from the Gulf Coast Aquifer within Montgomery County or any county that adjoins Montgomery County, the groundwater district *opened* the door to pumpage of groundwater that comes from beneath the aquifer formations that are subject to proportional adjustment.

The development of deep or brackish water has become a viable alternative water supply for some Montgomery County users, as demonstrated by the recent certification of several groundwater reduction plans that include that source. That was not always the case, as the district's initial regulatory requirements could have effectively precluded exploration of the supply. For one thing, the rules initially required that to be an alternative water source, the deep groundwater had to require demineralization before use. Indeed, recent test wells have shown the deep groundwater to be fresh enough in some areas to allow blending.

Additional district rulemaking is The groundwater anticipated. district's production permitting rules were crafted at a time before the groundwater reduction requirements were adopted and large-volume water users were required to prove alternative supplies. It is an artifact of timing that the district's production permitting rules are not an easy procedural fit for application to alternative water supply wells that do produce mineralized water and the timelines of the alternative water supply requirements. For example, the groundwater district's permitting regulations currently do not provide for obtaining a production permit significantly in advance of actual production. The practical implication of the rules if they are not further amended is that, for a desalination project, very significant facility construction would need to occur before a permit for production is secured. Also, when Lone Star groundwater district does issue a permit under its current rules, that permit is for a term of one year. Although there is statutory precedent for recognizing that longer-term permits should be issued for projects that involve the construction of significant transportation infrastructure, no such statutory or regulatory protections

currently exist for projects that require the construction of desalination facilities for *in*-district use.

Even considering additional rulemaking, certain regulatory and litigation risks associated with a deep or brackish groundwater supply must be recognized. Production needs to be authorized by the groundwater district after application and opportunity for a contested proceeding. An applicant to operate alternative supply wells bears the burden of proof to establish that production will not impair water quantity or water quality in the Gulf Coast Aquifer. Knowledge about the deep aquifer formations in Montgomery County is increasing quickly, but without a history of production from those formations opinions about how the formations will react to production must come from test wells and expert technical extrapolations. In the nature of a "buyer beware," Lone Star Groundwater Conservation District has stated that if production from a permitted alternative water supply well begins to impair water resources in the Gulf Coast Aquifer, production authorization will be reduced or even withdrawn.

The possibility of future production restrictions also is very significant. Such authority as the groundwater district has to require reduction of historical pumpage levels due to perceived overproduction would apply also to deep, and/or brackish groundwater. That being the case, estimating the reliability of supplies based on production of water from deep, or alternative water supply wells requires analysis of projected water availability together with anticipated demand. In this case, Lone Star also has expressly admonished potential applicants for alternative groundwater well projects that the production from such wells may become subject to future proportional adjustment or other regulatory controls. And, significantly, desired future conditions for the deep formations in Montgomery County have yet to be identified.

V. CONCLUDING REMARKS

It would be customary for case studies to have "conclusions," but regulation of groundwater use is an evolving process. Those issues that have been identified as on the horizon for the districts support this view.

Special Laws for Groundwater

The take-away from the three studies as a whole is the importance of individual involvement in the local regulatory process. With so many districts exercising local discretion, the interest in groundwater use must be actively advocated at every step. The best time to advocate those interests with an existing district is while rules and planning are being developed, so that the districts can better consider the regulated community's perspective. Early cooperation can make compliance with groundwater production regulations, and the enforcement of them, more efficient and effective.

The success of regulation will exist in the continued prosperity of people, business, and environmental values that depend on use of the resource. A century ago when the East case was decided, the Supreme Court emphasized a second perspective on the nature of groundwater regulation, one that has been less heralded but is nevertheless significant. Also borrowing from the Ohio court, the Texas opinion expresses the importance of not following a regulatory scheme that works "to the material detriment of the commonwealth, with drainage and agriculture, mining, the construction of highways and railroads, with sanitary regulations, building, and the general progress of improvement in works of embellishment and utility." East at p. 281. It is a similar sentiment, after all, that led the state to the prior appropriation system for surface water development and statewide regulation.

More information about groundwater generally, including useful maps, is available at the Texas Water Development Board's Groundwater Resources Division page, www.twdb.state.tx.us/gwrd/pages/gwrdindex. html. The Board also has compiled and shares information about individual districts through a list published on its website at www.twdb.state.tx.us/GWRD/GCD/gcdinfo1 .htm. Another excellent resource for information, including legislative issues for groundwater, is the Texas Alliance of Groundwater Districts. The alliance website is at www.texasgroundwater.org.

The author also would like to acknowledge and thank the following for their insights: Mr. C.E. Williams, General Manager, Panhandle Groundwater Conservation District; Mr. Steve Stevens, Mesa Water, Inc.; Ms. Luana Buckner, Chairman of the Board, Edwards Aquifer Authority; Mr. Darcy Frownfelter, General Counsel, Edwards Aquifer Authority; Mr. Greg Ellis, former General Manager of the Edwards Aquifer Authority and Montgomery County Municipal Utility Districts Nos. 8&9, whose groundwater reduction plan was recently approved by the Lone Star Groundwater Conservation District. In all instances, however, the perspectives expressed in this discussion are those of the author alone.

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John Jacobi joined the Office of Pipeline Safety, Southwest Region in 2003 with over 20 years of natural gas and liquids pipeline experience. A professional engineer (TX) and licensed attorney (TX & FL), he began his career with the U.S. Army Materiel Command with assignments at Red River Army Depot and the Aviation Systems Command before becoming Chief Engineer, Lake City Army Ammunition Plant. His private sector experience includes 13 years with Tenneco Inc. and Tennessee Gas Pipeline (TGP) including stints as a Planning Manager, Manager of Technical Services, and as an attorney dealing with health, safety and environmental compliance issues for both Tenneco Inc. and TGP. He left Tenneco for a career as an environmental consultant focusing on regulatory compliance, pipelines and energy issues. At the state level, he served as Chief, Bureau of Environmental Health for the Texas Department of Health where he managed regulatory programs such as asbestos, lead in paint, hazardous communications, industrial hygiene, indoor air quality, general sanitation and product safety. He has also served as in-house counsel for a public bulk liquids storage facility on the Texas Gulf coast.

A former Presidential Exchange Executive, Mr. Jacobi received his Bachelor of Science in Mechanical Engineering (with Honors) from Rose-Hulman Institute of Technology, his Master of Science in Industrial Engineering from Texas A & M University, and his Juris Doctorate from the University of Missouri - Kansas City.

Mr. Jacobi resides in Houston with his wife of 44 years, Jane. In his spare time, he enjoys flying, golf and bridge.

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Biography

Molly counsels clients on virtually every kind of environmental matter and represents them before various agencies and in federal and state courts. *Chambers USA* described her in their 2004 publication of *America's Leading Business Lawyers* as a "renaissance lawyer, a true litigator" who is especially praised for her "effectiveness" and "top notch negotiation skills."

In the enforcement area, she has litigated and negotiated settlements for clients under the Clean Water Act, Clean Air Act, Resource Conservation and Recovery Act, and their state analogs, as well as Superfund. Molly has counseled on audit issues, under both the state audit law and federal policy. She also has both resolved and tried disputes regarding water supply and utility issues.

Molly's other major area of practice is permitting work before the U.S. Environmental Protection Agency and Texas Commission on Environmental Quality (and its predecessor agencies), as well as the Texas Parks & Wildlife, and Railroad Commission of Texas. With regard to air and solid waste, Molly has handled a variety of contested cases, including incinerator and BIF air and hazardous waste permitting. She represents clients in State Implementation Plan (SIP) issues as well. On both a state and federal level, Molly has assisted clients in rulemaking petitions and in preparing comments on agency rules. She also has assisted clients in bringing litigation to challenge environmental legislation and rules. Molly has testified before the United States and Texas Senates, and has served as a testifying expert on environmental issues in a number of cases.

V&E

Representative Experience

Clean Air Act

- Secured first contested NSR/PSD permit in non-attainment area (TCEQ decision upheld by district court)
- · Counseled clients on impact of non-attainment designation on permitting issues
- Represented clients in work group to consider challenging EPA's eight-hour ozone nonattainment designation for counties determined to be "contributing to" non-attainment area
- Advised Dallas/Ft. Worth area client on 11 technical factors used by EPA in determining boundaries for eight-hour ozone non-attainment designations
- Evaluated emission credit contracts and transactions related to emission off-sets
- Reviewed and commented on various SIP issues associated with Houston, Galveston, and Beaumont/Port Arthur ozone non-attainment areas
- Evaluated numerous computer modeling efforts and results in conjunction with various contested air permits
- · Worked extensively with engineers, modelers, and toxicologists in air modeling issues
- Advised client on viability of challenging TCEQ NOx rules
- Counseled clients on various Title V compliance issues

Mining

- · Counseled clients on rulemaking and interpretation of coal combustion byproducts
- Successfully represented client in defeating an unsuitability petition
- Assisted in securing settlement in SCMRA contested case
- · Worked with a team of lawyers to successfully permit a lignite mine in Texas

Water/Wastewater

· Secured, defended, and defeated water rights permits

- Secured groundwater permits in contested matters from the Edwards Aquifer Authority and other groundwater districts
- Represented client in securing contested wastewater permit for new lignite mine
- Counseled clients on Effluent Limitation Guidelines for various industry sections
- Successfully represented clients in contested TPDES wastewater discharge matters
- Challenged special districts on authorization to supply services
- Successfully defended action to compel water supply
- Advised clients regarding water rights and water contracts in various transactions
- Advises on clean water cases, including those dealing with raw water supply
- Actively involved in Texas water planning efforts

Waste

- Successfully permitted and renewed underground injection control
- Advised clients on various RCRA issues

Prior results do not guarantee a similar outcome.

Education and Professional Background

- The University of Texas School of Law, J.D. with honors, 1981
- Texas Tech, B.S. Textile Technology and Textile Chemistry *magna cum laude*, 1978 (Outstanding Engineering Student, Engineering Student Council, 1977 1978)
- Attended the University of Southwestern Louisiana
- Admitted to practice: Texas, 1981

Professional Recognition

 The International Who's Who of Business Lawyers in environmental law, 2004, 2006, 2008, and 2010

V&E

- Chambers USA: America's Leading Lawyers for Business in environmental law, 2003 -2011
- The Best Lawyers in America® in environmental, administrative, and water law, 1995 2011; "Lawyer of the Year" in environmental law, 2011
- Legal Media Group's (Euromoney's) *Guide to the World's Leading Lawyers Best of the Best USA* in environmental law, 2009
- Legal 500 U.S. in environment litigation, 2007 2010
- Who's Who Legal: Texas in environmental law, 2007 and 2008
- "Texas Super Lawyer," Texas Monthly, 2003 2010
- "Top 50 Central and West Region Super Lawyers," Texas Monthly, 2003
- "Top 50 Women Super Lawyers," Texas Monthly, 2003
- "Top Notch Lawyer" in environmental law, Texas Lawyer' Go-To Guide, 2002 and 2007

Activities and Affiliations

- Member: Administrative and Public Law, and Environmental and Natural Resources Law Sections, State Bar of Texas; Board of Directors of the Texas Water Conservation Association, 1999
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Is the Third Time a Charm?—EPA's Latest Proposed Section 316(b) Regulations for Existing Utility Facilities Molly Cagle, Bryan Moore, and Taylor Holcomb

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Exhibit 1—EPA Guidance, "Development of BPJ-Based Section 316(b) NPDES Permit Conditions" (2007)

<u>Is the Third Time a Charm?—EPA's Latest Proposed</u> <u>Section 316(b) Regulations for Existing Utility Facilities</u> *Molly Cagle, Bryan Moore, and Taylor Holcomb*

When Congress amended the Clean Water Act in 1972, it added a rather unusual provision to authorize the Environmental Protection Agency ("*EPA*") to regulate cooling water intake structures. Section $316(b)^1$ requires that the "location, design, construction and capacity of cooling water intake structures reflect the best technology available ("*BTA*") for minimizing adverse environmental impact."² The focus of this paper is the recently proposed standards for "existing" utility facilities (*i.e.*, those facilities that commenced construction on or before January 17, 2002, and any modifications to such facilities that are not "new" facilities under the Phase I rule).

On April 20, 2011, EPA published in the *Federal Register* proposed section 316(b) regulations applicable to *existing facilities*, both utility and non-utility.³ Like EPA's two previous stabs at adopting section 316(b) regulations for utilities, the rules are aimed at reducing impingement and entrainment of fish and shellfish. As for EPA's prior efforts, a federal court remanded EPA's first set of rules in its entirety, and the second set was set aside to the extent it pertained to existing facilities.⁴ It remains to be seen whether EPA's third attempt—which covers non-utility facilities in addition to utility facilities—will survive public comment much less judicial scrutiny.

I. The History of Section 316(b) Regulation

Industry, including both utility power plants and non-utility manufacturing plants, use water to absorb heat in a variety of processes. In many instances, substantial volumes of water are withdrawn from rivers, lakes, and reservoirs constructed for industrial cooling purposes. Water is typically withdrawn by cooling water intake structures and in the process fish and aquatic species may be impinged—that is, sucked up against the intake structure screen, or entrained—that is, sucked into the cooling water system. All of EPA's section 316(b) rulemaking has been aimed at addressing impingement and entrainment.

EPA's first set of section 316(b) regulations was struck down on procedural grounds by the Fourth Circuit.⁵ Eighteen years later, EPA had yet to even propose revised section 316(b) regulations. Various environmental organizations, disturbed by the lack of progress, initiated a citizen suit in the Southern District of New York demanding that EPA promulgate rules to implement the BTA requirement established in the Clean Water Act. EPA and the environmental organizations eventually settled the citizen suit by entering into a consent decree.⁶ In traditional fashion, EPA and the environmental groups approached the regulatory task of

¹ See Federal Water Pollution Control Act Amendments of 1972, Pub. L. 92-500, § 2, 86 Stat. 816, 876 (codified as amended at 33 U.S.C. § 1326(b) (1976)).

² 33 U.S.C. § 1326(b) (2006).

³ Cooling Water Intake Structures at Existing Facilities, 76 Fed. Reg. 22,174 (Apr. 20, 2011). The proposed regulations were signed for publication and released to the public on March 28, 2011.

⁴ EPA voluntarily remanded the portion of the Phase III rule governing existing non-utility facilities. ConocoPhillips v. EPA, 2010 WL 2880144 (5th Cir. July 23, 2010).

⁵ Appalachian Power Co. v. Train, 566 F.2d 451 (4th Cir. 1977).

⁶ Cronin v. Reilly, 93 Civ. 314 (S.D.N.Y. 1995) (consent decree entered October 10, 1995).

defining BTA in three phases of rulemaking, allowing different standards for "new" and "existing" cooling water intake structures, and utility and non-utility facilities. Notably, the settlement was entered into without any input whatsoever from electric utility companies,⁷ the industry most directly targeted by the agency in its section 316(b) rules. Following a series of extensions to the timeline set out in the consent decree, in 2000 the District Court eventually ordered EPA to propose section 316(b) regulations for new facilities by July 20, 2000, and for existing facilities by July 20, 2001.⁸

Only a year or so behind schedule, EPA finalized section 316(b) regulations applicable to new facilities on December 18, 2001.⁹ The new facility rule, also known as the Phase I rule, applies to all new facilities above a certain intake volume threshold, with the exception of new offshore oil rigs (which were reserved for Phase III), and establishes a two-track approach to regulating cooling water intake structures. Track I establishes national intake capacity and velocity standards based on closed-cycle cooling technology, while Track 2 allows facilities to conduct site-specific studies to demonstrate to the permitting authority that alternatives to the Track I requirements will reduce impingement and entrainment mortality to at least the level the facility would achieve if it met Track I capacity and velocity requirements.¹⁰ In a nutshell, EPA essentially mandated closed-cycle cooling for all new facilities.

On July 9, 2004—twenty-seven years after the Fourth Circuit remanded EPA's initial section 316(b) regulations—EPA promulgated Phase II section 316(b) regulations. The Phase II rules were applicable to *existing facilities*¹¹ that, as their primary activity, "both generate and transmit electric power, or generate electric power but sell it to another entity for transmission," "use or propose to use cooling water intake structures with a total design intake flow of 50 million gallons per day or more," and "use at least 25 percent of water withdrawn exclusively for cooling purposes."¹² Phase II therefore covered large, existing power plants.

Much to the disappointment of several environmental groups, EPA did not require existing power plants using once-through cooling to convert to Phase I technology by installing closed-cycle cooling systems to comply with section 316(b)'s "best technology available" standard.¹³ Recognizing that the social cost of conversion would amount to \$3.5 billion per year¹⁴ and that requiring closed-cycle cooling would close at least 9 of the 539 existing power plants subject to the rule,¹⁵ EPA instead adopted five compliance alternatives that a facility could select and implement¹⁶—three of which, if chosen, triggered a requirement to comply with

⁷ The district court denied a motion by 56 electric utility companies to intervene. *Cronin v. Browner*, 898 F. Supp. 1052, 1064 (S.D.N.Y. 1995).

⁸ Cronin v. Browner, 90 F. Supp. 2d 364, 376 (S.D.N.Y. 2000).

⁹ Regulations Addressing Cooling Water Intake Structures for New Facilities, 66 Fed. Reg. 65,256 (Dec. 18, 2001).

¹⁰ *Id.* at 65,259–260 (codified at 40 C.F.R. § 125.84).

¹¹ Final Regulations to Establish Requirements for Cooling Water Intake Structures at Phase II Existing Facilities, 69 Fed. Reg. 41,576 (July 9, 2004).

¹² 40 C.F.R. § 125.91 (2005).

¹³ 40 C.F.R. § 125.94(a)(1)(i) (2005).

¹⁴ 69 Fed. Reg. at 41,605.

¹⁵ Proposed Regulations to Establish Requirements for Cooling Water Intake Structures at Phase II Existing Facilities, 67 Fed. Reg. 17,122, 17,155 (Apr. 9, 2002).

¹⁶ 40 C.F.R. § 125.94(a) (2005).

national performance standards¹⁷ that were developed based on consideration of a range of technologies that EPA determined to be commercially available for the industries affected as a whole.¹⁸

The adopted Phase I and II regulations were challenged by both industry and environmental groups.¹⁹ The Phase I regulations were upheld except for that portion of the regulations that permitted the use of restoration measures for compliance.²⁰ However, the Second Circuit—with now Supreme Court Justice Sonia Sotomayor writing—remanded the Phase II regulations back to EPA almost in their entirety, for a number of reasons, including that EPA impermissibly relied on cost-benefit analyses in characterizing the "best technology available."²¹ On appeal of the narrow issue of whether EPA can rely on cost-benefit analyses in promulgating section 316(b) regulations, the Supreme Court answered in the affirmative.²² Note that the Supreme Court did not instruct EPA to consider cost in promulgating regulations under section 316(b); it merely concluded that, under the Clean Water Act, the agency <u>could</u> consider cost-benefit in defining BTA. In support of the new rulemaking, EPA pursued an information collection request or survey designed to discover how much individuals and households are willing to pay to protect aquatic organisms.²³

Shortly after the Second Circuit remanded the Phase II regulations, EPA issued a memorandum suspending the regulations while the Second Circuit decision was appealed to the Supreme Court. EPA also directed that all permits for existing facilities that would have been subject to the regulations include section 316(b) conditions developed on a "best professional judgment" basis.²⁴ After the formal suspension of the Phase II rules was published in the *Federal Register*, only one small provision of the Phase II rules survived:

Existing facilities that are not subject to requirements under this or another subpart of this part must meet requirements under section 316(b) of the CWA determined by the Director on a case-by-case, best professional judgment (BPJ) basis.²⁵

In an effort to provide some interim guidance to permit writers engaged in evaluating NPDES permit renewal applications for existing facilities, EPA published Draft Guidance

¹⁷ *Id.* at § 125.94(b) (2005).

¹⁸ 69 Fed. Reg. at 41,598-99.

¹⁹ See Riverkeeper Inc. v. EPA, 358 F.3d 174 (2d Cir. 2004) (challenge to new facility rule); Riverkeeper Inc. v. EPA, 475 F.3d 83 (2d Cir. 2007) (challenge to existing facility rule).

²⁰ *Riverkeeper Inc. v. EPA*, 358 F.3d at 205.

²¹ *Riverkeeper, Inc. v. EPA*, 475 F.3d at 104.

²² Entergy Corp. v. Riverkeeper, Inc., 129 S. Ct. 1498 (2009).

²³ On January 21, 2011, EPA forwarded its final Information Collection Request to the Office of Management and Budget for approval. Willingness to Pay Survey for § 316(b) Existing Facilities Cooling Water Intake Structures, 76 Fed. Reg. 3,883 (January 21, 2011).

²⁴ Memorandum from Benjamin Grumbles, Assistant Administrator, EPA Office of Water, to Regional Administrators (Mar. 20, 2007).

²⁵ Suspension of Regulations Establishing Requirements for Cooling Water Intake Structures at Phase II Existing Facilities, 72 Fed. Reg. 37,107, 37,108 (July 9, 2007) (keeping in effect 40 C.F.R. § 125.90(b)).

explaining what information would be useful to permitting authorities for developing best professional judgment permit requirements.²⁶

The Phase III rules were issued in 2006 and covered two types of facilities that utilize cooling water intake structures—non-utility existing facilities and new offshore oil and gas rigs. As noted, the Phase III rules were in part remanded,²⁷ thus setting the stage for the proposed rule that is the focus of this paper that combines requirements for existing utilities (Phase II) and non-utilities (Phase III) into one rule.

II. EPA's Third Attempt at Enacting Section 316(b) Regulations for Existing Utility Facilities

EPA and environmental groups entered into a settlement agreement on November 22, 2010, in which EPA committed to propose new section 316(b) regulations for existing facilities by March 14, 2011, and to promulgate final regulations by July 27, 2012.²⁸ Industry groups asked to participate in the district court's consideration of the settlement agreement, but, similar to its previous decision in *Cronin v. Browner*, the court denied the industry groups' request.²⁹ On March 11, 2011, EPA and the environmentalist groups amended the settlement agreement to give EPA an additional two weeks to release its proposed section 316(b) regulations.³⁰

The proposed regulations, signed for publication on March 28, 2011, and published in the *Federal Register* on April 20, 2011, address over half of the water withdrawals in the nation and affect 1,262 facilities—including 559 electric generators, 355 of which employ once-through cooling. The draft rules are set forth in approximately 15 pages, but required more than 80 pages of explanation. EPA estimates that the cost of compliance with the proposed regulations—including one-time technology costs, one-time costs of installation downtime, annual fixed and variable operating and maintenance costs, the value of electricity requirements for operating compliance technology, permitting costs, and costs incurred by federal and State governments—will total \$384 million annually.³¹ Once again, EPA rejected closed-cycle cooling as the BTA for purposes of complying with section 316(b) (based on cost-benefit analyses) and instead proposed what it characterizes as a "more flexible" approach—one it claims will reduce fish and shellfish mortality caused by impingement and entrainment.

²⁶ Development of BPJ-Based Section 316(b) NPDES Permit Conditions, EPA Draft Fact Sheet (December 2007) (attached as Exhibit 1). The Obama EPA subsequently and quietly pulled the draft guidance off of EPA's webpage.

²⁷ ConocoPhillips v. EPA, 2010 WL 2880144 (5th Cir. July 23, 2010).

²⁸ Order Terminating the Second Amended Consent Decree and Dismissing the Complaint, *Riverkeeper, Inc. v. Jackson*, Case No. 93 Civ. 0314, Slip op. (S.D.N.Y. Dec. 3, 2010).

²⁹ Order Denying Utility Water Act Group's Amicus Motion, *Riverkeeper, Inc. v. Jackson*, Case No. 93 Civ. 0314, Slip op. (S.D.N.Y. Dec. 3, 2010).

 ³⁰ Amendment to Settlement Agreement Among the Environmental Protection Agency, Plaintiffs in *Cronin, et al. v. Reilly*, 93 Civ. 314 (LTS) (SDNY), and Plaintiffs in *Riverkeeper, et al. v. EPA*, 06 Civ. 12987 (PKC) (S.D.N.Y.) (March 11, 2011).
 ³¹ 76 Fed. Reg. at 22,207. This amount is misleading, however, because EPA did not include in its calculation (i)

³¹ 76 Fed. Reg. at 22,207. This amount is misleading, however, because EPA did not include in its calculation (i) the costs that will be incurred by existing facilities expected to meet requirements based on closed-cycle cooling for newly constructed generating units and (ii) costs associated with complying with site-specific entrainment determinations made by the permitting authority.

A. Who Must Comply?

Facilities subject to the proposed regulations include existing power generating facilities³² and existing manufacturing and industrial facilities that use³³ intake structures with a design intake flow³⁴ of more than two million gallons per day,³⁵ that withdraw water from waters of the U.S., that require a NPDES permit, and that use at least twenty-five percent of withdrawn water (measured on an average annual basis for each calendar year) exclusively for cooling purposes.³⁶ In other words, EPA combined its Phase II and Phase III coverage for utility and non-utility facilities under the new rule.

B. How Must They Comply?

As opposed to a "one-size fits all" directive,³⁷ the proposed regulations take a more multi-faceted approach, setting up separate compliance requirements for impingement mortality.³⁸ and entrainment mortality.³⁹

 $^{^{32}}$ An "existing facility" is any facility that commenced construction before January 18, 2002, including modifications and additions to such facilities commencing before January 18, 2002. Modifications or additions to a cooling water intake structure (or even total replacement of an existing cooling water intake structure with a new one) does not convert an otherwise unchanged existing facility into a new facility. Rather, the determination as to whether a facility is new or existing focuses on whether it is a green field or stand-alone facility and whether there are changes to the cooling water intake to accommodate it. 76 Fed. Reg. at 22,193.

³³ Use of a cooling water intake structure includes obtaining cooling water by contract or other arrangement from independent suppliers—defined as entities that own and operate their own cooling water intake structure and directly withdraw water from waters of the U.S.—that are not otherwise subject to section 316(b) requirements. 76 Fed. Reg. at 22,281 (to be codified at 40 C.F.R. § 125.91(b)). However, facilities that obtain cooling water from a public water system or use treated effluent are not deemed to be "using" a cooling water intake structure for purposes of the proposed regulations. *Id.* (to be codified at 40 C.F.R. § 125.91(c)).
³⁴ EPA intends for the design intake flow to reflect the maximum volume of water that a facility can physically

³⁴ EPA intends for the design intake flow to reflect the maximum volume of water that a facility can physically withdraw from a source waterbody over a specific time period. 76 Fed. Reg. at 22,195. This means that a facility that has permanently taken a pump out of service or has flow limited by piping or other physical limitations should be able to consider such constraints when reporting its design intake flow. *Id*.

³⁵ EPA's 2004 existing facility regulations applied to existing power plants with a design intake flow greater than or equal to 50 million gallons per day.

 ³⁶ Because EPA wants to encourage the reuse of cooling water, water used for both cooling and non-cooling purposes does not count towards the 25-percent threshold. 76 Fed. Reg. at 22,192.
 ³⁷ EPA's self-congratulatory characterization of its proposed rules as "flexible" because it avoids a one-size fits all

³⁷ EPA's self-congratulatory characterization of its proposed rules as "flexible" because it avoids a one-size fits all compliance mandate ignores the nationwide single impingement mortality standard proposed year-round for all facilities, for all water bodies and for all species.

³⁸ EPA defines impingement as "entrapment of any life stages of fish or shellfish on the outer part of an intake structure or against a screening device during periods of intake water withdrawal." Impingement includes only those organisms collected or retained on a 3/8 inch shell...." 76 Fed. Reg. at 22,282 (to be codified at 40 C.F.R. § 125.92). Impingement mortality is death as a result of impingement. *Id.* ³⁹ "Entrainment" is defined to cover the species missed by the entrapment definition and this includes "those

³⁹ "Entrainment" is defined to cover the species missed by the entrapment definition and this includes "those organisms that pass through a 3/8" sieve." 76 Fed. Reg. at 22,281 (to be codified at 40 C.F.R. § 125.92). "Entrainment mortality" is "death as a result of entrainment through the cooling water intake structure, or death as a result of exclusion from the cooling water intake structure by fine mesh screens or other protective devices intended to prevent the passage of entrainable organisms through the cooling water intake structure." *Id*.

I. Reducing Impingement Mortality

All units at existing facilities subject to the proposed regulations must achieve the proposed impingement mortality standard, regardless of cost or current practices. <u>To reduce impingement mortality</u>, the proposed regulations provide two compliance options.

- <u>Option 1</u>. Under the first option, an existing facility would comply with impingement mortality standards by demonstrating to the permitting authority that its through-screen design velocity or actual average intake velocity does not exceed 0.5 feet per second.⁴⁰ If compliance via design is elected, compliance monitoring is not required, but facilities must show that operations and maintenance prevent debris from blocking more than 15% of the intake opening.⁴¹ Biweekly monitoring, however, is required for those facilities meeting the Option 1 standard based on actual average intake velocity.⁴² Because EPA acknowledges in its proposed regulations that compliance through meeting this "design standard" is not possible at all facilities, facilities are given a second compliance option.⁴³
- <u>Option 2</u>. Under the second option, existing facilities would be subject to a performance standard that is arguably designed to limit the number of fish that are ultimately killed by impingement. Although EPA has proposed the use of modified traveling screens, such as Ristroph screens with "fish-friendly"⁴⁴ handling and return systems, as "best technology available" for reducing impingement mortality, the proposed regulations do not specify any particular intake screen configuration, mesh size, or intake screen operations that must be used.⁴⁵ However, the screens and return systems used must result in the facility consistently meeting the following performance standard: for all life stages of fish that are collected or retained on a 3/8 inch sieve and held for a period of 24 to 48 hours, impingement mortality may not exceed a monthly average of 31 percent and an annual average of 12 percent (calculated as the average of monthly impingement mortality for 12 consecutive months).⁴⁶ Thus, the total number of fish killed from impingement is not relevant—rather the percent of survival is what counts.

The proposed rule allows existing facilities to comply with entrainment requirements through the use of closed-cycle cooling recirculating systems⁴⁷ but,

⁴⁰ 76 Fed. Reg. at 22,283 (to be codified at 40 C.F.R. § 125.94(b)(2)).

⁴¹ *Id.* (to be codified at 40 C.F.R. § 125.94(b)(2)(iii)).

⁴² Though monitoring frequency would be determined case-by-case, EPA assumes that monitoring would "generally be conducted on a biweekly basis." 76 Fed. Reg. at 22,250.

 $^{^{43}}$ *Id.* at 22,204.

⁴⁴ The modified screens EPA envisions consist of screens with coarse size mesh with collection buckets designed to minimize turbulence, fish barriers to prevent fish from escaping the collection bucket, and a low-pressure wash to remove fish prior to using a high pressure spray to remove debris. 76 Fed. Reg. at 22,203. ⁴⁵ *Id.* at 22,204.

⁴⁶ *Id.* at 22,282 (to be codified at 40 C.F.R. § 125.94(b)(1)).

⁴⁷ Defined at 76 Fed. Reg. at 22,281 (to be codified at 40 C.F.R. § 125.92).

oddly enough, does not exempt plants using closed-cycle systems from impingement mortality requirements.⁴⁸

To account for impingement mortality under the second compliance option, facilities would be subject to a site-specific Impingement Mortality Reduction Plan that describes the frequency and duration of monitoring, the monitoring location, and the organisms to be monitored.⁴⁹ The Plan must be approved by the permitting authority.

For each monitoring episode, a facility would determine the number of organisms that are collected or retained on a 3/8 inch sieve (the number that are impinged, or "**I**"), and the number that die within 24 to 48 hours of impingement (the amount of impingement mortality, or "**IM**").⁵⁰ To accomplish this, EPA envisions that most facilities would collect samples from the fish return systems at some point prior to the fish return discharge point, and would either divert some or all of the flow from the fish return system into a fish collection or holding area, or place a net or debris basket fitted with 3/8 inch mesh spacing in the fish return and collect and transfer the retained organisms to a holding tank.⁵¹ Fish that are included in any carryover from a traveling screen or removed from a screen as part of debris removal would be counted as fish impingement mortality, but naturally moribund fish and invasive species would be excluded.⁵² The percentage of impingement mortality would be defined by the following equation:

% $IM = (IM \div I) \times 100$

Monitoring results would be sent to the permitting authority along with a facility's Discharge Monitoring Reports and annual permit report. If impingement mortality does not exceed a monthly average of 31 percent and an annual average of 12 percent, the facility would be deemed in compliance with the performance standard.⁵³ Additionally, facilities would be required to submit an annual certification statement, signed by a responsible corporate officer, indicating each cooling water intake structure technology is being maintained and operated as set forth in the permit.⁵⁴

Existing facilities would be required to comply with impingement mortality requirements as soon as possible, but may request up to eight years to come into compliance.⁵⁵ Regardless of which compliance alternative a facility chooses to

⁴⁸ See 76 Fed. Reg. at 22,205.

⁴⁹ See id. at 22,250.

⁵⁰ See id. at 22,257.

 $^{^{51}}$ *Id*.

⁵² Id.

⁵³ Id.

⁵⁴ See id. at 22,287 (to be codified at 40 C.F.R. § 125.97(c)).

⁵⁵ See id. at 22,248.

comply with impingement mortality requirements, however, all facilities must <u>also</u> ensure that fish are not entrapped—so they can escape without dying.⁵⁶

• <u>Tidal and Ocean Waters</u>. For facilities with intake structures on tidal or ocean waters, protective measures for traveling screens (such as guard rails and gentle back wash) must be incorporated into the design of the intake structures. Shellfish impingement mortality must be reduced to a level that reflects the installation and utilization of barrier nets.⁵⁷

2. Reducing Entrainment Mortality

EPA did not identify a single technology that represents the "best technology available." Instead, the proposed regulations establish a process for the permitting authority to determine entrainment technology controls on a site-specific basis following the consideration of nine factors.⁵⁸ The nine factors include (but are not limited to) source water physical data, source water baseline biological characterization data, cooling water intake structure data, engineering studies of the technical feasibility and incremental costs of candidate entrainment control technologies, engineering cost estimates of all technologies considered, and a detailed discussion of changes in non-water quality factors attributed to technologies and/or operational measures considered, including increases or decreases in energy consumption and thermal discharges.⁵⁹ Alternatively, existing facilities could instead choose to comply with the entrainment mortality requirements applicable to new units at existing facilities that are based on closed-cycle cooling.⁶⁰

Like EPA did in its now withdrawn Phase II regulations with respect to facilities with intake structures located on reservoirs,⁶¹ EPA considered proposing no controls to address entrainment mortality, and to rely instead only on impingement mortality controls.⁶² EPA did not select this option, though it is soliciting comment on whether the final regulations should base national BTA on impingement controls only and drop the specific requirement for a structured site-specific analysis of entrainment technology options; but one outcome of a site-specific analysis may be that no other technologies beyond impingement control meet the criteria for selection as BTA, because no other technologies are feasible and/or their benefits do not

⁵⁶ See id. at 22,283 (to be codified at 40 C.F.R. § 125.94(b)(2)(vi)).

⁵⁷ See id. at 22,283 (to be codified at 40 C.F.R. § 125.94(b)(2)(iv)).

⁵⁸ See id. at 22,283 (to be codified at 40 C.F.R. § 125.94(c)).

⁵⁹ EPA explicitly recognized in the proposed regulations that a number of existing facilities should have already compiled much of the required study information for purposes of complying with its remanded and suspended section 316(b) regulations, and expects that these studies could be used to meet many of the application study requirements detailed in its newly proposed regulations. 76 Fed. Reg. at 22,254. This is simply not true of most facilities in Texas. Under the withdrawn Phase II rule, facilities with an intake structure on reservoirs were not required to meet any entrainment requirements and therefore did not prepare and submit entrainment studies, such as Entrainment Characterization Studies. *See* 69 Fed. Reg. at 41,635.

⁶⁰ 76 Fed. Reg. at 22,283 (to be codified at 40 C.F.R. § 125.94(a)(2)).

⁶¹ 69 Fed. Reg. at 41,598

⁶² See 76 Fed. Reg. at 22,205.

justify their costs.⁶³ EPA, however, does expect that permitting authorities will in some cases choose closed-cycle cooling as the BTA for entrainment mortality.⁶⁴

In addition, the proposed regulations require facilities with an "actual intake flow"⁶⁵ of 125 million gallons per day or more to develop and submit an Entrainment Characterization Study for use in establishing site-specific BTA, which would include information already collected by existing facilities in studies to comply with the now withdrawn existing facility intake structure regulations, as well as additional site-specific information.⁶⁶ Entrainment Characterization Studies would be subject to peer review.⁶⁷

Existing facilities would be required to comply with entrainment requirements as soon as possible under a schedule of compliance established by the permitting authority.⁶⁸

3. Impingement and Entrainment Requirements for "New Units" at Existing Facilities

<u>New generating units</u> at an existing facility that are not a "new facility" and that have a design intake flow greater than two million gallons per day would be required to meet the same impingement mortality standards identified for existing facilities, but would be expected to meet requirements based on closed-cycle cooling to satisfy entrainment mortality standards.⁶⁹ Owners of new units at existing facilities would be required to either (i) reduce actual intake flow to a level commensurate with that which could be attained by the use of a closed-cycle recirculating system for the same level of cooling, or (ii) demonstrate to the permitting authority the installation, operation, and maintenance of technologies for each intake at the new unit that would reduce entrainment mortality for all stages of fish and shellfish that pass through a 3/8 inch sieve equivalent to 90 percent or greater of the reduction that could be achieved through flow reduction commensurate with closed-cycle cooling.⁷⁰

Notably, repowered, replaced, and upgraded units are not considered new units under the proposed regulations and therefore would not be subject to the proposed "new unit" regulations.⁷¹

III. Other Regulatory Options EPA Considered For Its Proposed Rule

In developing its proposed regulations, EPA evaluated a number of technologies and developed four primary options that it considered for its proposal. The first three options—

⁶³ Id.

⁶⁴ See id. at 22,210.

⁶⁵ Defined as the average volume of water withdrawn on an annual basis by its cooling water intake structures over the past three calendar years, of greater than 125 million gallons per day. 76 Fed. Reg. at 22,281 (to be codified at 40 C.F.R. § 125.92).

⁶⁶ 76 Fed. Reg. at 22,276 (to be codified at 40 C.F.R. § 122.21(r)(9)).

⁶⁷ *Id.* at 22,276 (to be codified at 40 C.F.R. § 122.21(r)(9)(ii)).

⁶⁸ *Id.* at 22,282 (to be codified at 40 C.F.R. § 125.93(b)).

⁶⁹ *Id.* at 22,283 (to be codified at 40 C.F.R. § 125.94(d)).

⁷⁰ Id.

⁷¹ *Id.* at 22,196.

including the option it ultimately chose—would require identical impingement mortality standards, but would vary the approach to entrainment mortality controls.

The fourth option ("*Option 4*") is the friendliest to small businesses. Similar to the "best professional judgment" method that has been used to establish section 316(b) requirements for existing facilities that would have been subject to EPA's withdrawn Phase II regulations, Option 4 requires existing facilities operating intake structures with a design intake flow of between two and fifty million gallons per day to have impingement controls established on a site-specific, best professional judgment basis.⁷² Existing facilities with a design intake flow of fifty million gallons per day or more—as opposed to the proposed regulations' threshold of two million gallons per day or more—would be expected to comply with the impingement mortality standards described in the proposed regulations.⁷³ All existing facilities with a design intake flow of two million gallons per day or more—would be subject to entrainment controls established on a site-specific basis.⁷⁴

Though EPA did not select Option 4 for its proposal, EPA is planning to further evaluate this option because other major regulations already promulgated and expected to be promulgated in the near future, in conjunction with its proposed section 316(b) regulations, may have an adverse cumulative impact on small businesses.⁷⁵ EPA specifically solicited comments on Option 4, including the cumulative impact of the proposed regulations on small businesses generally.⁷⁶

IV. The Future of the Proposed Regulations

The proposed regulations will draw fire from all sides, but particularly from environmental groups who hoped that EPA would require all existing facilities to retrofit to closed-cycle systems. Of particular concern to environmental groups is that the proposed regulations may partially reinforce the status quo, particularly because EPA estimated in its proposed regulations that three-fourths of all electric generators may already meet some or all of the proposed impingement mortality standards.⁷⁷

V. Concerns and Criticisms

At the time the authors prepared this paper, industry groups and states were rumored to be editing 100+ page comments on the rules—critical of almost everything about the rules. A few notable problems are described below:

- EPA did not define "adverse environmental impact."
- At the heart of section 316(b) is Congress' goal to minimize "environmental impacts" associated with sucking up significant volumes of water from waters of

⁷² See id. at 22,206.

⁷³ Id.

⁷⁴ Id.

⁷⁵ *Id.* at 22,208. ⁷⁶ *Id.*

⁷⁷ *Id.* at 22,248.

the U.S. Rather than define "adverse environmental impact," EPA proposes a rule which is structured to protect each and every aquatic community. The focus of the rule should be on overall biological populations—the health of the aquatic ecosystem in existing surface waters. EPA ignores the biological community and instead simply assumes that any impingement and entrainment mortality compromises aquatic populations and that such a consequence is *per se* an adverse environmental impact. There is no scientific or policy basis for that assumption.

- EPA uses a single national impingement standard regardless of what type of water body an intake is located on, and regardless of what aquatic species and communities exist in that water body.
- In its now withdrawn Phase II rules, EPA recognized that different standards should be applied to intake structures on rivers versus reservoirs. No such recognition exists in the current rules. Yet, the aquatic habitats of a riverine as opposed to a reservoir system are drastically different. In addition, in Texas many reservoirs were built specifically as cooling ponds and, but for the associated power plant, the aquatic ecosystem would never have been established. The proposed rules, however, completely ignore this fact and the glaring lack of evidence that current aquatic ecosystems are suffering because of cooling water intake structure impingement or entrainment.
- Existing closed-cycle systems may not already comply with the proposed rules, and even facilities complying via closed-cycle cooling must perform extensive monitoring.
- EPA's description of how to appropriately sample for impingement is inadequate, practically difficult, and may not be sound from a biological perspective.
- The proposed threshold of two million gallons per day for rule applicability is unsupported.
- The numerous proposed application requirements and the level of review and evaluation required of permit writers and state agencies will create severe burdens—especially in light of the fact that cuts to EPA's budget means fewer federal funds will be provided to aid state permitting agencies.

The opportunity to comment on the proposed regulations extends until August 18, 2011.⁷⁸ The final regulations are not expected to be promulgated before July 27, 2012.

⁷⁸ The comment period originally ended on July 19, 2011. On July 14, EPA extended the comment period to August 18, 2011. *See* 76 Fed. Reg. 43,230 (July 20, 2011).

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Development of BPJ-Based Section 316(b) NPDES Permit Conditions

A National Pollutant Discharge Elimination System (NPDES) permit for any new or existing facility (set special definitions at 40 C.F.R. §§ 125.83 and 125.133) operating a cooling water intake structure (CWIS) must contain permit conditions meeting the requirements applicable to CWISs under section 316(b) of the Clean Water Act (CWA). Section 316(b) of the CWA requires that the location, design, construction, and capacity of CWISs reflect the best technology available (BTA) for minimizing adverse environmental impact (AEI). Under current regulations, existing facilities are subject to section 316(b) conditions that reflect BTA for minimizing AEI on a case-by-case, best professional judgment (BPJ) basis. 40 C.F.R. §§ 125.90(b) and 401.14. In addition, the fact sheet for the permit needs to reflect the rationale for the determination that CWISs reflect the BTA for minimizing AEI.

EPA's Phase II Section 316(b) Existing Facilities Rule was remanded to the Agency in *Riverkeeper, Inc, et al. v. EPA*, 475 F.3d 83 (2d Cir. 2007). EPA has begun work to address the remand. Until EPA has issued the final rule, EPA has not definitively spoken to what controls represent BTA for minimizing AEI for those facilities. The rulemaking record for the Phase II Rule is, however, a useful source of information concerning potential technologies for minimizing AEI at CWISs that the permitting authority may wish to evaluate in order to establish controls that represent BTA for minimizing AEI at a particular facility. This fact sheet discusses information in the Phase II record that permit writers may consider when establishing BPJ 316(b) permit conditions or when reviewing 316(b) conditions for reissued permits to ensure that they continue to reflect BTA for minimizing AEI.

Examples of Information From the Phase II Record That May Be Useful to Consider When Developing BPJ Permit Requirements Reflecting BTA for Minimizing AEI

Information on Intake flows

Information in the record for EPA's Phase II Section 316(b) Existing Facilities Rule showed that closedcycle recirculating cooling systems can reduce cooling water flow by up to 98 percent and can correspondingly reduce mortality from impingement and entrainment by up to 98 percent when compared with conventional once-through systems.

One approach for the permit writer would be to determine that BTA for minimizing AEI at a particular facility represents some prescribed flow level. This might mean that the permit writer would develop permit conditions requiring achievement of the BTA flow level or achievement of BTA impingement mortality and entrainment (IM&E) reduction standards associated with the BTA flow level. Under this approach, the permit writer would need information from the facility demonstrating that it has reduced (or will reduce) the volume of its intake flow to a level that is commensurate with the BTA flow level. The permit writer should consider including conditions in the permit that require proper operation and maintenance of the system in order to meet the BTA intake flow.

¹ The discussion in this document is intended solely as a tool. The statutory provisions and EPA regulations described in this document contain legally binding requirements. This document is not a regulation itself, nor does not it change or substitute for those provisions and regulations. Thus, it does not impose legally binding requirements on EPA. States, or the regulated community. This tool does not confer legal rights or impose legal obligations upon any member of the public. While EPA has made every effort to ensure the accuracy of the discussion in this tool, the obligations of the regulated community are determined by statutes, regulations, roughly binding requirements. In the event of a conflict between the discussion in this document and any statute or regulation, this document would not be controlling.

Information on performance ranges

The record for the Phase II rule also included information on the performance ranges of technology other than closed-cycle recirculating systems. The data showed that current technologies other than closed-cycle cooling can meet a performance standard range of 80-95% reduction in impingement mortality and 60-90% reduction in entrainment. These ranges were representative of the efficacies that can be expected from the use of intake technologies at most facilities.

Another approach for the permit writer would be to determine that an IM&E performance level represents BTA for minimizing AEI for a particular facility. Under this approach, the permitting authority may consider requiring the facility to submit data to demonstrate the IM&E performance level that the technology or suite of technologies they currently employ (or will install) will achieve. Data collection may include, among other things, engineering data, operational information, source waterbody information, and IM&E characterization studies. Historical data may also be useful where the conditions at the facility and in the waterbody from which the facility withdraws have not changed substantially over time.

The permit writer may consider requiring the facility to characterize adverse environmental impact (AEI), e.g., implingement and entrainment, describe its expected CWIS operation, and to develop a technological or operational response to reduce AEI based on the site-specific details of the facility to minimize impacts.

Under this approach, the permit writer would include a condition in the permit requiring achievement of the IM&E performance level that the permit writer determines is BTA for minimizing AEI for the facility as well as conditions requiring operation and maintenance of the facility in a manner consistent with the information submitted to establish the BTA performance for the facility.

What if the Permit Writer Determines that the Facility's Current Technology is BTA for . Minimizing AEI?

In circumstances where the permit writer determines that technology or a suite of technologies in-place at the CWIS currently reflect BTA for minimizing AEI, the permit writer may base the section 516(b) permit conditions on the current technologies at the CWIS. Under this approach, the permitting authority should explain why other available technologies do not represent BTA for minimizing AEI. Examples of why technologies are not available could include considerations such as costs or energy penalty and would support the determination that the current technology represents BTA for minimizing AEI.

For a facility where current technology is BTA for minimizing AEI, permit conditions could include, for example, operation and maintenance conditions or the achievement of a required flow or IM&E performance level as BTA for minimizing AEI.

in addition, the permitting authority may want to include a permit reopener provision and the requirement for the facility to submit additional data. This data would allow the permit writer to compare AEI associated with the existing technology with that identified for other technologies. Data submission requirements may address engineering data, operational information, source waterbody information, and IM&E characterization studies. As noted above, in certain circumstances, historical data may be useful.

The permitting authority could also consider requiring the facility to evaluate AEI, e.g., impingement and entrainment, resulting from its current CWIS operation and develop additional technological or operational solutions if necessary based on the site-specific details of the facility. If studies indicate the current CWIS configuration is not representative of BTA for minimizing AEI, the permitting authority should consider modifying its determination of BTA either by reopening the permit under the reopener provision or during the next permit cycle.

Useful Resources

The materials in the 316(b) Phase I, II, and III rulemaking records offer a substantial amount of information on intake technology performance. EPA has identified the following documents as especially helpful:

American Society of Civil Engineers (ASCE). Design of Water Intake Structures for Fish Protection. 1982. DCN 6-5057 and OW-2002-0049-2769 in the 316(b) Phase II record.

Electric Power Research Institute (EPRI). Fish Protection at Cooling Water Intakes: Status Report. 1999. DCN 4-4002B in the 316(b) Phase II record.

U.S. EPA. Technical Development Document for the Proposed Section 316(b) Phase II Existing Facilities Rule (EPA 821-R-02-003). Chapter 3. April 2002. DCN 4-0004 in the 316(b) record. http://www.epa.gov/waterscience/316b/phase2/devdoc/

U.S. EPA. Technical Development Document for the Final Section 316(b) Phase II Existing Facilities Rule (EPA 821-R-04-007). Chapter 4. February 2004. DCN 6-0004 and OW-2002-0049-1462 in the 316(b) record. http://www.epa.gov/waterscience/316b/phase2/devdoc/final.htm

U.S. EPA. Draft Guidance for Evaluating the Adverse Impact of Cooling Water Intake Structures on the Aquatic Environment: Section 316 (b) P.L. 92-500. 1977. DCN 1-5045-PR in the 316(b) record. http://www.epa.gov/waterscience/316b/files/1977AElguid.pdf

U.S. EPA. U.S. EPA NPDES Permit Writers' Manual. Chapter 5.1.4. December 1996. EPA-833-B-96-003 http://www.epa.gov/npdes/pubs/owm0243.pdf

For More Information

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Contact Jamie Hurley at the EPA Office of Water; Office of Wastewater Management (4203M), 1200 Pennsylvania Avenue, NW Washington, D.C. 20460 (e-mail: <u>hurley.lamle@epa.gov</u>).



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WHY ARE THE FISH SAD AND GLAD AND BAD? THE ROLE OF WHOLE EFFLUENT TOXICITY TESTING IN WATER QUALITY PROTECTION

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... SAY! WHAT A LOT OF FISH THERE ARE. YES. SOME ARE RED AND SOME ARE BLUE. SOME ARE OLD AND SOME ARE NEW. SOME ARE SAD AND SOME ARE GLAD, AND SOME ARE VERY, VERY BAD. WHY ARE THEY SAD AND GLAD AND BAD? I DO NOT KNOW, GO ASK YOUR DAD ...

One Fish, Two Fish, Red Fish, Blue Fish, Dr. Seuss (1960, Random House)

I. Introduction

Can one really apply the whimsy of this Dr. Seuss children's rhyme to the rather wonkish topic of Whole Effluent Toxicity ("WET")? Perhaps we can say that the text playfully describing the abundance and variety of fish around us is one of a million examples of our popular culture's environmental awareness that supported the adoption of the federal Clean Water Act in 1972 ("CWA" or the "Act")² and continues to support our efforts to achieve the Act's goals 40 years later. Another point that could be drawn is one with which those implementing the Act struggle daily — why are the fish sad and glad and bad? How do we go about crafting specific policies and regulations that lead to real world protections for aquatic life? The story of WET, is the story of regulators and other stakeholders trying to answer this basic question with respect to predicting and eliminating the potential for toxic impacts on aquatic life from wastewater discharges. This paper examines how WET policy has developed over the years from its emergence in the mid-1980's as a method for addressing toxic impacts above and beyond the early technology based controls and pretreatment requirements to today's current impasse in Texas over (1) triggers for the imposition of WET limits (reasonable potential analysis) and (2) the imposition of a subset of WET testing — sublethal WET limits.

¹ Ms. Kalisek extends her thanks to Ms. Andrea J. Giovannone for her research and writing contributions to this paper.

² Clean Water Act, 33 U.S.C. § 1251 et. seq.

II. What is WET Testing?

To understand the significance of the debate over WET testing, it is useful to understand the test procedure. WET testing exposes living aquatic organisms to treated effluent at a specified dilution and analyzes the acute (immediate lethal impacts) and chronic (lethal, growth or reproductive impacts over time) effects to the organisms. The test organism responses are used to estimate the effects of the test sample on receiving waters. The Environmental Protection Agency's ("EPA") cited benefits of WET testing include: (1) the ability to evaluate the "integrated effects" of all chemicals in a wastestream; (2) the ability to protect against toxic effects from pollutants for which specific aquatic life criteria have not been set; and (3) the ability to predict and avoid toxic impacts before the impacts occur.³ The test is a biological method that examines the "whole effluent" toxicity in lieu of individual toxic pollutants and attempts to measure the total effect of pollutant parameters contained in the effluent. As EPA explains, "when whole effluent toxicity testing is used, toxicity itself is a pollutant parameter."⁴

Of the two types of testing, acute and chronic, this discussion focuses on chronic for the reason that the chronic test method (and especially chronic sublethal testing) has generated the most controversy and concern in Texas. In chronic testing, a series of effluent dilutions are exposed to highly sensitive aquatic organisms such as a *ceriodaphnia dubia* (water flea) or a fathead minnow. As discussed in detail in Part IV below, the ability of permittees to track down and eliminate the cause of sublethal test failures, the question of the link of chronic sublethal test results to instream impacts, and the potential costs to permittees has generated a significant amount of recent debate in the TCEQ-Region 6 partnership leading to permitting delays and the potential for federalization of state issued permits.

III. Regulatory History of WET

Congress enacted the CWA in 1972 with the objective of "restoring and maintaining the chemical, physical, and biological integrity of the Nation's waters."⁵ To assure protection of water quality, the CWA called for the implementation of technology-based standards and also directed the states, with federal approval and oversight, to establish water quality-based standards.⁶ These state standards must assign uses for surface waters and identify water quality criteria to protect such uses.⁷ EPA implements the National Pollutant Discharge Elimination System ("NPDES") permitting program in conjunction with the standards. All point sources that discharge pollutants must obtain an NPDES permit that meets all of the CWA technology-based requirements and any more stringent requirements imposed by the state to achieve state water quality standards.⁸ Under the CWA, effluent limitations are an important component of NPDES permits because they fulfill both technology-based and water quality-based requirements.

³ U.S. Environmental Protection Agency, Office of Wastewater Management, National Whole Effluent Toxicity (WET) Implementation Guidance Under the NPDES Program, November 2004, *DRAFT*, EPA 832-B-04-003, page xii, available at <u>http://water.epa.gov/scitech/methods/cwa/wet/index.cfm</u>. [hereinafter 2004 Draft EPA WET Guidance].

⁴ 60 Fed Reg 53529 October 16, 1995 Whole Effluent Toxicity: Guidelines Establishing Test Procedures 40 CFR Part 136 for the Analysis of Pollutants.

⁵ Clean Water Act, 33 U.S.C. § 1251(a).

⁶ Id. at §§ 1311, 1313.

⁷ Id. at § 1313(c)(2)(A).

⁸ Id. at §§ 1311, 1342.

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Originally, EPA programs controlling toxic discharges were dependent mainly on effluent limitations containing numerical criteria for individual chemicals. However, data gathered in the 1980s indicated that not all potentially toxic pollutants could be identified by chemical methods and/or that effluent limitations for only those specific identifiable compounds did not necessarily provide adequate protection for aquatic life. In other words, some NPDES permits, which satisfied the CWA technology-based requirements, were allowing facilities to discharge effluents with sufficient toxicity to cause water quality problems. Therefore, additional reductions in the toxicity of wastewater discharges were necessary.⁹

In 1984, EPA developed a policy recommending the use of toxicity data to assess and control the discharge of toxic pollutants. The Policy for the Development of Water Qualitybased Permit Limitations for Toxic Pollutants¹⁰ introduced an integrated strategy consisting of biological and chemical-specific methods to address toxic and nonconventional pollutants from industrial and municipal sources, including WET. It identified WET as a useful method of measuring the biological effects on aquatic life caused by the discharge of a complex mixture of waste materials. To implement this approach, some states have included numeric criteria for WET in their water quality standards, while others, like Texas, focus on narrative criteria.¹¹ The 1984 policy also discussed chemical, physical, and biological testing requirements (WET requirements); use of data; setting of effluent limitations; and monitoring procedures.¹² For instance, under sections 308 and 402 of the CWA, EPA or the state may require NPDES permit applicants to collect chemical, toxicity, and instream biological data necessary to assess compliance with state standards.¹³ Data requirements were determined on a case-by-case basis, and EPA did not require permitting authorities to use any specific procedures when making this determination.

When the policy first came about in 1984, EPA did not have much experience in the use of WET limitations and testing. Four years later, EPA promulgated regulations identifying procedures for permitting authorities to use when determining whether to impose water qualitybased effluent limitations.¹⁴ After these regulations were finalized in 1989, permitting authorities were required to establish effluent limitations in permits in situations where a discharge "causes, has the reasonable potential to cause, or contributes to an in-stream excursion of numeric or narrative water quality criteria" for WET.¹⁵ The regulation also concentrated on procedures for constructing effluent limitations in permits based on the state's numeric or narrative water quality criteria. However, until 1995, EPA did not require permitting authorities to follow EPA's guidance documents describing how to perform toxicity tests. To provide more

¹⁵ 40 C.F.R. §§ 122.44(d)(1)(iv) and (v) (2007).

⁹ 2004 Draft EPA WET Guidance at xi.

¹⁰ Policy for the Development of Water Quality-Based Permit Limitations for Toxic Pollutants, 49 Fed. Reg. 9016 (March 9, 1984).

¹¹ Method Guidance and Recommendations for Whole Effluent Toxicity (WET) Testing (40 CFR Part 136), 65 Fed. Reg. 46457 (July 28, 2000); 30 Tex. Admin. Code § 307.6(e)(1) (2010).

¹² Policy for the Development of Water Quality-Based Permit Limitations for Toxic Pollutants, 49 Fed. Reg. at 9016 – 9021.

¹³ Policy for the Development of Water Quality-Based Permit Limitations for Toxic Pollutants, 49 Fed. Reg. at 9016.

¹⁴ National Pollutant Discharge Elimination System; Surface Water Toxics Control Program, 54 Fed. Reg. 23868 (June 2, 1989) (to be codified at 40 C.F.R. § 122.44(d)). ¹⁵ 40 C.F.R. § 122.44(d)(1)(iv) and (v) (2007)

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detailed guidance on water quality implementation issues, EPA created the Technical Support Document for Water Quality-based Toxics Control ("TSD"), which was revised in 1991. For example, one provision recommends using the most sensitive of at least three test species from different phyla when conducting WET tests.¹⁶

Taking into account the guidance documents, EPA published an updated general policy on WET in 1994 to incorporate the new regulations.¹⁷ This document contains eight policy statements reaffirming EPA's dedication to the CWA and the water quality permitting regulations at 40 C.F.R. § 122.44(d)(1). Specifically, the policy statements: (1) describe the procedure permitting authorities should use to analyze WET water quality criteria and to create effluent limitations to control WET; (2) identify which dischargers should be assessed first in evaluating the reasonable potential to exceed WET water quality criteria and what information is important in determining whether a specific discharger has the reasonable potential to cause or contribute to exceeding WET water quality criteria; (3) restate that effluent limitations are required in a permit when there is a reasonable potential for the discharger to cause or contribute to exceeding WET water quality criteria; (4) clarify when it is appropriate to impose WET monitoring conditions on a discharger and when compliance schedules are necessary in NPDES permits; and (5) address several issues permitting authorities have come across in establishing WET controls when ammonia or chlorine is the primary cause of toxicity.¹⁸ Additionally, EPA issued a draft guidance document based on the policy statements that sought to provide further clarification for permitting authorities ("2004 Draft EPA WET Guidance").

Just one year later EPA published a WET final rule adding seventeen standardized WET (*i.e.*, aquatic toxicity) test methods to the list of EPA methods approved under Section 304(h) of the CWA.²⁰ The WET final rule added acute toxicity methods and short-term methods for estimating chronic toxicity to 40 C.F.R. § 136.3 (Tables IA and II).²¹ Each of these test methods measures the aggregate acute and chronic toxicity of effluents and receiving waters to freshwater, marine, and estuarine organisms. By promulgating these regulations, EPA made it mandatory that permitting authorities use these methods and adhere to the specific test procedures outlined in three WET manuals. The three test method manuals incorporated by reference in the WET final rule are: (1) Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms,²² Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms,²³

¹⁶ Environmental Protection Agency, EPA No. 505/2-90/001, Technical Support Document for Water Quality-Based Toxics Control (March 1991).

¹⁷ Environmental Protection Agency, EPA No. 833-B-94-002, Whole Effluent Toxicity (WET) Control Policy (July 1994).

¹⁸ Id.

¹⁹ 2004 EPA WET Guidance at xi.

²⁰ WET: Guidelines Establishing Test Procedures for the Analysis of Pollutants, 60 Fed. Reg. 53529 (October 16, 1995) (codified at 40 C.F.R. pt. 136).

²¹ Id. at 53533.

²² U.S. Environmental Protection Agency, Environmental Monitoring Systems Laboratory, EPA 600/4-90/027F, Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms (1993).

²³ U.S. Environmental Protection Agency, Environmental Monitoring Systems Laboratory, EPA 600/4-91/002, Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms (1994).

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and Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Marine and Estuarine Organisms.²⁴

Shortly after the methods were published, a coalition of municipal and industrial dischargers filed suit challenging the methods as invalid. The crux of the parties' complaint was that EPA did not adequately ensure the scientific validity of the test methods.²⁵ As a result of this litigation, EPA entered into settlement agreements requiring it to conduct an interlaboratory variability study and to report and ratify or withdraw WET test methods evaluated in the study ("Interlaboratory Variability Study").²⁶ The Interlaboratory Variability Study, which tested over 700 samples in 56 different laboratories, evaluated interlaboratory precision, successful test completion rates, and false positive rates of the WET methods.²⁷ In addition, EPA agreed to publish a WET Variability Guidance Document²⁸ and a WET Method Guidance Document²⁹ providing recommendations on certain WET implementation issues. For instance, the WET Method Guidance Document addresses five specific technical issues: nominal error rate adjustments, confidence intervals, concentration-response relationships, dilution series selection, and dilution water.³⁰ In 2002, based on the results of the WET Interlaboratory Variability Study, EPA ratified ten methods and withdrew two methods from its approved list for NPDES permits.

The updates to the methods were incorporated in EPA's revised final rule promulgated in 2002. In this final rule the EPA also addressed numerous technical stakeholder concerns, such as: blocking by known parentage, pH drift, concentration-response relationships, confidence intervals, dilution series selection, dilution water acceptability, and pathogen interference.³¹ A complete list of the approved methods and additional modifications to WET test methods can be found in the 2002 revised final rule available at: <u>http://www.epa.gov/fedrgstr/EPA-WATER/2002/November/Day-19/w29072.htm</u>.

The petitioners from the original suit, however, did not fully agree with EPA conclusions regarding the WET Interlaboratory Variability Study or that its updates to the methods were adequate. They subsequently brought Petitions for Review from EPA's final order in the U.S. Court of Appeals for the District of Columbia.³² In *Edison Electric Institute v. EPA*, the petitioners objected to four of the ten test procedures approved in the 2002 Final Rule. The Court of Appeals affirmed EPA's approved methods.³³ Although the Court concluded that EPA

²⁴ U.S. Environmental Protection Agency, Environmental Monitoring Systems Laboratory, EPA 600/4-91/003, Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Marine and Estuarine Organisms (1994).

Organisms (1994). ²⁵ Edison Elec. Institute, et. al. v. EPA, (No. 96-1062, 96-1124) (C.C.D.C. 1996), aff'd. 391 F.3d 1267, 1267 (D.C. Cir. 2004).

Cir. 2004). ²⁶ Guidelines Establishing Test Procedures for the Analysis of Pollutants; WET Test Methods; Final Rule, 67 Fed. Reg. 69951, 69954 (November 19, 2002) (codified at 40 C.F.R. pt. 136). ²⁷ Guidelines Establishing Test Procedures for the Analysis of Pollutants; WET Test Methods; Final Rule, 67 Fed.

²⁷ Guidelines Establishing Test Procedures for the Analysis of Pollutants; WET Test Methods; Final Rule, 67 Fed. Reg. at 69961.

²⁸ WET Variability Guidance Document, 65 Fed. Reg. 44528 (July 18, 2000).

²⁹ WET Method Guidance Document, 65 Fed. Reg. 46457 (July 28, 2000).

³⁰ Id. at 46462.

³¹ Guidelines Establishing Test Procedures for the Analysis of Pollutants; WET Test Methods; Final Rule, 67 Fed. Reg. at 69954.

³² Edison Electric, 391 F.3d at 1267.

³³Id. at 1267-71.

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did not act arbitrarily and capriciously in developing and adopting the final set of WET test methods approved in the 2002 rulemaking, it also noted that the role of state permitting authorities in implementing the test methods remained important. In addressing the concerns raised by petitioners that permittees could be subjected to excessive restrictions the Court noted that the question of how the methods are translated into permit limits was left to local permitting authorities and was not a part of the rulemaking under review by the Court. It observed:

The WET test methods offer only a means of measuring compliance with those limits — individual dischargers remain free to challenge their permits on a caseby-case basis if they believe that local authorities are regulating at a level that poses only a minimal risk to aquatic life.³⁴

Therefore, at the federal level, even after the Court of Appeals approval of the test methods, the question of how the methods should be implemented in NPDES permits through the state delegated programs remained open for discussion.

IV. Implementation of WET in Texas

In Texas, the discussion on WET implementation has focused in recent years on the issues of (1) the proper structure of the "reasonable potential analysis" required by 40 C.F.R. § 122.44(d)(1) used as the basis for imposing WET limits in permits; and (2) the use of sublethal WET limits. As reflected by the issues raised by petitioners in *Edison Electric*, concerns over the appropriateness of sublethal limits and the basis upon which they will be imposed have run head on into EPA's attempt at a national level to standardize the WET program throughout its Regions.

During the time EPA was finalizing the WET method regulations and responding to the resulting litigation, it was also in the process of implementing a new strategy across its Regions to "more efficiently and effectively manage the NPDES permit program with increased environmental focus."³⁵ Included among the several elements outlined for action in the Permitting for Environmental Results Strategy ("PER") was a call for "program integrity reviews" for each state. The "NPDES Profile" generated for Texas by the PER noted that as of 2004, Region 6 had not required its states to implement a "predictive reasonable potential assessment" (i.e., EPA headquarters' version of reasonable potential analysis) for WET permit limits during permit development or sublethal WET limits. It identified the Region's concern in the early 1990's that toxicant identification procedures were not "adequately refined" to result in "successfully completing [toxicity identification and elimination studies] on a consistent basis."³⁶ In other words, Texas was not fully implementing EPA headquarters' interpretation of the WET regulations and methods as outlined in the 2004 draft national guidance because Region 6 was concerned that the science was not yet developed in a manner that would allow a permittee to identify and eliminate the causes of sublethal test results. The PER goes on to note that, as of 2004, Region 6 recently had concurred on the 2004 draft national guidance and that the Region

³⁴ Edison Electric, 391 F.3d at 1274.

³⁵ August 15, 2003, Memorandum from G. Tracey Mehan, III, Assistant Administrator to Regional Water Division Directors available at <u>http://www.epa.gov/npdes/pubs/final_per_strategy.pdf</u>.

³⁶ U.S. Environmental Protection Agency, Permitting for Environmental Results, NPDES Profile: Texas and Indian Country, last updated July 19, 2005 at page 20, available at <u>http://www.epa.gov/npdes/pubs/texas_final_profile/pdf</u>.

would be developing a strategy to implement a revised reasonable potential analysis and sublethal WET limits. 37

On its website today, Region 6 describes its current status of implementation of this revised WET policy in Texas as follows:

After six years of negotiating, EPA and the [TCEQ] have not yet agreed on appropriate revisions to the Texas Surface Water Quality Standards implementation procedures. On December 2, 2010 EPA disapproved TCEQ's adopted revisions for its implementation procedures for WET and directed the agency to submit a number of permits to which EPA previously voiced concerns regarding WET requirements. The two agencies continue to work towards resolution of several contentious issues, however TCEQ has not indicated a willingness to make the revisions required to fully support federal regulations and ensure compliance with its water quality standards established to protect aquatic life.³⁸

The impasse documented in this description has been brewing for several years. In its work on revisions to the *Procedures to Implement the Texas Surface Water Quality Standards* ("Implementation Procedures"),³⁹ Texas Commission on Environmental Quality (TCEQ) staff predicted that if TCEQ were to adopt EPA/Region 6's preferred approach on reasonable potential as set out in the TSD, 25-50% of permitted facilities in the state could be subject to sublethal WET limits. This is because the TSD reasonable potential analysis requires the imposition of WET limits based on a single test failure.⁴⁰

Given this fairly conservative approach to limit requirements, it is important to understand the link between a single test failure and actual instream impact. Does it make sense that a single failure should drive a permit limit unless there is a fair amount of certainty that the single failure is an indicator of actual instream effects? Although EPA and Region 6 often cite to *Edison Electric* as confirmation of EPA's studies in this regard, such citation is an oversimplification of the *Edison* holding. Although the *Edison* court notes the results of EPA correlation studies during the 1990's, a detailed review of those studies reveals that the studies' conclusions are focused on lethal, rather than sublethal testing. In fact, the actual study cited by the *Edison* court as supporting the "representativeness of the WET test methods *in general*"⁴¹ actually calls into question the link between sublethal test results and instream impacts, the study observes:

⁴⁰ Tex. Comm'n Env. Quality, Texas Surface Water Quality Standards Advisory Workgroup May 5, 2008 meeting summary, pgs. 5-6, available at <u>http://www.tceq.texas.gov/assets/public/permitting/waterquality/attachments/stakeholders/summary0508.pdf</u>.
⁴¹ Edison Electric, 391 F.3d at 1273 [emphasis added].

³⁷ Id.

³⁸ U.S. Environmental Protection Agency, Region 6, Background Status of EPA Region 6/State Whole Effluent Toxicity (WET) Implementation Revisions, available at <u>http://www.epa.gov/region6/water/npdes/wet_method_manuals/00000001_background.pdf</u>.

³⁹ Tex. Comm'n Env. Quality, Procedures to Implement the Texas Surface Water Quality Standards, RG-194, available at http://www.tceq.tex.gov/publications/rg/rg-194.html.

[w]e appear to be approaching consensus that when significant lethality (and in the case of effluents, assuming accurate dilution has been considered) is seen in toxicity tests there is a very high potential of aquatic ecosystem impairment. As this connection is accepted, we continue to struggle with the idea that sublethal effects on indicator species can result in detectable adverse ecosystem responses.42

With such a conclusion drawn in EPA's own study, it is difficult to understand the agency's insistence on basing important permitting decisions on a single test result. In addition, nothing in the Edison Electric opinion suggests that permit limits should be based on a single test. Rather, the opinion acknowledges that individual tests will be wrong some of the time and, as discussed previously, that issues regarding implementation of the test methods and how they will be used in permitting decisions are "details" to be left to local permitting entities.⁴³ Edison Electric actually anticipates the debate between Texas and Region 6 rather than closing it.

The costs of sublethal limits can be significant. As noted in recent correspondence from members of the federal Texas delegation to EPA Administrator Lisa Jackson, toxicity investigation studies attempting to identify the causes of sublethal test failures can cost hundreds of thousands to millions of dollars and when they are attempted, are typically not successful.⁴⁴ Therefore, not only is a permittee subjected to a permit limit that may be unnecessary and costly, it is also a limit that may not be possible to meet. Despite Region 6's apparent conversion on the issue of the ability of permittees to successfully characterize the cause of sublethal effects, TCEQ and the regulated community in Texas remain doubtful based on their own first-hand experience.

Therefore, even though TCEO did include revisions to the Implementation Procedures that called for sublethal WET limits in Texas for the first time, because TCEO did not also include the additional step of adopting EPA/Region 6's preferred approach to the reasonable potential analysis, the Region disapproved the 2010 Implementation Procedure revisions on WET.⁴⁵ In addition, the Region issued correspondence to TCEQ identifying approximately 33 permits held up in the renewal process due in part to WET limit issues and requesting that TCEQ resubmit the permits to the Region and resolve outstanding issues in six months.⁴⁶ It coupled this correspondence with a press release to the effect that TCEQ was allowing toxic discharges to continue under expired permits.⁴⁷ TCEQ responded with its own strongly worded reply and press release pointing out, among other items, that Region 6 took a full nine years to approve all of the 2000 Texas Surface Water Quality Standards and that the Region still had failed to issue

⁴² De Vlaming, Victor and Teresa J. Norberg-King, A Review of Single Species Toxicity Tests: Are the Tests Reliable Predictors of Aquatic Ecosystem Community Responses?, EPA/600/R-97/114 (1999) p. 24, available at http://nepis.epa.gov.

Edison Electric, 391 F.3d at 1272-1273.

⁴⁴ June 12, 2011 letter from Rep. John Carter, Sen. John Cornyn, Sen. Kay Bailey Hutchison, et.al. to EPA Administrator Lisa Jackson (<u>Attachment A</u>).

December 2, 2011 letter from Miguel I. Flores, Water Quality Division Director, EPA Region 6 to Mark R. Vickery, P.G., Executive Director TCEQ (Attachment B).

⁴⁶ December 2, 2010 letter from Al Armendariz, Ph.D., Regional Administrator EPA Region 6 to Mark R. Vickery, P.G., Executive Director TCEQ (<u>Attachment C</u>). ⁴⁷ December 2, 2010 EPA Region 6 News Release (<u>Attachment D</u>).

Page 8

the one permit it had federalized in Texas in 2005 on WET issues.⁴⁸ December 2010 did not bode well for the TCEQ/Region 6 partnership on NPDES.

V. Path Forward?

At both the national and state level, WET is one of several current Clean Water Act policy initiatives, along with numeric nutrient criteria and effluent limits for stormwater discharges among others, testing the limits of the federal-state delegation partnership. For the first time since delegation of the NPDES program to the State of Texas in 1998, the current arguments over WET threaten the federalization of a significant number of state-issued permits. However, there have been no further press releases, but just a slow negotiation process on the permit backlog. Since Region 6 has disapproved the Implementation Procedures, TCEQ and the Region have turned their attention to working out the permit and fact sheet language for WET in an attempt to move forward, and those negotiations remain ongoing on a permit-by-permit basis at least as of the time of the preparation of this paper.

An argument can be made that Texas has attempted to step toward the middle ground with EPA/Region 6 in its acceptance of EPA's insistence on sublethal WET limits while EPA/Region 6 has remained intractable in its demand for the TSD approach to reasonable potential analysis and the right to require sublethal limits based on a single test failure. This remaining dispute of whether a single sublethal test failure is equivalent to instream toxicity that must be controlled through a permit limit has consumed a considerable amount of time and energy of the Region, TCEQ and the regulated community over a number of years. But is this a reasonable application of limited resources to the question of what makes our fish communities "glad, sad and bad"? It is not as if the state is suffering from a rash of sublethal instream aquatic impacts from unknown sources warranting sublethal limits. Rather, TCEQ identifies bacteria concerns as the most significant challenge to its water quality protection program at this time.⁴⁹

It is unfortunate that EPA/Region 6 has not, thus far, taken the opportunity to listen to the input of its state partner, step toward the middle ground, and create a solution that would allow our federal, state, and local water quality protection resources to be applied to arguably more pressing matters. When faced with a federal initiative that seems to be driven simply by the desire to impose national consistency, it is hard for municipal permittees in particular to justify the potential increased compliance costs to their taxpayers without being able to point to any tangible environmental benefit. Without a change in EPA's position, our path forward seems to be continued debate on a permit-by-permit basis as to whether a particular permittee's WET testing history necessitates permit controls in the form of sublethal WET limits that may or may not be necessary to protect our "sad, glad, and bad" aquatic community.

 ⁴⁸ December 8, 2010 letter from Mark R. Vickery, P.G., Executive Director TCEQ to Al Armendariz, Ph.D., Regional Administrator EPA Region 6 (<u>Attachment E</u>); December 3, 2011 TCEQ Press Release (<u>Attachment F</u>).
 ⁴⁹ Tex. Comm'n Env. Quality, Strategic Plan Fiscal Years 2011-2015, p. 93.

Congress of the United States Washington, DC 20515

June 13, 2011

The Honorable Lisa P. Jackson Administrator U.S. Environmental Protection Agency 1200 Pennsylvania Avenue, NW Washington D.C., 20460

Dear Administrator Jackson:

For almost two decades, the EPA has required permit applicants to conduct whole effluent toxicity (WET) tests and has required that permits issued in accordance with the National Pollntant Discharge Elimination System (NPDES) comply with Title 40 Code of Federal Regulations Part 122.44(d) with respect to WET. There has been no change in this regulation. However, EPA Region 6 has recently made significant changes in its requirements with respect to how the WET program is implemented pursuant to this regulation. The changes are a requirement to include a sublethal WET permit limit based on the results of sublethal WET tests and a requirement to do studies to identify the cause of failures and corrective programs when only sublethal effects are present.

While we understand, and share, EPA's goal of protecting our waterways from instream toxicity caused by pollutant discharges, we are concerned that the costs and regulatory burden of implementing EPA's policy with regard to sublethal WET test failures is not justified given the apparent lack of environmental benefits based on the following:

- Implementing this policy could cost Texas communities in excess of \$20 million peryear.
- EPA's own studies indicate that there is no demonstrated correlation between sublethal WET testing in the laboratory and actual instream impacts.
- Toxicity investigations attempting to identify the causes of test failures when only sublethal effects are present can cost hundreds of thousands to millions of dollars, and to the limited extent that such studies have been attempted; they have typically been unsuccessful in identifying, and eliminating the causes of sublethal WET test failures.
- Sublethal WET permit limits subject a permit applicant to potential enforcement by state agencies, EPA, and to third-party citizen suit liability for test failures that may simply be the result of the statistical error rate of the test.

ATTACHMENT A

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Given that the regulatory burden imposed in meeting a sublethal WET limit can be substantial, we urge you to revisit this EPA policy and work with representatives of the regulated community and the Texas Commission on Environmental Quality to refine the policy in a manner that meets the requirements of the federal Clean Water Act but provides more flexibility to the State and takes into consideration the environmental significance and the technical challenges posed by sublethal WET permit limits.

Possible approaches include the following:

- Suspend the imposition of sublethal WET limits until additional studies are conducted that clearly demonstrate a correlation between sublethal test results and instream sublethal toxicity
- Only impose a sublethal WET limit after a permit applicant has conducted a successful study to identify the cause of, and corrective measures to eliminate, test failures.

It is our understanding that TCEQ is supportive of alternatives such as these. In addition, there may be other approaches that reflect the unique challenges of sublethal WET testing while providing adequate protection against instream sublethal toxicity.

We see this not as a request to lessen the regulatory commitment to clean water, but rather an opportunity to refocus our public entities' limited resources in a manner that will most effectively protect water quality. In this challenging economic time of budget cuts and identification of cost-saving opportunities, we seek your help in ensuring that tax-payer and rate-payer funded scientific investigations and capital investments go to measures that clearly result in water quality protection and enhancement.

Thank you for your attention to this matter.

(cp. John R. Carter (TX-31)

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Nenry Quellar (TX-28)

Senator Joh

Rep. Silvestre Reyes (TX-16)

Rep. Mike Conawa

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Rep. Louie Gohmert (TX-01)

Rep. Lamar Smith (TX-21)

Rep. Peter Sessions (TX-32)

Rep. Sam Johnson (TX-03)

Rep. Randy Neugebouer (TX-19)

Rep. Ted Poe (TX-02)

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Rep. Michael T. McCaul (TX-10)

Rep. Ray Granger (TX-12)

Blake Farenthold (TX-

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Rep. Bill Flores (TX-17)

John Culberson (TX-07)

Rep. Kenny Marchant (TX-24)

Rep. Kevin .02

Rep. Joe Barton (TX-06)

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Rep. Peje Olson (TX-22) Rep. Mac Thornberry, 13)

Rep. Fransisco "Quico" Canseco (TX-23)



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY REGION 6 1445 ROSS AVENUE, SUITE 1200 DALLAS TX 75202-2733

DEC 2 2010

Mark R. Vickery, P.G. Executive Director Texas Commission on Environmental Quality Post Office Box 13087 Austin, Texas 78711-3087

Dear Mr. Vickery:

EPA has completed its review of the Procedures to Implement the Texas Surface Water Quality Standards (IPs), RG-194, adopted by the Commission on June 30, 2010. It appears that some of EPA's previously voiced concerns have been addressed. However the section of the document dealing with whole effluent toxicity (WET), the item on page 131 regarding dechlorination requirements for minor POTWs, and the section on variances do not ensure that discharges from permitted facilities will comply with the Texas Surface Water Quality Standards (TSWQS). Pursuant to the 40 CFR § 130.5 and the 1998 Memorandum of Understanding between the Environmental Protection Agency (EPA) and the Texas Commission on Environmental Quality (then the Texas Natural Resource Conservation Commission), EPA is disapproving these portions of the IPs.

As noted in several EPA letters to the TCEQ between December 2009 and August 2010, the section on whole effluent toxicity (IPs, pages 102-129) does not establish permitting implementation procedures that adequately support the TSWQS established to protect aquatic life (see 30 TAC §§ 307.1, 307.2, 307.4., 307.6(b)(2), and 307.6(e)(1)). The document does not provide EPA, the regulated community, or the public a clear and definitive process for determining whether WET limits are required in TPDES permits. In addition, it incorporates a number of revisions which are inconsistent with current requirements and about which EPA has already voiced concern.

Finally, with regards to statements made in Series 18 of the Continuing Planning Process (CPP), viewed in light of the IPs, it appears that TCEQ's decision to remove TRE requirements from permits will necessitate revisions to the CPP. The enclosed comments outline several, but not all, EPA concerns with regard to the WET section of the IPs. The IP is a lengthy technical guidance document which is intended to assist in the implementation of the state's rules and the Texas Pollutant Discharge Elimination System (TPDES) program. If inconsistencies exist between the IP and the rules (which include the Texas Surface Water Quality Standards), or the requirements that apply to the TPDES program, the state rules, the CWA, federal regulations and the Texas/EPA Memorandum of Agreement will govern EPA's interpretation.

ATTACHMENT B

Internet Address (URL) ● http://www.apa.gov/region6 Recycled/Recyclable ● Printed with Vegetable Oil Based Inks on 100% Recycled Paper, Process Chlorine Free
Letter to Mark Vickery Page 2

EPA continues to be willing to work with TCEQ to resolve the issues outlined in this letter and the attached comments. However, as we have previously communicated, we anticipate that further delays will increase the impacts on issuance of permits that comply with the requirements of the Texas water quality standards and the NPDES program. If you have any questions regarding this matter please contact me at (214) 665-7101 or have your staff contact Claudia Hosch at (214) 665-6464 (Email: hosch.claudia@epa.gov))

Sincerely,

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Miguel I. Flores Director Water Quality Protection Division

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Enclosures

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EPA Comments on 2010 Procedures to Implement the Texas Surface Water Quality Standards

EPA Memo, "Compliance Schedules for Water Quality-Based Limitations in NPDES Permits (James A. Hanlon, May 10, 2007)

cc: L'Oreal Stepney, TCEQ Charles Maguire, TCEQ

EPA Comments on Revised Texas Water Quality Standards Implementation Procedures December 2, 2010

1. Reasonable Potential (RP) for Whole Effluent Toxicity (WET) (IPs, page 113): The implementation procedures (IPs) do not adequately address RP. Federal regulations require NPDES permitting authorities to determine whether each NPDES-permitted discharge has the reasonable potential to cause or contribute to an exceedance of a State water quality standard or criterion. EPA has attempted to work with TCEQ since February 2005 to develop acceptable procedures. However, after several draft proposals and recent cautionary letters from EPA Region 6, TCEQ submitted revisions to its IPs that do not address RP for WET in any meaningful manner. In addition, recently submitted TPDES permits do not include WET limits where RP clearly exists.

TPDES permits issued under the NPDES program must fully meet the requirements of the Clean Water Act, federal regulations and the Texas WQS. In order for EPA to approve the WET section of the IPs submitted for EPA approval, the document must be revised to include RP procedures that fully and clearly explain TCEQ's decision-making process, and all information and data to be used in making the determination. In addition, the document must provide a clear explanation of any process which results in data being discarded or otherwise not used. These revisions should be completed as expeditiously as possible to prevent further impacts to aquatic life, delays in the issuance of TPDES permits and potential specific objections to permits/fact sheets that do not provide a clear, detailed and consistent process for determining reasonable potential for WET.

2. Total Residual Chlorine Requirements for Minor POTWs (IPs, Page 131); Minor POTWs (i.e., those with design flows of > 1.0 mgd) constitute a class of Texas discharge permits which specifically authorizes the discharge of toxics in toxic amounts. Most of these permits have not previously been subject to EPA review, however that status is currently under review since EPA has identified this as a significant programmatic issue. In its revisions to its IPs, TCEQ elected to establish dechlorination requirements for a relatively small portion of its minor domestic discharge universe, only those facilities that are new or expanding, with design flows between 0.5 and 1.0 mgd. TPDES permits for these facilities typically require the facility's effluent to "...contain a chlorine residual of at least 1.0 mg/l and shall not exceed 4.0 mg/l after a detention time of at least 20 minutes (based on peak flow)...," with no requirement to dechlorinate the effluent prior to discharge. For discharges to many small streams, this permit condition effectively authorizes the discharge of a toxic (chlorine) in toxic amounts (4.0 mg/l is almost 400 times EPA's chronic criterion and 200 times EPA's acute criterion for chlorine toxicity to aquatic life). In addition, such permit requirements are in direct conflict with TCEQ's narrative water quality standard for the protection of aquatic life and constitute reasonable potential for exceedance of the criterion. Among the necessary changes for EPA to approve the WET section of the IP document submitted for EPA approval, the document must be revised to include appropriate restrictions on the level of chlorine and other substances used to disinfect effluents discharged from minor POTWs. EPA recognizes that this requirement will impact many minor POTWs and is willing to

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assist TCEQ in prioritizing a phased implementation plan (i.e., discharges with the most significant environmental impacts first, etc.) that will result in appropriate chlorine controls for a significantly greater number of minor POTWs in the near future.

- 3. **Permit Effective Dates for Variances and Limits:** The Agency cannot approve permits that allow for compliance schedules or variances which do not include a specific date for compliance with final effluent limitations.
- 4. Statistical Interpretation of Test Results (IPs, Page 107): As previously noted to TCEQ, this section and all such references regarding any adjustment of the nominal error rate must be removed for EPA to consider approval of the IPs. In point of clarification of this issue, subsequent to publishing its approach in July 2000, EPA determined that the procedure lacked sufficient scientific basis and withdrew it. The 2002 WET test method manual revisions set the nominal error rate at 0.05, and do not allow for adjustment for that value. Test results based on any nominal error rate other than 0.05 are not acceptable for purposes of permit compliance and any test results based on an any value other than 0.05 must be recalculated based on the standard rate of 0.05 before evaluating RP.
- 5. Reasonable Potential Determination Review of Previously Submitted WET Data (IPs, Page 113): This specific issue is not addressed in the IPs, however, on page 55, #116 in the TCEQ Response to Comments on the IPs, TCEQ lists several qualifiers it intends to employ in establishing RP for WET -

"The TCEQ approach will be grounded in the best scientific information available, consideration of EPA guidance as allowed under the MOA, staffs' professional and scientific knowledge (including but not limited to, artifactual toxicity, non-representative data, and source water toxicity) in dealing with RP determination and WET related issues, experience, and familiarity with program administration of permits with lethal and sublethal monitoring, and testing methodologies."

EPA previously commented to TCEQ on the review of data already submitted for purposes of determining compliance with the NPDES program, and stated that test results meeting the established test acceptability criteria may not subsequently be discounted. Each piece of this information must be fully and clearly documented in the fact sheet. Any previously reported WET data or test results that TCEQ determines will not be used in RP analysis is subject to EPA review and must be submitted as part of the public record for the draft permit package. Standard permit requirements have for years precluded the submission of invalid test data. EPA anticipates that it will very rarely allow data that has been submitted for purposes of NPDES compliance to be subsequently disgualified. 6. Reasonable Potential Determination – Compliance Periods (IPs, Page 114): TCEQ's proposal to delete TRE requirements from permits will affect the use of compliance schedules and likely result in conflicts with the revised WQS which state:

"Where conditions may be necessary to prevent or reduce effluent toxicity, permits *must* include a reasonable schedule for achieving compliance with such additional conditions." (30 TAC § 307.6(e)(2)(D)).

EPA has provided guidance on the appropriate use of compliance schedules (See attached memo, Compliance Schedules for Water Quality-Based Limitations in NPDES Permits, James Hanlon, May 5, 2007). As proposed, permittees who demonstrate significant toxic effects and fail to aggressively self-implement a TRE and /or have had sufficient time to already have done so will not qualify for a compliance schedule. Also, a permit compliance schedule must be an "enforceable sequence of actions or operations leading to compliance," must be fully described and supported in the permit fact sheet and require compliance as soon as possible - i.e., "The permitting authority should not simply presume that a compliance schedule be based on the maximum time period allowed by a State's authorizing provision."

By not continuing the use of TREs and TRE triggers in permits, TCEQ is providing permittees with what amounts to a five-year delay in even beginning to address toxicity. Moreover, the WQSs now state that a TRE (duration is not defined, but historically 28 months) may be required, and a compliance schedule (three years) must be included. In addition, the IPs now introduce an additional one-year "study period" prior to initiating a compliance schedule. Thus, potentially toxic discharges could be permitted to continue for over eleven years (and over two permit cycles) before any positive control would become effective in a permit. This would not constitute timely and appropriate actions to preclude exceedances of the WQS.

Lastly, EPA has concerns that the new one-year study period followed by a three-year compliance schedule constitutes a four-year compliance schedule, which is not allowed by the WQS. EPA's position is that if substantial and ongoing corrective actions have not been taken after toxicity has been demonstrated and confirmed by a follow-up test, anything beyond a compliance schedule of up to three years (if warranted) would not be approvable.

7. Reasonable Potential Determination - Basis for Removing WET Limits (IPs, Page 114): TCEQ proposes to remove WET limits after a 3 year period of compliance with quarterly testing. As previously communicated to TCEQ, EPA disagrees with the notion that twelve WET tests performed over a three year period constitute an adequate basis for removal of a permit limit. In view of federal anti-backsliding requirements, this is an inadequate amount of data on which to make such a determination. Further, the removal of a WET limit, as with any other limit, must first be based on an analysis of reasonable

potential – which TCEQ has not yet developed for WET. EPA also notes that for purposes of making decisions on site-specific criteria for use in individual permits, the IPs require a minimum of 30 samples for hardness (page 157), pH (page 158), chlorides (page 159), total suspended solids (page 161) and metals (page 161), all taken at a minimum of one week apart, and a minimum of 50 samples for total dissolved solids (page 180). TCEQ has provided no basis for establishing a three-year WET limit, the IPs do not even mention removing a chemical limit after any period of time, nor do the WQS address this important issue.

- 8. Addressing WET Limit Violations (IPs, Pages 114 and 117): The IPs state that noncompliance with a WET limit is based on a scheduled test failure followed by at least two additional test failures demonstrated in the required additional testing period. EPA disagrees with this approach – a single violation is a permit violation and an exceedance of the narrative Texas water quality standard for protection of aquatic life.
- 9. Toxicity Reduction Evaluations (TREs) (IPs, page 115): In our previous comments, because EPA was mindful of the scope of its authority, the Agency took no position on whether the IPs, and permits, must include TRE requirements. However, EPA strongly encourages TCEQ to include TRE requirements (and now including sublethal TREs) in the IPs and permits as has been done since 1991. Otherwise, TCEQ is establishing a scenario where a permittee need take no action whatsoever after repeated test failures, potentially wasting opportunities to find toxic samples, and identify sources and controls for toxicants in a timely manner. In fact, there is no reason for not including TREs in permits even with WET limits other States have done so for years.

In addition, it appears that the water quality standards, implementation procedures and the continuing planning process documents are inconsistent with respect to TRE requirements.

- a. The IPs state that TREs *are suggested* but TRE requirements will no longer be included in TPDES permits(s) (except for purposes of the Texas 24-Hour LC50 test).
- b. The WQS state that a TRE may be required.

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- c. Series 18 of the continuing planning process (CPP) states that "If a discharge repeatedly fails effluent toxicity tests, then a toxicity reduction evaluation *is required*..."
- d. Series 18 of the CPP also states that "Any significant toxicity observed during biomonitoring must then be evaluated and eliminated."

With respect to item d. above, TCEQ will need to explain how it will ensure that "Any significant toxicity observed during biomonitoring..." will be evaluated and eliminated, given that the IPs simply suggest that permittes perform a TRE. This problem will be further exacerbated by TCEQ removing reopeners from its permits, as indicated on Page

48, #117, of its Response to Comments on the IPs, "The commission responds that the second paragraph of the TRE section states that two retests will be performed. The additional retest results will be used as part of the RP determination. *The commission does not intend to place re-opener clauses in the permit language.*"

TCEQ has not provided a process by which the IPs, WQSs and CPP are reconciled with respect to TREs. It is unclear what environmental benefit is to be achieved by purposefully discontinuing a permitting requirement that ensures timely investigation and corrective actions after WET test failures (which indicate impairment of aquatic ecosystems).

- 10. WQS v IPs on TREs and Compliance Schedules: It does not appear that the general standard at 306.6(e)(2) fully supports the narrative standard at 307.6(e). The phrase "...may require TRE..." presents an issue of implementation; it is not a water quality standard. Further, TCEQ must define what constitutes an acceptable TRE and the duration period of a TRE, as well as explain how the concepts of TRE (in the WQS), a one-year "initial study period" (in the IPs) and a compliance schedule (in the WQS and IPs) work together. It appears that the 1-year initial study period presented with a compliance period is actually a 4 year compliance schedule this contradicts the WQS, which limit compliance schedules to a maximum of 3 years. In addition, the federal regulations governing the use of compliance schedules preclude general application of the maximum period allowed by a State (see enclosure EPA Memo, "Compliance Schedules for Water Quality-Based Limitations in NPDES Permits (James A. Hanlon, May 10, 2007)).
- 11. POTW Flow Rates Domestic Dischargers (IPs, Page 102): The sentence "Permittees with more than one flow phase in their permit begin WET testing upon expansion to 1 MGD or greater" is misleading and must be corrected to, "Permittees with more than one flow phase in their permit begin WET testing upon expansion to, or the discharge of, 1 MGD or greater, whichever comes first" or similar. [See EPA Comments, May 2008]. Once a POTW facility has discharged at the rate of ≥1.0 mgd under normal operating conditions, that facility is functionally an NPDES major discharger and must comply with requirements for major POTW facilities.
- 12. WET limits vs monitoring-only (IPs, Page 102): As noted in our comments dated May 23, 2008, the first sentence of the first paragraph is incorrect. Facilities whose effluent "... demonstrates significant potential to exert toxicity in the receiving water..." require WET limits, not just WET monitoring. Facilities whose effluent poses a very low potential for toxicity are required to monitor for WET, but WET limits are not required unless toxicity is demonstrated in testing during the permit term.

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13. Nutrients: While EPA acknowledges the steps taken by TCEQ to begin addressing nutrient concerns through the IPs, we believe such actions should not be limited to dischargers that are new or expanding. EPA also notes that the IPs' reference to potential effluent limits as low as 0.5 mg/l phosphorus may not be sufficiently protective. EPA recommends that the IPs include a reference to the potential for significantly lower phosphorus limits. All domestic discharges and other facilities with potential to discharge nutrients to reservoirs with chlorophyll-a criteria should be evaluated for potential limits.

Procedures related to Chlorophyll-a/Nutrients Permitting (IPs, pages 30-54):

- a. Some of the conversion factors utilized in the equations are not adequately identified or labeled (i.e. 1381525 in equation #3, 4047 in equation #4, and 0.3048 in equation #5).
- b. What is the justification for an assumption of 3.5 mg/L TP in effluent if no TP data is available?
- c. The model appears to rely on a perception that there is only one discharger per waterbody. Are these cumulative loadings?
- d. If this model is used only to assess new or expanding dischargers, it is possible that the model will not adequately represent to sum of TP inputs to a reservoir.
- 14. Regression Equation for Establishing Critical Low-Flows in Specific Water Bodies in the Cypress Creek Basin (IPs, pages 93 and 95-99): Tables 4a through 4e include tables for alternate values to be used in place of 7Q2 critical low flow values (or the previously-approved Table 4 for East Texas streams, which is based on bedslope). The tables are intended for use in the following water bodies: Harrison Bayou (unclassified water body in segment 0401); segment 0406 Black Bayou; segment 0407 James Bayou; 0409 Little Cypress Creek (Bayou); and segment 0410 Black Cypress Bayou (plus upstream unclassified portion). The flows are calculated from a regression-based equation, which is the basis for site-specific dissolved oxygen criterion (with the addition of safety factor of 0.5 mg/l to dissolved oxygen criterion).

The Use Attainability Analysis (UAA) does not address the application of this equation for alternative low flow values. The only reference to such use is a statement in a 2009 summary of the UAA which says "For purposes of applying DO models to establish permit limits using the regression equation, information is being developed to include in the current revisions to the TCEQ Procedures to Implement the Texas Surface Water Quality Standards." The values in Tables 4a-4e arc considerably higher than the 7Q2 values available from the three U.S. Geological Survey gauge stations available for the above segments. Two stations are located on segment 0409- Little Cypress Creek (Bayou) and the 7Q2 values are 0.53 cfs and 0.1 cfs. The 7Q2 low flow was also calculated from the gauge station on segment 0410 - Black Cypress Bayou. For segment 0409 - Little Cypress Creek (Bayou), the headwater flows in Table 4d range from 69 cfs to 1140 cfs, to protect a dissolved oxygen criterion of 4.0 mg/l. Similar differences are found between the 7Q2 value for segment 0410 - Black Cypress Bayou and the values in Table 4e. The values in Tables 4a-4e are also much larger than the values found in Table 4 of the IPs, ranging from 0.1 cfs to 3.0 cfs, to protect a dissolved oxygen criterion of 4.0 mg/l.

EPA is currently reviewing the UAA as the basis for the site-specific criteria changes in Appendices A and D of the Texas Water Quality Standards. However, we need additional information to support the second use of the equation in the IPs. We also note that environmental groups have recently submitted comments on this UAA to EPA.

- 15. Narrow Tidal Rivers (IPs, Page 92): It would be helpful to define the limitations of how far upstream TCEQ intends to look to find usable flow data for narrow tidal rivers. It would also be helpful to provide working definitions of the terms river and stream when does a stream become a narrow tidal river? This has impact on the level of protection being afforded to aquatic life.
- 16. Water Bodies with a Dissolved Oxygen Impairment: EPA rules currently preclude additional loadings to segments listed as impaired on the 303(d) list. Additional oxygen demanding loadings to segments listed as impaired for dissolved oxygen would be precluded under most scenarios, and existing discharges would be capped at current permitted levels.
- 17. Stormwater Permits: Under general provisions, the draft IPs state that TCEQ does not have routine procedures for establishing limits based on standards, but then goes on to say in certain circumstances TCEQ may include numeric technology-based limits in individual permits. Where a general permit covers a discharge subject to an Effluent Limitations Guideline (ELG), that numeric limit must be included in the general permit; these numeric limits are not limited to individual permits.
- 18. Temporary Variances: In the past, temporary variances have only been granted for wastewater discharges; however, TCEQ is now proposing to allow temporary variances for <u>storm water</u> discharge permits as well. Procedures regarding the implementation of this addition are not adequately discussed in the temporary variance section of the IPs.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY REGION 6 1445 ROSS AVENUE, SUITE 1200 DALLAS TX 75202-2733

DEC 0 e 2010

Mr. Mark R. Vickery, P.G. Executive Director Texas Commission on Environmental Quality Post Office Box 13087 Austin, TX 78711-3087

Dear Mr. Vickery:

There are a significant number of draft Texas Pollutant Discharge Elimination System (TPDES) permits which have not been issued, pending the Texas Commission on Environmental Quality's (TCEQ) resolution of various concerns raised by the U.S. Environmental Protection Agency (EPA). Please see the enclosed November 16, 2010, list of 80 facilities. A large number of these draft permits have been delayed due to issues regarding whole effluent toxicity (WET).

The majority of EPA's concerns involve the reissue of permits that have been continued administratively but are expired. Beyond the obvious impact of these unresolved issues on TCEQ's permit backlog, there are significant environmental consequences to the continued authorization of discharges under administratively continued expired permits. In some cases, such as with the TPDES permit number TX0126098 for the Red River Redevelopment Authority (RRRA), EPA is concerned that the expired permit continues to authorize toxic discharges. According to EPA's Online Tracking Information System (OTIS), since 2005 the RRRA facility failed 14 out of 18 WET tests for the C, dubia species at the lethal endpoint and 17 out of 18 tests at the sublethal endpoint. For the P. promelas species, the facility failed 10 out of 15 WET tests at both the lethal and sublethal endpoints. Accordingly, reissuing the RRRA permit with toxicity limits included must be expedited. Similarly, the TPDES permit number TX0057304 for the City of South Houston has been expired since September 2007, and must be reissued to include toxicity limits based on the facility's extensive history of WET test failures (five failures out of 20 tests for the C. dubia species at both the lethal and sublethal endpoints and three failures out of 20 tests for the P. promelas species at the sublethal endpoint). EPA is concerned that the two facilities' discharges remain toxic and TCEQ is not effectively addressing the toxicity by not reissuing the TPDES permits with appropriate WET limits.

To ensure that TCEQ's and EPA's environmental goals and program commitments continue to be met, EPA requests that TCEQ take the necessary steps to resolve outstanding EPA requests for additional information, as well as TCEQ permit withdrawals for the specified TPDES facilities, so that these permits may be expeditiously issued. In accordance with Chapter 1, III.A.3. of the *Memorandum of Agreement Between the Texas Natural Resource Conservation Commission and the U.S. Environmental Protection Agency, Region 6 Concerning the National Pollutant Discharge Elimination System*, (Texas Natural Resource Conservation Commission is now known as TCEQ), EPA is requesting that TCEQ provide EPA with revised draft permits which address EPA's concerns for the specified facilities within six months of this request. EPA will review the revised draft permits and formally withdraw its opposition to issuing the permit, as appropriate, so that TCEQ may proceed with its permitting process.

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<u>ATTACHMENT C</u>

Letter to Mr. Vickery Page 2

EPA recognizes that TCEQ may identify a few situations where resolution of the issues will be complex and a revised draft permit cannot be provided within six months. For these, please provide EPA with an updated status of the situation and a brief explanation of the plans, including the timeframe, for resolution.

We appreciate the continued cooperation and support from you and your staff in administering the National Pollutant Discharge Elimination System permitting program, and your efforts to reach resolution of these matters. EPA is available to assist TCEQ in anyway possible. If you have any questions, please contact me at (214) 665-2100, or your staff may contact Mr. Miguel Flores, Water Quality Protection Division Director, at (214) 665-7101.

Singerel iz Regional Administrator

Enclosure

cc: L'Oreal W. Stepney, Deputy Director, Office of Water, TCEQ

Texas Municipal Permits

			Date of LPA objection	rermit
Municipal Whole Effluent Toxicity (WET)*	NPDES ID	State ID	or TCEQ withdrawal	Expiration Date
1 Langham Creek MUD	TX0064734	WQ0011682001	EPA-2/1/07	5/1/07
2 Houston-Homestead	TX0063029	WQ0010495023	EPA-8/1/07	9/1/07
3 City of Garland	TX0024686	WQ0010090002	EPA-5/28/08	5/1/08
4 City of South Houston	TX0057304	WQ0010287001	TCEQ-10/02/08	9/1/07
5 Harris Co. Fresh Water Supply Distict No. 51	TX0025062	WQ0010032001	TCEQ-10/02/08	5/1/08
6 City of Georgetown	TX0022667	WQ0010489002	EPA-11/20/08	12/1/08
7 City of McGregor	TX0023914	WQ0010219002	TCEQ-4/3/09	12/1/08
8 City of Houston-Metro (also WQ0010495152)?	TX0069736	WQ0010495136	EPA-7/1/09	9/1/08
9 Prairie View A&M University	TX0111201	WQ0011275002	EPA-7/6/08	7/1/09
10 Memorial Villages Water Authority	TX0047457	WQ0010584001	EPA-7/8/09	5/1/09
11 City of Bay City	TX0034461	WQ0010123004	EPA-9/9/09	8/1/09
12 City of Navasota	TX0071790	WQ0010231001	EPA-9/25/09	5/1/09
13 Cinco MUD No. 1	TX0098957	WQ0013558001	EPA-10/20/09	8/1/09
14 City of Humble	TX0034401	WQ0010736002	EPA-10/29/09	12/1/09
15 City of Houston-Southeast	TX0035009	WQ0010495079	EPA-11/12/09	9/1/09
16 City of El Campo	TX0021474	WQ0010844001	EPA-11/6/09	12/1/09
17 North Texas Municipal Water District-Stewart Creek West	TX0103501	WQ0014008001	EPA-3/10/10	10/1/07
18 Laguna Madre Water District	TX0023647	WQ0010350001	EPA-4/13/10	7/1/10
19 City of Houston- Kingwood	TX0066583	WQ0010495146	EPA-6/8/10	7/1/10
20 Brazoria County MUD #3	TX0086118	WQ0012332001	EPA-8/23/10	9/1 /10
21 City of League City	TX0085618	WQ0010568005	EPA-9/8/10	9/1/10
22 City of Corpus Christi- Greenwood	TX0047074	WQ0010401003	EPA-9/30/10	6/1/10
23 City of Copperas Cove	TX0069850	WQ0010045004	EPA-10/21/10	2/1/10

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* may have other issues cited also

updated 11/16/10

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	· · · ·		Date of EPA objection	Permit
Municipal Wet Weather*	NPDES ID	State ID	or TCEQ withdrawal	Expiration Date
1 City of Bridge City	TX0025500	WQ0010051001	EPA-2/7/02	3/1/01
2 City of Port Neches	TX0022926	WQ0010477004	EPA-1/30/09	8/1/06
3 City of Houston-Sims South & Scott St. WWF	TX0105058	WQ0010495002	EPA-9/13/05	5/31/00
4 City of Houston-FWSD No. 23 & Bretshire WWF	TX0063053	WQ0010495016	EPA-10/6/04	5/1/03
5 City of Houston-69th St. & Northside WWF	TX0096172	WQ0010495090	EPA-9/25/05	9/1/02
6 City of Houston-Sims North	TX0062201	WQ0010495002	EPA-9/13/05	8/31/02
* may have other issues cited also				• • •

Texas Industrial Permits

			Date of EPA Objection	Permit
Industrial - WET*	NPDES ID	State ID	or TCEQ withdrawal	Expiration Date
1 Texas Instruments Incorporated	TX0003824	WQ0001225000	TCEQ-7/11/08	2/1/08
2 Lubrizol Corporation,	TX0007048	WQ0000639000	TCEQ-7/30/08	5/1/08
3 Exxon Mobil Corporation (Mont Belvieu)	TX0089125	WQ0002546000	TCEQ-9/11/08	8/1/08
4 Solvay Chemicals, Inc.	TX0087971	WQ0002544000	TCEQ-10/2/08	7/1/08
5 Red River Redevelopment Authority	TX0126098	WQ0004664000	TCEQ-12/22/08	1/1/08
6 Huntsman Petrochemical Corporation	TX0005592	WQ0000584000	TCEQ-12/22/08	7/1/08
7 City of Bryan (Roland C. Dansby Steam Electric Station)	TX0073954	WQ0002117000	EPA-1/22/09	12/1/08
8 Shell Oil Company and Deer Park Refining	TX0004871	WQ0000403000	EPA-2/8/10	7/16/10
9 NRG Texas Power LLC (W.A. Parish Steam Electric)	TX0006394	WQ0001038000	EPA-12/2/09	7/1/09
10 WRB & ConocoPhillips Refinery (Borger)	TX0009148	WQ0001064000	EPA-4/30/10	1/30/10
11 LCY Elastomers	TX0128015	WQ0004772000	EPA-5/26/10	Mod-8/1/13
12 Valero Refining- Texas, L.P. (West Plant)	TX0063355	WQ0001909000	EPA-7/16/10	6/1/10
13 City Public Service of San Antonio (V.H. Braunig Steam)	TX0063690	WQ0001515000	EPA-7/29/10	3/1/10

* may have other issues cited also

updated 11/16/10

				Date of EPA Objection	Permit
	Industriai - 316(b)*	NPDES ID	State ID	or TCEQ withdrawal	Expiration Date
1	Comanche Peak (Luminant)	TX0065854	WQ0001854000	EPA-2/28/08	3/1/08
2	Barney Davis	TX0008826	WQ0001490000	EPA-1/9/08	12/5/06
3	Valley NG	TX0009067	WQ0000948000	EPA-1/8/08	12/1/07
4	Calhoun (ES Joslin)	TX0003573	WQ0001303000	EPA-1/8/08	1/1/08
5	Sterling Chemicals, Inc.	TX0005762	WQ0000575000	EPA-4/27/09	11/1/08
6	Luminant Generation Company LLC (Graham Steam Elec)	TX0001163	WQ0000551000	EPA-9/10/09	5/1/09
7	Alcoa (Rockdale)	TX0000876	WQ0000395000	EPA-9/16/09	5/1/09
8	GenTex Power Corporation (Lost Pines 1 Power Plant)	TX0119661	WQ0004155000	EPA-11/4/09	9/1/09
9	LCRA (Sim Gideon Steam Elec & Lost Pines Unit I)	TX0064378	WQ0002052000	EPA-1/12/10	9/1/09
10	City of Austin (Decker Cr. Power Plant)	TX0058441	WQ0001887000	EPA-1/12/10	9/1/09
11	Southwestern Electric Power Company (Lone Star Power)	TX0061999	WQ0001464000	EPA-1/27/10	2/1/10
12	2 South Texas Electric Cooperative, Inc (Sam Rayburn Power)	TX0005118	WQ0001521000	EPA-1/28/10	2/1/10
13	STP Nuclear Operating Company (South Texas Project)	TX0064947	WQ0001908000	EPA-2/25/10	12/1/09
14	Luminant Generation Company, LLC (Monticello Steam)	TX0000086	WQ0001528000	EPA-3/10/10	2/1/10
15	5 Lower Colorado River Authority(ThomasCFerguson Power)	TX0057576	WQ0001369000	EPA-4/7/10	12/1/09
18	5 The Dow Chemical Company (Freeport)	TX0006483	WQ000007000	EPA-7/8/10	7/1/09
17	Victoria WLE, LP (Victoria Power Station)	TX0003603	WQ0001165000	EPA-8/19/10	2/1/10
18	B Lower Colorado River Authority (Fayette Power Plant)	TX0073121	WQ0002105000	EPA-8/19/10	Mod-6/11/12 .

* may have other issues cited also

		Date of EPA Objection	Permit
NPDES ID	State ID	or TCEQ withdrawal	Expiration Date
TX0124419	WQ0004359000	EPA-3/24/08	10/1/06
TX0006068	WQ0000393000	EPA-11/5/08	9/1/07
TX0062189	WQ0001904000	EPA-4/14/09	9/1/08
TX0001643	WQ0000368000	EPA-4/15/09	12/9/08
TX0001171	WQ0000554000	EPA-5/22/09	12/1/09
TX0007412	WQ0000305000	EPA-2/12/10	10/1/08
TX0006017	WQ0000455000	EPA-3/10/10	12/1/09
TX0004715	WQ0000394000	EPA-3/26/10	9/1/01
TX0008788	WQ0003977000	, EPA-4/14/10	7/1/09
TX0003697	WQ0000990000	EPA-4/15/10	11/1/08
TX0005991	WQ0000309000	EPA-6/10/10	12/1/09
TX0127841	WQ0004767000	EPA-7/7/10	3/1/10
TX0131962	WQ0004882000	EPA-7/29/10	new
TX0104876	WQ0003083000	EPA-8/5/10	4/1/10
TX0004685	WQ0000349000	EPA-8/10/10	6/1/10
TX0007056	WQ0000353000	EPA-8/31/10	Mod-9/1/12
TX0001627	WQ0001200000	EPA-9/9/10	9/1/10
TX0006076	WQ0001598000	EPA-9/15/10	Mod-5/1/11
TX0076996	WQ0002075000	EPA-9/22/10	6/1/10
	NPDES ID TX0124419 TX0006068 TX0062189 TX0001643 TX0001171 TX0007412 TX0006017 TX0004715 TX0004715 TX0004715 TX0004715 TX0003697 TX0005991 TX0127841 TX0131962 TX0104876 TX0004685 TX0007056 TX0001627 TX0006076 TX0076996	NPDES IDState IDTX0124419WQ0004359000TX0006068WQ000393000TX0062189WQ0001904000TX0001643WQ000368000TX0001171WQ0000554000TX0007412WQ0000305000TX0006017WQ0000455000TX0004715WQ000394000TX0003697WQ000394000TX0003697WQ000399000TX0127841WQ000309000TX0131962WQ000309000TX0104876WQ0003083000TX0004685WQ000349000TX0001627WQ0001598000TX0001627WQ0001598000TX0006076WQ0002075000	Date of EPA ObjectionNPDES IDState IDor TCEQ withdrawalTX0124419WQ0004359000EPA-3/24/08TX006068WQ000393000EPA-11/5/08TX0062189WQ0001904000EPA-4/14/09TX0001643WQ000368000EPA-4/15/09TX0001171WQ000554000EPA-5/22/09TX0007412WQ000305000EPA-2/12/10TX0006017WQ000305000EPA-3/10/10TX0006017WQ000394000EPA-3/26/10TX0003697WQ0003977000EPA-4/14/10TX0003697WQ00039000EPA-4/15/10TX0127841WQ0004767000EPA-7/7/10TX0131962WQ0003083000EPA-8/5/10TX0004685WQ000349000EPA-8/10/10TX0004685WQ000353000EPA-8/10/10TX0007056WQ0001200000EPA-8/31/10TX0006076WQ0001598000EPA-9/9/10TX0076996WQ002075000EPA-9/22/10

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United States Environmental Protection Agency

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www.epa.gov/region6

For more information contact Dave Bary or Joe Hubbard at 214-665-2200 or <u>r6press@epa.gov</u> Subscribe to receive e-mail copies of Region 6 news releases at: www.epa.gov/region6/6xa/r6news_mailing_list.htm

EPA Requests Texas Issue Clean Water Act Permits

(DALLAS – December 2, 2010) The Environmental Protection Agency (EPA) has requested the Texas Commission on Environmental Quality (TCEQ) take the necessary steps to reissue Clean Water Act discharge permits to sewage treatment plants and industrial facilities in Texas.

The TCEQ has a significant number of draft Clean Water Act discharge permits which have not been issued pending resolution of various concerns raised by EPA. Of the 80 discharge permits of concern, a large number of these draft permits have been delayed due to issues regarding the toxicity of the discharges.

There are significant environmental consequences to the continued authorization of discharges under expired permits. In some cases, EPA is concerned that expired permits continue to authorize toxic discharges.

"We are taking a stand for clean water. The streams, lakes, and bayous of our great state deserve to be protected from chemicals, bacteria, and toxic metals," said EPA Regional Administrator Al Armendariz. "Our children and future generations should be able to swim and fish anywhere in the state without worries about pollution."

To ensure that TCEQ's and EPA's environmental goals and program commitments continue to be met, EPA has requested that TCEQ take the necessary steps to resolve its concerns. With its action today, EPA is requesting that TCEQ issue the long overdue discharge permits within six months so that the cleanup and conservation of the state's waters can proceed.

More about activities in EPA Region 6 is available at http://www.epa.gov/region6

EPA audio file is available a http://www.epa.gov/region6/6xa/podcast/dec2010.html

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ATTACHMENT D

Bryan W. Shaw, Ph.D., Chairman Buddy Garcia, Commissioner Carlos Rubinstein, Commissioner Mark R. Vickery, P.G., Executive Director



DEC 1 4 2010

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TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

December 8, 2010

Mr. Al Armendariz, Ph.D. **Regional Administrator** United States Environmental Protection Agency Region 6 1445 Ross Avenue, Suite 1200 Dallas, Texas 75202-2733

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6WQ-A	6WQ-C
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Dear Dr. Armendariz:

We read the Environmental Protection Agency's (EPA) December 2, 2010 News Release and received your letter of the same date relating to the Texas Pollutant Discharge Elimination System (TPDES) draft permits that have not been issued because of concerns raised by the EPA. It's perplexing to the Texas Commission on Environmental Quality (TCEO) that after so many months and years of working with your staff on this issue, a news release is the communication tool of choice. This approach does not advance our common goal of clean water.

Your letter mentions 80 pending draft permits that the EPA is requesting be issued, and details two permits with concerns related to toxic discharges. I am aware of and have reviewed this growing list of EPA delayed unissued permits with concern because of the need to update the requirements. In fact, I initiated and made several visits to the EPA Region 6 and met with your staff to specifically discuss the list of objections raised by the EPA; some of which had never been raised before. In Dallas, I expressed our concern that many of these permits, as the TCEQ drafted and presented to the EPA for review, have other more restrictive permit limits that would improve the protection of water quality in Texas. However, they were stalled because of the EPA's unwillingness to work cooperatively on an effective solution for toxicity requirements.

The TCEQ is concerned with this EPA-imposed delay in issuing updated TPDES permits, particularly for those permits for which the TCEQ has taken corrective action that is being continued and/or improved in the proposed permits. Specifically, Red River Redevelopment Authority (RRRA) already has lethal Whole Effluent Toxicity (WET) limits at Outfall 001, effective since January 1998, where 48-hour acute testing is performed. In July of 2005, RRRA entered into a chronic TRE, followed later by a 24-hour acute TRE for Outfall 002. In March of 2008 we proposed chronic lethal WET limits and 24-hour acute WET limits for two species, which the EPA took issue with, causing further delays. More protective limits would be in place had the TCEO permit been issued in 2008 as proposed. Similarly, the City of South Houston had chronic lethal WET limits that became effective in January 1999. For this proposed permit, the EPA wanted an approach contrary to our EPA approved Implementation Procedures for sublethal effects, which again caused delays. The TCEQ has reviewed these permits with our latest weight of scientific evidence method and these permits are ready to be processed.

ATTACHMENT E

P.O. Box 13087

Austin, Texas 78711-3087

512-239-1000

Internet address: www.tceg.state.tx.us

Mr. Al Armendariz, Ph.D. Page 2 December 8, 2010

Once the EPA finally approves the permit and fact sheet language that has been sent to the EPA for review in May, and subsequently in early November, 2010, they can be issued.

For almost a year the TCEQ has expressed a willingness to move beyond its current EPA approved procedures to implement a WET program with the EPA's support. Most recently, and as mentioned above, in May we presented proposed permit language for all the permits that are on hold because of the toxicity limits. We were surprised to learn that the EPA now objects to a reasonable compliance period for the permittee to resolve the toxicity issues. Although it has been a common practice for new limits and was previously considered appropriate by your staff. We responded in early November with revised permit language for your consideration and still have not received approval. Until we have some established language for the permits and fact sheets it is inefficient to proceed with sending the other permits for review and comment; including permits for the City of South Houston and Red River Redevelopment Authority. Once the language is vetted between our two agencies the process can be expedited. We are eager to get the permits issued and will do so as soon as possible, but at this point, we have been waiting on EPA.

In the meantime, we are also sending new draft permits forward for your review with toxicity limits based on our analysis, and you have approved one, which has been issued with similar language.

Also, with respect to the rest of the permits included on the EPA's list of objections, we believe it is important to consider the technical merits of each issue and work with the EPA to develop protective permits. As an example, we have been able to develop a mutually agreed upon solution for permits with EPA objections on 316(b) requirements, which cover approximately 23% of permits you reference.

As you are aware, the EPA in 2006, federalized a Texas permit and began the process to add toxicity limits, and has still not issued this permit. We certainly do not want to encounter the same difficulty as we move forward to issue our permits. Having an EPA approved systematic approach for all permits to follow is the best path forward.

We desire to work with the EPA to protect water quality in Texas. We remain open to meetings and further discussions to establish mutually acceptable WET limits in permits. If you have any questions, please contact me at 512-239-5308.

Sincerely Charles W. Maguire, Director

Water Quality Livision Texas Commission on Environmental Quality

cc: Mr. Miguel Flores, United States Environmental Protection Agency, Region 6, 1445 Ross Avenue, Suite 1200, Dallas, Texas 75202

20101203 TCEQ Press Release

FOR IMMEDIATE RELEASE CLAWSON FRIDAY, DEC. 3, 2010 657-0738 MEDIA CONTACT: TERRY

PHONE: 512-239-0046 / PAGER: 512-

TCEQ's response to EPA news release on Texas water issues

In an apparent attempt to undermine the ongoing progress made between TCEQ and EPA staff on a very complicated scientific issue (lethal and sublethal toxicity limits in Texas Pollutant Discharge Elimination System [TPDES] permits), EPA Regional Administrator Al Armendariz issued a news release late yesterday proclaiming EPA's concern that expired permits continue to authorize toxic discharges, and "taking a stand for clean water." Interestingly, EPA took nine years to approve all of the 2000 Texas Surface Water Quality Standards, the foundation for water quality protection in the state, even though the Clean Water Act deadline is 60 days to approve and 90 days to disapprove.

It's perplexing to the TCEQ that after so many months and years of progress on this issue, a news release is the communication tool of choice.

For many of the permits referenced, TCEQ is proposing other, more restrictive permit requirements, which have not yet been implemented because of EPA's unwillingness to work cooperatively on an effective solution for toxicity requirements.

Currently the EPA has in house, at its offices in Dallas, proposed toxicity limits for several permits subject to renewal. These draft solutions for toxicity limits were forwarded to EPA and are pending review and approval by EPA. The EPA and TCEQ staff have been working closely on this toxicity issue for many years and are in the final stages of agreeing on permit language. With respect to other permits included on EPA's list of objections, we believe it is important to not blindly accept comments received from EPA but to carefully consider the technical merits of each one and work together to develop protective permits.

In FY 2010 TCEQ issued 600 wastewater discharge TPDES permits and have issued a total of 2932 TPDES individual permits. These permits are protective of human health and the environment. Texas is our home, and we take a stand for clean water every day. We are anxious to receive approval so that any permits in question may be expeditiously processed.

ATTACHMENT F

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James Murphy Executive Manager, Water Resources/Utility Operations, Guadalupe-Blanco River Authority (GBRA), Seguin

Mr. Murphy directs water resource planning and management, including engineering and construction activities, recreation and parks, and utilities operations. He also directs the negotiation and development of major contracts and represents GBRA with its customers. Mr. Murphy was the in-house counsel and directed the Legal Department of the Trinity River Authority for 16 years. He currently serves as vice president of the Environmental Law Section of the San Antonio Bar Association.

Weston Solutions, Inc.

Susan T. Litherland, PE

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VAPOR INTRUSION: REGULATORY UPDATE WITH CASE STUDIES

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Over the past two years, vapor intrusion (VI) has emerged as a topic of growing interest for Texas regulatory and private sectors. This interest is driven by increased attention from the Environmental Protection Agency (EPA) Headquarters and Region 6, several high-profile sites in Texas suggesting potential residential exposure from impacted groundwater, and an overall increase in the regulation of VI across the country. This paper provides an update on the regulatory climate, an overview of the new American Society for Testing and Materials (ASTM) vapor encroachment guidance, several recent case studies, and updated recommendations regarding environmental risk management for sites with potential VI issues.

Background

During the 2009 Superconference, Weston Solutions, Inc (WESTON_®) presented a paper focusing on VI as an emerging issue in the state of Texas. This discussion attributed the emergence to increased national regulatory focus in conjunction with the prevalence of risk-based closures that do not address the VI pathway. In the corresponding conference paper, WESTON provided information on factors that contribute to VI in addition to analytical techniques to assess the potential for a complete VI risk pathway to exist and potential mitigation strategies. This paper focuses on changes in the regulatory climate since 2009 and provides several case studies to illustrate current strategies for the assessment and mitigation of potential VI risks.

VI occurs when contaminants in subsurface soil or groundwater volatize and are subsequently transported indoors where they may be inhaled by occupants of a building. Potential exposure can occur in both residential and commercial settings. Although some semi-volatile chemicals, and even some metals, can potentially create VI issues, chemicals categorized as "volatile organics" are most commonly associated with VI. Lists of potential VI chemicals are provided in available guidance^{1 2 3}. The most common VI chemicals of concern (COCs) are chlorinated solvents, such as trichloroethylene (TCE) and perchloroethylene (PCE), and constituents of petroleum hydrocarbons, such as benzene. The recent interest in hydraulic fracturing of shales in residential areas to extract natural gas has also focused attention on the potential for methane intrusion into structures. Common sources of potential VI chemicals are liquids and gases associated with dry cleaners, manufacturing facilities, machining facilities, gas stations, and landfills.

¹ Environmental Quality Management, Inc. 2004, "User's Guide for Evaluating Subsurface Vapor Intrusion Into Buildings", Table 1. Screening List of Chemicals, p. 7 of 77.

² ASTM International, 2010, Standard Practice for Vapor Encroachment Screening on Property Involved in Real Estate Transactions- E 2600-10.

³ California Environmental Protection Agency, Department of Toxic Substances Control, "Interim Final Guidance for the Evaluation and Mitigation of Subsurface Vapor Intrusion to Indoor Air" 2004, December 15, 2004 (Revised February 7, 2005), 59 pp.

Volatile organics in soil and/or groundwater equilibrate in the vapor phase within interstitial spaces above the water table so that a portion of the volatile chemical is present as "soil gas." The mere presence of volatile organics in soil and/or groundwater, and/or even relatively high concentrations of a chemical in the soil vapor beneath a building, do not necessarily mean there is an unacceptable risk associated with VI.

The three largest influences on the movement of soil vapor are 1) differences in pressure (vapors move from areas of higher pressure to areas of lower pressure), 2) differences in concentration (chemicals in the vapor phase will move from areas of higher concentration to areas of lower concentration), and 3) the presence or absence of a confining layer or barrier between the source (soil or groundwater) and the floor of the structure. Soil vapors enter a building when the pressure of the air within a building is lower than the pressure of the soil vapor, the chemical concentration in the soil vapor is higher than that chemical in the indoor air, <u>AND</u> there is an insufficient barrier (the presence of gaps, cracks, or holes in the foundation, as well as a lack of geologic barriers (clays and moist soils) to prevent migration into the building. Vapors migrating from a source will follow the path of least resistance, which in some cases results in VI routing into buildings or crawl spaces beneath buildings.

The Evolving Regulatory Climate

National and state regulatory guidance and programs have been created in response to VI concerns. Initial regulatory guidance documents on VI date back to the early 1990s⁴. The seminal EPA guidance documents on VI are the 2001 Resource Conservation and Recovery Act (RCRA) draft guidance document⁵ on VI and the 2002 Office of Solid Waste and Emergency Response (OSWER) draft guidance⁶. These documents provide a basic approach to the assessment and evaluation of potential VI issues and serve as the basis for development of subsequent EPA regional and state regulatory programs. Currently, EPA Regions 3, 6, and 9 have already developed, or are in process of developing, their own VI guidance⁷. At present, there are more states with regulatory guidance (31) than without (19). States without regulatory guidance or programs include Alabama, Arizona, Arkansas, Florida, Georgia, Illinois, Iowa, Kentucky, Montana, Nevada, New Mexico, Oklahoma, South Carolina, Tennessee, Texas, Utah, Vermont, West Virginia, and Wyoming. Links to the states with VI-related documents can be found at the following website maintained by EPA and the Interstate Technology and Regulatory Council: www.epa.gov/oswer/vaporintrusion/ http://www.itrcweb.org/teampublic and Vapor.asp.

⁴ United States Environmental Protection Agency. 1992. Assessing Potential Indoor Air Impacts for Superfund Sites; Air/Superfund National Technical Guidance Study Series. Office of Air Quality, Planning and Standards, Research Triangle Park. Document No. EPA-451/R-92-002. September 1992.

⁵ United States Environmental Protection Agency. 2001. Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway (Vapor Intrusion Guidance). December 2001.

⁶ United States Environmental Protection Agency. 2002. Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils (Subsurface Vapor Intrusion Guidance). Office of Solid Waste and Emergency Response. November 2002,

⁷ USEPA Region 6 RCRA Corrective Action Program Vapor Intrusion Policy October 2010

EPA Headquarters

As part of its ongoing evaluation of the Superfund program, EPA is considering an addition to the Hazard Ranking System (HRS) that would evaluate the threats posed by VI into dwellings and other occupied structures. The HRS currently has no mechanism for evaluating the threat to human health posed by VI, and groundwater and soil exposure pathways do not address site-related vapors that can enter buildings. While the air migration pathway considers the threat posed by contaminants released to atmospheric air, it does not address indoor air. EPA has stated that evaluation of threats related to VI will allow the agency to address particular priorities of its mission, such as ensuring the health of children and of women of childbearing age. Consideration of VI threats also will enable EPA to address indoor air contamination issues for vulnerable populations (including low-income, minority, indigenous, and Native American communities) who may live and work in areas where the design and condition of structures may result in conditions that are more conducive to VI.

As part of this process, EPA held four "listening sessions" in 2011 at cities in Virginia, California, New Mexico, and New Jersey. At these sessions, EPA officials presented an overview of VI HRS issues and received comments and questions from the public. The public comment period ended on 16 April 2011. The agency will consider the information gathered from these sessions and other sources before deciding to issue a proposed rulemaking to add consideration of VI to the HRS. Transcripts may be found on the following EPA website when available (www.epa.gov/superfund/sites/npl/hrsaddition.htm).

In parallel with the assessment of potential changes to the HRS, EPA is also revising the 29 November 2002 draft guidance documents for VI evaluation⁶. This draft guidance document is the basis for many of the state regulatory programs and underwent a comment period that closed 14 May 2011. Comments from the EPA Regions, the Department of Defense, state environmental agencies, industry group representatives, citizen's groups, consultants, and other interested parties can be viewed at http://www.regulations.gov/#!documentDetail;D=EPA-HO-RCRA-2002-0033-0070. Many comments were focused on what commenters described as the inadequacy of a "one size fits all" approach to VI assessment. Some reviewers stated that the screening levels for potential VI related to groundwater, set in some cases at the maximum contaminant level (MCL), were too low, while others commented that the MCL is an arbitrary benchmark and that all screening levels should be risk-based. Others questioned the appropriate risk levels (10⁻⁴, 10⁻⁵ or 10⁻⁶) used for carcinogens. The comments regarding MCLs and risk levels are significant because at least 12 volatile organic compounds (VOCs) would warrant further VI assessment at a site if groundwater concentrations were at the MCL and the 10^{-6} risk level was used as an acceptable indoor air concentration. A final document is scheduled for release on 30 November 2012.

EPA Region 6

Region 6 issued an October 2010 policy document to provide interim guidance for the EPA Region 6 RCRA Corrective Action Program until the final VI guidance document is issued (<u>http://www.epa.gov/region6/6pd/rcra_c/ca</u>/). Region 6 states that under existing regulations and guidance, the consideration of the VI pathway is an integral part of the corrective action process under RCRA, including the investigation and selection/implementation of final remedies.

Region 6 also uses the policy to identify various factors that should be considered in conducting assessments and implementing remedies.

Many of the 2002 draft USEPA guidance recommendations are included in the Region 6 policy document, but are re-emphasized in a condensed and direct manner to address issues often raised regarding the VI exposure pathway. The policy emphasizes the importance of testing the air inside the building or enclosed structure that occupants are breathing. The policy states that only indoor air samples can determine if actual inhalation exposures are occurring so that risk-based decisions can be made to determine whether remediation is required to protect human health. In public presentations, EPA Region 6 has stated that because of the volume of air inhaled by individuals (on the order of 20,000 liters per day), the levels of exposure from inhaling air with approximately 0.5 ug/m³ of a contaminant in air is equivalent to drinking 2 liters of water per day with 5 ug/L of the contaminant.⁸

Region 6 has completed several VI assessments. The Texas assessments include the Delfasco Forge site in Grand Prairie in which EPA collected soil gas, crawl space, outdoor, and indoor air samples to assess potential VI impacts associated with a 2,600-ft-long plume of TCE affected groundwater present beneath approximately 150 homes and businesses. EPA began the assessment by collecting over 400 samples using passive soil gas samplers placed in the public right-of-ways.⁹ Based on the soil gas results, EPA decided to collect sub-slab and crawl space samples from 16 homes and 2 commercial buildings. The concentrations of TCE in crawl space samples ranged from 9.4 to 193 μ g/m³. Indoor air samples were then collected from five homes with reported TCE concentrations ranging from 0.59 to 135 μ g/m³. EPA conducted additional screening and testing of soil gas, outdoor air, and indoor air using a mobile lab as part of a "Green Remediation Strategy" that resulted in the installation of solar-powered exhaust fans in the crawl spaces of homes with TCE concentrations above the 14 μ g/m³ action level established for the project.¹⁰ EPA reported equipment costs of only \$250 per site for fans, photo-voltaic cells, and the batteries.

TCEQ

The Texas Commission on Environmental Quality (TCEQ) has no specific rules or guidance for assessing or mitigating VI. For most properties in Texas that require environmental evaluation and/or where environmental evaluation is being voluntarily performed, the Texas Risk Reduction Program (TRRP) provides a framework for evaluation of risks associated with COCs in outdoor air [350.71(c)(3-6)]. Under 350.71(c) of TRRP, TCEQ lists specific human exposure pathways that must be considered. In addition, under TRRP 350.71(c)(8) "evaluation of other complete or reasonably anticipated to be complete exposure pathways," is required. TRRP includes risk-based concentrations in soil and groundwater that are unlikely to result in an unacceptable risk through the inhalation of outdoor air, and acceptable breathing space concentrations are provided

⁸ United States Environmental Protection Agency. 2010. Vapor Intrusion - An Overview, Presentation in Austin, Texas, 3 February 2010.

⁹ United States Environmental Protection Agency Region 6 web site. 2011. <u>http://www.epa.gov/region6/6sf/texas/delfasco/tx_delfasco_grand-prairie-fs-eng-span1.pdf</u>, July 2011.

¹⁰ Interstate Technology & Regulatory Council web site. 2011. <u>http://www.clu-in.org/greenremediation/subtab_d30.cfm</u>, July 2011.

in look-up tables. However, TRRP does not provide look-up values for soil or groundwater to demonstrate that existing concentrations will not result in a VI-related issue.

TCEQ has not consistently required evaluation of the indoor air pathway to obtain regulatory closure of properties where volatile chemicals are present. Rather, the agency considers this issue on a case-by-case basis. TCEQ has rarely (if ever) specifically concurred that no VI risk exists based on an evaluation performed for a particular property. This lack of guidance in Texas is primarily a function of the uncertainties involved in VI assessments in general. Although TCEQ may not require evaluation of the VI pathway to obtain regulatory closure of a property, this issue should be considered by those seeking closure, especially if volatile organics are to remain in soil and/or groundwater beneath existing buildings, or in areas where future buildings are anticipated.

As a consequence of the October 2010 policy memo, EPA Region 6 has asked TCEQ to have RCRA facilities, where EPA is a "partner" in the review of submittals, evaluate the potential VI pathway as part of the Corrective Action Process. As previously discussed, TCEQ does not have rules or guidance in place on VI issues and has been reluctant to ask the RCRA facilities to evaluate this pathway. TCEQ has been participating to a limited extent in the development of new EPA guidance.

In 2009, TCEQ completed a VI study at the Jones Road Federal Superfund Site in Harris County. The site has a large plume of PCE-impacted groundwater associated with a former dry cleaner.¹¹ The maximum concentrations of PCE in the groundwater in the source area are greater than 27,000 ug/L. TCEQ collected sub-slab soil gas and indoor air samples in the dry cleaner property. Maximum PCE and TCE concentrations in the sub-slab soil gas samples were greater than 50,000 ug/m³ and 9,000 ug/ m³, respectively. The maximum concentrations of PCE and TCE in indoor air (14 ug/m³ and 1.8 ug/ m³) were above the 2002 EPA Tier II target concentrations. However, the Baseline Risk Assessment conducted for the property concluded that the reported indoor air concentrations were below acceptable risk levels.¹² A Feasibility Study was completed in late 2009. The Feasibility Study discussed potential response actions to address affected soil and groundwater. Based on the results of the VI assessment and the Baseline Risk Assessment, VI was not considered a significant exposure pathway requiring a response action.¹³

TCEQ is currently conducting an assessment of the Hillcrest community in Corpus Christi.¹⁴ The work started in response to a study that reported benzene in blood samples collected from some of the residents in the neighborhood. The study area is located in the vicinity of refineries and the TCEQ assessment is focused on assessing impacts to soil, groundwater, and ambient air. During

¹¹ United States Environmental Protection Agency Region 6 web site. 2011. <u>http://www.epa.gov/earth1r6/6sf/pdffiles/0605460.pdf</u>, July 2011.

¹² Texas Commission on Environmental Quality web site. 2011.

⁽http://www.tceq.texas.gov/assets/public/remediation/superfund/jonesroad/jonesroadri/jonesroad_vis_report_final.pdf, July 2011 ¹³ Texas Commission on Environmental Quality web site. 2011.

http://www.tceq.texas.gov/assets/public/remediation/superfund/jonesroad/fs/fs_part1.pdf, July 2011

¹⁴ Texas Commission on Environmental Quality web site. 2011. <u>http://www.tccq.texas.gov/toxicology/research/hillcrest.html#background</u>, July 2011.

Phase I of the study, TCEQ used passive soil gas samplers to assess subsurface vapors. For this project, the passive soil gas samplers were used as a way to understand the extent of affected groundwater rather than to assess the potential for VI. Phase II of the assessment will be focused on soil and groundwater assessment. Phase IV of the assessment is planned to include indoor air sampling that will be completed after ambient air sampling that will be conducted during Phase III.

Vapor Encroachment Assessment - ASTM 2600-10

ASTM replaced ASTM E 2600-08 with ASTM E 2600-10 in June 2010. As with the previous ASTM standard, it either supplements the Phase I Environmental Site Assessment (ESA) or stands alone. The ASTM assessment is not meant to address applicable federal, state, or local laws – no comparison standards are provided. Rather, the ASTM method can be used in cases such as due diligence for property transactions to make parties aware of the implications and liability associated with potential VI issues.

The revised standard represents a significant change in the endpoint for the assessment. The conclusion is not whether VI has occurred or is likely (a Vapor Intrusion Condition). Instead, the assessment allows for an evaluation of the potential for a vapor encroachment condition (VEC), which is defined as follows:

The presence or likely presence of COC vapors in the subsurface of the target property caused by the release of vapors from contaminated soil or groundwater or both either on or near the target property (TP) as identified by the Tier 1 or Tier 2 procedures for this work.

Note that a VEC is simply the presence of COC vapors, not the presence above any health-based or regulatory threshold.

The assessment is now known as a Vapor Encroachment Screen (VES) rather than a Vapor Intrusion Assessment. Other significant changes are that there is more reliance on the judgment of Environmental Professional (EP) and there are only two assessment tiers – Tier 1 based on Phase I information and Tier 2 based on soil gas, soil, and/or groundwater data.

Most of the data needed for a Tier 1 VES is collected for an ASTM E1527-05 Phase I Environmental Site Assessment. The following additional data is needed:

- Planned future use (if not known, assume most conservative use for current property zoning).
- Better information on natural or man-made conduits for vapor movement.
- Asking specific questions to site contacts regarding knowledge of vapor issue on TP or within area of concern (AOC).
- Evaluation of prior VE information for the TP.

One key concept is that of the Contaminated Plume, which is defined as groundwater or soil contaminated with concentrations of COCs above enforcement action levels. The Contaminated Plume is the source of COCs that enter soil gas in the unsaturated zone where they move along the path of least resistance, influenced by changing barometric pressures, natural conduits, utilities, and buildings.

Another key concept is the AOC, which is defined by the approximate minimum search distances from the edge of the property. In the initial levels of screening, the EP is looking for known or suspected sources of contamination within AOC. The default AOC is dependent on the type of COC and the groundwater gradient. The AOC for petroleum hydrocarbons is 1/10 mile. The AOC for the other COCs is 1/3 mile.

The AOC can be changed based on EP judgment. Examples of factors to be considered by the EP include the following:

- Lower permeability soil or moist soil may limit vapor migration (exception for some clayey soils with high shrink-swell potential).
- Greater depth to groundwater usually means lower risk of VE.
- When the groundwater gradient can be estimated, the AOC can be decreased downgradient and cross-gradient.
- The type of closure on contaminated property within the AOC makes a difference. A site with a Municipal Setting Designation (MSD), Class 3 groundwater, or Remedy Standard B closure may have significant levels of COCs left in place.
- Petroleum COCs usually breakdown quicker than non-petroleum COCs (such as chlorinated solvents).
- Utilities and other subsurface feature may act as vapor conduits, resulting in an increase in the AOC.

Once the AOC is set, a Search Distance Test is employed to identify actual or potential contaminated properties; then a COC test is used to identify those contaminated properties with VI COCs. After contaminated properties with COCs are identified, the goal of the assessment is to understand if a Contaminated Plume is present or is likely to be present within the Critical Distance (CD), which is considered to be the distance COCs will migrate from the Contaminated Plume in all directions within the unsaturated zone. The default CD is 30 feet for petroleum hydrocarbons and 100 feet for other COCs and light non-aqueous phase liquid (LNAPL).

The possible findings of the Tier 1 screening are as follows:

- VEC exists
- VEC likely exists
- VEC cannot be ruled out
- VEC can be ruled out because a VEC does not or is not likely to exist.

The ASTM standard does not explicitly state the conditions under which the EP will conclude that a VEC is present at the property. However subject to EP judgment, the presence of a contaminated plume with VI COCs on the property would most likely result in the conclusion that a VEC exits, whereas the presence of a similar contaminated plume off-site within the CD would most likely result in the conclusion that a VEC likely exists. The presence or likely presences of contaminated plumes in the AOC, adjusted appropriate for likely groundwater gradient, could result in the conclusion that a VEC cannot be ruled out, whereas no potential or actual contaminated properties within the AOC would typically lead the EP to conclude that a VEC can be ruled out.

If a VEC cannot be ruled out after Tier 1 screening, and the user desires to further explore the question, a Tier 2 screening can be completed to compile existing information relevant to assessing the potential for a VEC or collecting new data (soil gas, soil, and/or groundwater). The data collected for the Tier 2 screening is used to understand if a contaminated plume is in fact present within the AOC and to modify the AOC and CD as appropriate based on site-specific information.

It is important to note that a VEC is not necessarily a recognized environmental condition (REC) under ASTM E1527-05. For example, a VEC on a property could be considered a *de minimis* condition due to COC characteristics and site conditions. The Vapor Encroachment Screening guide is explicit in stating that completion of such screening using the methods of ASTM E2600-10 is not required under All Appropriate Inquiry (AAI), nor does it fulfill the requirements of AAI. The legal background provided in Appendix X1 of ASTM E2600-10 discusses the relationship of this standard to ASTM E1527-05 and AAI. According the background document, assessment of the potential for hazardous substance volatile chemicals in gas or vapor in the subsurface beneath a property is part of AAI, but completion of the Vapor Encroachment Screening does not necessarily meet all the requirements of AAI and does not determine if a REC exists.

Case Studies

As is illustrated in the case studies below, VI issues can be quite complicated. There is well founded concern that indoor air sampling can create more questions than answers, but predictive methods have been inconsistent. Predictive methods, which are discussed in greater detail in the 2009 paper, include Johnson & Ettinger modeling and the use of attenuation factors. Unfortunately, when volatiles are present in soil or groundwater beneath a building, site-specific factors make it challenging to use these predictive models to accurately assess the potential that vapors might migrate into a structure above risk-based levels. In addition, the use of common products in a home or business can cause indoor or outdoor air concentrations of the same chemicals that are being evaluated for VI, resulting in somewhat of an academic study to assess the impacts of any VI on the indoor air quality. In many cases, implementation of mitigation measures are cost-effective when compared to the cost of assessment to evaluate whether or not there is a problem.

The case studies below demonstrate some of the draw backs of the predictive models and steps that were taken to resolve the issues.

Adaptive Reuse of Former Automotive Garage and Retail Space as Private School

This case study involved a commercial property built over the location of a former automotive garage in the 1980s. A private school was interested in purchasing the property and remodeling the building for use as a school. However, a Phase I ESA conducted for the property identified the former automotive garage as a REC. Due to the planned future use as a school, indoor air quality was identified as the primary concern, and testing was conducted without conducting subsurface soil/groundwater testing. TCE was detected in indoor air at concentrations of approximately 20 ug/m³. Later, sub-slab samples reported maximum TCE concentrations of approximately 60 ug/m³. WESTON provided recommendations for sealing the slab and adjusting the new air conditioning system to increase ventilation.

The developer elected to also install a passive system to further decrease risk of VI. The redevelopment plan included the installation of new sewer and water lines in the building. WESTON developed a plan to use the trenches opened for the new utilities along with other trenches cut into the slab to install perforated piping in a pea-gravel backfill at the level of the bedding sand beneath the slab. These horizontal pipe runs were connected to vertical risers in the walls of the building during the build-out phase and routed above a dropped ceiling to exterior walls. The purpose of the system was not passive removal of vapors from the subsurface. Instead, the purpose was to introduce a pressure break to de-couple the indoor air pressure changes from the subsurface soil vapor. Subsequent testing after installation of the passive system, sealing of the slab, and operation of the heating, ventilation, and air conditioning (HVAC) system showed that TCE concentrations were within acceptable levels. In the event of future need, the system can be converted into an active system by addition of low-volume exhaust fans to the vent lines.

Former Research Facility, Planned for Adaptive Reuse as an Elementary School

In this case study, a building that previously housed a research laboratory was under consideration for reuse as a school. Initial sub-slab vapor testing identified chloroform (as well as other VOCs) at very low concentrations, some of which exceeded residential breathing space risk-based values (which were used for comparison). Based on the measured chloroform concentration, total mass beneath the building was estimated at less than 10 drops. Of the 10 VOC compounds that were reported to be present in the sub-slab vapor samples, chloroform was the only one that appeared to be potentially site-related (based on the pattern showing higher concentrations near a sewer line). Calculations demonstrated that this level of chloroform could also have come from a leaking water line (based on EPA studies, chlorinating surface water can result in chloroform concentrations of up to 0.09 mg/L, which was more than enough to cause the soil vapor concentrations reported). Although the potential for indoor air issues was very low, indoor (as well as outdoor) air samples were collected to confirm that the small amounts of chloroform beneath the slab were not entering the building. A total of 163 volatile compounds were tested. The results did not detect the presence of chloroform in indoor or outdoor samples.

Although the focus of the assessment was the chloroform, there were a number of other chemicals identified in sub-slab, as well as the indoor and outdoor air samples. Most of which did not appear to be related in any way to the historical property operations, and in some cases, appeared to be naturally occurring and/or related to materials of construction used in the renovation. One prevalent chemical that was reported to be present in the indoor and outdoor air was alpha-pinene. This is a volatile compound that is given off by ash juniper and was naturally occurring.

Although all performed testing demonstrated that environmental conditions were protective for use of the building as a school, as a conservative step, a sub-slab ventilation system (SSVS) was installed and operated for approximately 1 year. This was a relatively inexpensive "fix" to what was primarily a perception issue. The venting system was installed through abandoned piping beneath the building and included a small vent fan on top of the building. The cost of installation and operation of this system was less than \$100,000.

Dry Cleaner Next to a Veterinarian Clinic

This case study focuses on the investigation and remediation of a dry cleaner "production" facility. Clothes were brought into this facility from drop off locations, dry cleaned, and then returned to the drop off location for customer pickup. What distinguished this situation from a typical dry cleaner remediation was the volume of PCE that had been released to the environment, primarily though a grease trap. PCE saturated the subsurface soil beneath the grease trap and migrated downhill from the facility, spreading laterally near an adjacent veterinarian clinic. Since excavation beneath the veterinarian clinic was not an option due to access issues, samples of indoor ambient air were collected. While concentrations of PCE were reported to be present above risk-based levels, there were also concentrations of non-site-related chemicals above risk-based levels. Several of the non-site-specific chemicals were associated with operations at the clinic. In addition, since products present at the clinic contained PCE, it could not be conclusively determined that PCE was related to the adjacent dry cleaner site. As a mitigation measure, the clinic increased the amount of fresh air that was circulated, and later ambient air samples demonstrated that conditions were protective.

Apartment Complex Near Former Industrial Complex

In many cities with significant growth, historically commercial, and even heavy industrial, areas are being redeveloped for residential purposes. In this case, an apartment complex had been constructed beyond the edge of a groundwater plume containing TCE and other chlorinated The solvents originated from machine shops within a manufacturing complex. solvents. Although the apartment complex, when it was constructed, was beyond and side-gradient to the groundwater plume, additional development (assumed to be the installation of a large storm sewer line) resulted in a change in the gradient, and the groundwater plume began moving beneath the apartment complex. Groundwater concentrations of TCE in the vicinity of the apartment complex were in excess of 20 mg/L. While soil vapor samples collected suggested that shallow clayey moist soil was limiting migration of the vapors (deeper soil vapor samples, in general, had higher concentrations than the shallower soil vapor samples), soil vapor samples collected adjacent to the apartment complex indicated TCE concentrations several orders of magnitude above risk-based levels (as compared to breathing space). There was considerable discussion regarding reliance on the natural soil to prevent migration into the complex, but there was concern regarding historical and current utility corridors that would potentially allow short circuiting of vapors. Instead of continuing to investigate this potential, a decision was made that, as a precautionary measure, small booster fans would be installed in the first floor apartment

buildings near the groundwater plume. Installation of these systems cost approximately \$2000-\$2500 per unit, and was cost-effective when compared to additional investigation and monitoring activities.

Recommendations and Considerations for Response to Potential Vapor Intrusion Issues

Increasing awareness and interest regarding VI, coupled with the regulatory and technical ambiguities surrounding its evaluation, make it an issue that can complicate real estate transactions and brings into question the appropriateness of previous environmental closures. Additionally, the trend towards residential use of properties historically used for commercial or industrial purposes has further complicated this issue.

Current information suggests that while VI may not be as significant an issue in Texas as in other areas (due to milder weather, fewer residential basements, etc.), the issue should not be ignored. Several high-profile sites in Texas along with increased activity by EPA Region 6 and interest from TCEQ suggest that Texas is on the pathway to VI regulation. However, the timing for such regulation and the methods in which sites would be evaluated is uncertain.

VI should be considered during transactions involving properties in areas with potential volatile sources. It is important to document the information that was considered in the evaluation and the final outcome. The ASTM VE screening should be considered as an option for evaluating properties. In some cases, VE screening can be used to exclude VI as a potential issue. However, at sites where VE is present or likely, there will still be questions regarding whether VI is an issue.

Predictive methods may not resolve VI issues (either technically or from a perception standpoint), particularly in situations where sensitive property use is planned (i.e., commercial or industrial being redeveloped as residential or educational).

When indoor air testing is conducted to resolve a VI issue, the multiple factors influencing VI (changes in barometric pressure, wind, soil moisture, HVAC activity, building traffic, etc) and the quality of indoor air (chemicals from outside air, products in buildings, and associated with building occupants), can produce results that are highly variable and difficult to interpret. When such sampling is conducted, the samplers should characterize background concentrations in outdoor air, conduct building surveys to identify and eliminate VOC sources, and consider collection of sub-slab samples to identify volatiles present in the subsurface. Collection of multiple samples in a single building and follow-up sampling to assess seasonal variations may also be needed to adequately characterize indoor air conditions.

Mitigation in the form of vapor barriers and other pre-emptive systems may be extremely effective, especially for new construction in areas where volatiles are present or may be present in the future due to plume movement. For existing buildings, pre-emptive mitigation measures are not terribly expensive and may be the best approach to resolving a potential VI issue. In areas where VI is a potential concern, some developers are choosing to incorporate VI mitigation measures into their development plans rather than spending time and money conducting assessments that may be inconclusive.

Legal Knowledge. Human Wisdom.



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v-card

Area(s) of Expertise

- Environmental
 - Environmental Compliance and Natural Resources Regulation
 - Environmental Litigation
- <u>Chemical and Refining Industry Team</u>
- <u>Climate Change Task Force</u>
- Energy Industry Team
- <u>Hospitality Industry Team</u>
- Internet, eCommerce and Technology Team
- <u>Real Estate Industry Team</u>



Best Lawyers

Practice Emphasis

Cindy Bishop provides services in a variety of environmental areas including federal and state litigation, regulatory counseling, renewable energy, and due diligence. She has defended clients in lawsuits involving groundwater, soil contamination and vapor intrusion, has negotiated settlements with government agencies regarding enforcement actions and assisted clients in obtaining environmental permits.

Before becoming an attorney, Ms. Bishop worked for seven years as an engineer for a national environmental consulting firm and is a licensed professional engineer in Texas (inactive status). She managed complex environmental projects for industrial clients, including underground storage tank compliance and removal, asbestos inspection and abatement, air permitting, and toxic chemical release inventories.

Clients and Matters

Ms. Bishop has a broad range of litigation experience and has litigated federal CERCLA contribution and cost recovery actions as well as state statutory and common law claims involving property damage and personal injury allegedly caused by contamination. She has closed impacted sites using innovative, risk-based approaches, saving one client over \$4 million in estimated cleanup costs. In two separate federal cost recovery actions, she received favorable summary judgment decisions within one thirty-day period. Ms. Bishop also has resolved a variety of issues involving leaking underground storage tanks at former service stations located in many states, including Arizona, Arkansas, Illinois, Iowa, Massachusetts, Pennsylvania, Tennessee, and Texas.

Ms. Bishop's work has included negotiating with the United States Environmental Protection Agency, the Texas Commission on Environmental Quality, and other agencies to reduce penalties assessed against industrial clients. She has assisted clients with obtaining closure approval from regulatory agencies for impacted

property, including using municipal setting designations (MSD) to facilitate closure. Ms. Bishop has reviewed environmental conditions and analyzed the viability of claims under environmental insurance policies. She has also reviewed numerous environmental reports and records for properties to determine potential environmental liabilities for lenders and real estate developers and has defended potentially responsible parties in litigation with state and federal agencies to minimize the clients' liability at contaminated properties.

Education

- J.D., Southern Methodist University Dedman School of Law (1994)
- B.S.Ch.E., The Ohio State University (1986)

Publications

Publications

- Co-Author with Jon Bull and Tracy Penn, <u>EPA Sets Rules for Commercial Vessel Discharges</u>, Gardere Client Alert, Gardere Wynne Sewell LLP, Dec. 2008.
- Author, <u>Foraging Through the Jungle of Expert Discovery and Testimony</u>, 4:4 Nat. Resources & Env't, Spring 2008.
- Co-Author with Richard O. Faulk, Stacy Obenhaus and Jeff Gaba, <u>Cooper v. Aviall</u>; Aviall's Brief to the U.S. Court of Appeals for the Fifth Circuit, 22:8 Toxic L. Rep. (BNA) 192 (Feb. 22, 2007).
- Co-Author with Richard O. Faulk and Celeste Quiralte, <u>Cost Recovery Under CERCLA Section 107</u> <u>After Cooper v. Aviall</u>, 37:12 Envtl. Rep. (BNA) 640 (Mar. 24, 2006).
- Author, <u>There and Back Again: The Progression and Regression of Contribution Actions Under</u> <u>CERCLA</u>, Tul. Envtl. L.J. (2005).
- Co-Author with Richard O. Faulk, <u>Disturbing Limitations on CERCLA Contribution Actions Aviall</u> <u>Services, Inc. v. Cooper Industries, Inc.</u>, ABA Envtl. Crimes & Enforcement Committee Newsl., Apr. 2002.
- Author, <u>Implementing Corrective Action Under RCRA: Past, Present and Future</u>, Envtl. Permitting, 1994.

Speeches

- Speaker, Address at the Dallas Bar Environmental Law Section Meeting: The Inside Skinny on Aviall (2005).
- Speaker, Address at Legal Issues for Texas Civil Engineers and Land Surveyors Meeting: Understanding Environmental Law (2005).
- Speaker, Address at the Law Conference for the International Council of Shopping Centers: Environmental Issues in Letters of Intent (2004).
- Speaker, Address at the Law Conference for the International Council of Shopping Centers: Protecting Yourself from Environmental Liability: Does Insurance Help? (2003).
- Speaker, Address at the North Texas Association of Environmental Professionals Meeting: Airport Air Quality Issues (Mar. 17, 2000).
- Speaker, Avoiding Enforcement (2000).
- Speaker, Address at the Dallas/Fort Worth Real Estate Council: Voluntary Cleanup Program and Innocent Operator Program Impact on Real Estate Transactions (Mar. 1999).
- Speaker, Understanding Wetlands (1999).
- Speaker, Food Safety (1998).
- Speaker, Address at the Air & Waste Management Association Annual Conference: Corrective Action Management Units (1994).

- Speaker, Address to Confidential Client: Expert Discovery and Testimony Avoiding Disaster (June 13, 2008) (authored paper for proceedings).
- Speaker, Address to Confidential Client: Municipal Setting Designations (June 13, 2008) (authored paper for proceedings).
- Speaker, Address at the Air & Waste Management Association Annual Conference: Environmental Liabilities – New Risks and Solutions (June 27, 2007) (authored paper for conference proceedings).
- Speaker, Address at the Asbestos Forum: Defense Strategies for Weathering the Storm of New Asbestos Claims (2005) (authored paper for forum proceedings).
- Speaker, Address at the International Petroleum Exploration Conference: Developments in The Clean Water Act (1997) (authored paper for conference proceedings).

Other Engagements

- Panel Moderator, Texas Bar Association Natural Resource Law Section Environmental Superconference (2008).
- Panel Moderator, Dallas Bar Association Environmental Law Section Meeting: What's Up With Wetlands? (2001).
- Panel Moderator, Dallas Bar Association Environmental Law Section Meeting: Impact of Recent Air Regulations on the Dallas/Fort Worth Area (1998).
- Lecturer, Address to the Tarrant County Junior College Environmental Class: Hot Topics In Environmental Law (1997).

Professional Affiliations

- Admitted to practice before:
 - Texas State Courts
 - U.S. District Court for the Northern and Southern Districts of Texas
 - U.S. Court of Appeals for the Fifth Circuit
 - U.S. Supreme Court
- Member, State Bar of Texas
 - Environment and Natural Resources Section
 - Vice Chair
 - Former Member, Executive Committee
- Member, Dallas Bar Association
 - Environmental Law Section
 - Former Chair
- Member, Air & Waste Management Association
- Member, American Institute of Chemical Engineers
- Member, North Texas Gas Processors Association
- Member, Women in Energy
- Member, Women in the Environment

Honors and Awards

- Recognized, <u>The Best Lawyers in America</u> (Steven Naifeh & Gregory White Smith eds., Woodward/White, Inc.) (2008 – 2011)
 - Environmental Law
- Recognized, <u>Chambers USA: America's Leading Lawyers for Business</u> (Tom Wicker ed., Chambers & Partners) (2011)
 - Environment [Texas]

Community Involvement

- Scholarship Chairperson, Ohio State Alumni Club of Dallas
- Member, Advisory Board, Dallas Museum of Nature and Science

Terry G. Salem

Biography

Terry is a Staff Attorney with the Texas Commission on Environmental Law. Terry began working at the Texas Air Control Board in 1992. Many years and projects later, Terry remains fascinated by the details, controversy and interesting personalities involved in practicing Air Law. She has worked on Texas' Federal Operating Permit Program (Title V) development and implementation since approximately 1993 and State Implementation Plan issues since approximately 1998-1999.
JEFFREY A. SAITAS, P.E.

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EXPERIENCE

Saitas and Seales

Managing partner of the firm which specializes in environmental consulting and government affairs. Assists firm clients with regulatory, permitting and enforcement matters before federal and state regulatory agencies and the Texas Legislature, primarily in air pollution control, but also in water and waste matters.

Texas Commission on Environmental Quality **EXECUTIVE DIRECTOR**

Managed operations of an agency with over 3,000 employees and a budget of \$400 million; represented agency before Congress and the Texas Legislature on programmatic (air and water quality, waste management, water and wastewater utilities and water rights) and budget issues; acted as spokesman for the agency on major media issues; provided information and recommendations to commissioners and state leadership on budget and programmatic matters.

DEPUTY DIRECTOR, OFFICE OF AIR QUALITY

Managed day to day operations of the Office; resolved policy questions relating to New Source Review and Title V permitting; represented agency on air quality issues before the Texas Legislature; provided media interviews on air quality matters.

DIRECTOR, NEW SOURCE REVIEW DIVISION

Managed the processing and issuance of permits for new construction and changes at facilities in Texas; ensured consistency and timeliness of reviews in division.

MANAGER/PERMIT ENGINEER, CHEMICAL/RCRA HAZARDOUS WASTE SECTION 1989-1993

Reviewed permit applications for chemical facilities, including analysis of best available control technology for reducing the emission of air contaminants.

Exxon Company USA/Brighton Industries/RioTek, Inc.	Houston, Texas
DRILLING ENGINEERING AND OIL AND GAS OPERATIONS	1982 - 1988

Designed and engineered oil and gas drilling and drilling fluid programs; managed oil extraction operations.

EDUCATION

MASTER OF SCIENCE, ELECTRICAL ENGINEERING	1994
University of Texas	Austin, Texas
BACHELOR OF SCIENCE, MECHANICAL ENGINEERING	1981
Georgia Institute of Technology	Atlanta, Georgia

ACTIVITIES

• Enjoys spending time with family, running and triathlons

2002-Present

Austin, Texas

1998-2002

1995-1998

1993-1995

Super Conference 2011 Air Quality Update

Jeff Saitas, P.E. Saitas and Seales

For those of us who have been around for a while, it is difficult to conceive that air quality environmental regulation could get any more complicated and yet, with a retrospective look at year's end, it always does. This past year has been especially challenging, though. Coupled with the increase in regulatory complexity came an overlay of one of the most difficult economic environments we have seen in this state and country in decades. Together these developments have made both regulating and operating facilities very difficult.

In this paper I will summarize some of the significant regulatory developments concerning air quality accompanied by a discussion of the implication of those changes. In particular, this paper addresses recent studies on the effectiveness of flares in destroying volatile organic compounds, recent legislative changes to MACT permitting requirements for electric generating facilities, and recent legislative changes to aggregation policies affecting oil and gas facilities. I also would like to mention that the content of this paper was coordinated with Mr. Rod Johnson and Ms. Terry Salem with whom I am sharing the Air Quality Update Session at this year's Super Conference. Additional important information on changes in air quality regulation can be found in their presentations as well.

Improvements in our Scientific Understanding of Flare Emissions.

The TCEQ convened a Flare Task Force which recently released their 2010 Flare Study Draft Report. The purpose of the Flare Task Force was to investigate the long held regulatory assumption that a flare operating in compliance with 40 CFR 60.18 criteria will effectively combust volatile organic compounds with a destruction efficiency greater than 98%.

The 98% assumed destruction efficiency was derived in part from a series of tests conducted under the direction of and published by the EPA in 1983. This firmly held presumption has been in place for well over 25 years and was based upon the belief that a flare operating with a

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minimum waste gas heating value (for example, 300 British thermal units per standard cubic foot, 300 BTU/scf, in an assisted flare) and a minimum exit velocity from the flare tip would destroy more than 98% of the volatile organic compounds in the waste gas stream.

With the onset of gas imaging technology and its use in visualizing the plumes leaving flares, several questions were raised as to whether these long held presumptions were in fact accurate. Of particular interest to the study participants was the effectiveness of flares operating in "high turn down" mode. The high turn down mode occurs when the volume of gas being combusted is substantially less than the capacity of the flare. Also of interest to the participants was the impact of variations in the level of air and steam assist on the destruction efficiency of the flare. The TCEQ noted that the study was not designed to evaluate flares operating under upset or emergency conditions nor did the study evaluate the effectiveness of flares specifically designed to operate in routine, low flow conditions.

The study participants evaluated common sizes and configurations of flares including 36 inch steam-assisted flares and 24 inch air assisted flares. The tested flares were operated using three different vent gas streams (350 BTU/scf, 600 BTU/scf and 2149 BTU/scf) under low vent gas flow conditions (0.1 % and 0.25 % of flare design capacity). The flares were also tested using varying amounts of air and steam assist. The amount of assist was varied between zero percent assist (no additional air or steam added) and sufficient assist to extinguish the flare flame (snuff point).

The study identified a number of interesting results including the following.

- The tested flares were able to achieve destruction efficiencies greater than 99% for vent gas streams with low heating value and low flow rate conditions.
- The highest destruction efficiencies occurred at or near the point where the flare just begins to smoke (incipient smoke point).
- For steam assisted flares with low flow rates of low heating value gas, the destruction efficiency decreased, almost linearly, as the amount of steam added increased. Similarly,

the flare flame became more transparent as the amount of steam increased and the vent gas destruction efficiency decreased.

- For air assisted flares, the measured destruction efficiency was greater than 97% when the amount of air added was less than ten times the amount needed to achieve theoretical stoichiometric combustion.
- While the high flow case (2,149 BTU/scf) results were similar to the 1983 EPA results, the lower flow cases (350 BTU/scf and 600 BTU/scf) results were significantly different.

These results provide important information regarding the effectiveness of flares in achieving the desired destruction efficiency. The most important result was that controlling the flare assist rate was critical to achieving high destruction efficiencies. If too much steam or too much air is added to the flare during combustion, the destruction efficiency will drop significantly. For example, over-steaming a flare that reduces the destruction efficiency from 98% to 90% will effectively increase the emissions of volatile organic compounds five-fold.

Another important result is that the best flare destruction efficiencies occur at or near the point when the flare begins to smoke, incipient smoke point. The TCEQ has long admonished flare operators not to let their flares smoke. In fact, the TCEQ rules require that flares not smoke.

30 TAC 111.111. Requirements for Specified Sources.

(a) Visible Emissions. No person may cause, suffer, allow, or permit visible emissions from any source, except as follows:

(4) Gas Flares.

(A) Visible emissions from a process gas flare shall not be permitted for more than five minutes in any two-hour period (emphasis added), except as provided in Section 101.11(a) of this title (relating to Exemptions from Rules and Regulations).

The genesis of this requirement was to address concerns by the public who expressed alarm when flares would send large, visible plumes of smoke wafting through the air.

These results create an unusual predicament for both the regulators and the regulated entities. Whereas in the past flare operators would increase steam to the flare to eliminate smoke and ward off complaints from the surrounding public, we now know that doing so may decrease the destruction efficiency of the flare resulting in higher emissions of volatile organic compounds. Therefore, the study results present a difficult choice. Is it better environmental policy to have the flare operating in a smokeless environment and sacrifice destruction efficiency or should flares be operated at the incipient smoke point to maximize the destruction of volatile organic compounds? Presumably, the optimal policy position would be to maintain the highest flare destruction efficiencies while tolerating some minimal amount of flare smoking.

The challenge will be for flare operators to increase their vigilance over the operating parameters of the flare keeping as near as possible to the incipient smoke point without drawing the ire of the surrounding public or the attention of the TCEQ investigator.

Additional information including the report and the attachments can be found on TCEQ's Flare Stakeholder website,

http://www.tceq.texas.gov/airquality/stationary-rules/flare_stakeholder.html

or can be obtained by contacting Mr. Russ Nettles of the TCEQ.

Mr. Russ Nettles Technical Specialist Texas Commission on Environmental Quality Office of the Chief Engineer Air Quality Division (512) 239-1493 Office (512) 239-1515 Fax (512) 921-6578 Cell rnettles@tceq.state.tx.us

Recent Statutory Changes on Public Participation for Electric Generating Facility MACT Amendments

As part of the TCEQ's Sunset bill, HB 2694, passed this past legislative session, Representative Warren Chisum included an amendment (relevant sections included at the end of this discussion) that altered the way the public can participate in certain amendment applications for electric generating facilities. In his amendment to the Sunset bill, Representative Chisum altered the new source review hearings process for electric generating facility amendments where the sole purpose of the amendment is to seek authorization from the TCEQ to reduce emissions necessary to comply with the new federal MACT standards.

The typical new source review process that requires public notice offers the public an opportunity to submit comments and/or request a contested case hearing on the amendment application. A request for a contested case hearing approved by the TCEQ Commissioners is normally conducted as an evidentiary hearing before a SOAH administrative law judge. The Chisum language changed this process for electric generating facilities subject to new federal MACT standards. For these amendments, the Chisum language directed the TCEQ to provide for an opportunity for public hearing and submission of public comment consistent with Section 382.0561 of the Texas Health and Safety Code (also included at the end of this discussion). Section 382.0561 of the Texas Health and Safety Code governs public hearings on applications for issuance, revision, reopening, or renewal of federal operating permits.

Further, the Chisum language specifically mentioned that hearings for these electric generating facility MACT amendments cannot be conducted under Chapter 2001, Government Code, reinforcing that they are not subject to the normal contested case hearings process in front of a SOAH administrative law judge.

In addition, the Chisum amendment created an aggressive processing timeline for these electric generating facility amendments. The TCEQ is required to issue a draft permit within 45 days of receiving the amendment application. Within 30 days after the TCEQ issues the draft permit, interested parties are required to submit to the TCEQ any legitimate issues of material fact

regarding whether the choice of technology approved in the draft permit satisfies federal MACT standards. During this 30 day time period, interested parties may request a contested case hearing consistent with Section 382.0561 of the Texas Health and Safety (Title V permit hearings).

If a contested case hearing is requested, the TCEQ is required to conduct the hearing and issue a final order issuing or denying the amendment not later than 120 days after the issuance of the draft permit. Decisions by the TCEQ to issue or deny the amendment are subject to the rehearing and judicial review provisions of the Texas Health and Safety Code Section 382.032. Finally, the Chisum language expires on the sixth anniversary of the date that the EPA administrator adopts the final MACT standards for existing electric generating facilities unless a stay of the EPA MACT standards is granted by a court.

The State of Texas has long held the contested case hearings process as an unassailable right for the public. Given this change in policy, albeit for a very limited slice of new source review applications, it will be interesting to see if the legislature in future sessions expands this approach making it more aligned with the federal notice and comment process.

Chisum Language Added to the TCEQ Sunset Bill, HB 2694.

SECTION 4.27. Subchapter C, Chapter 382, Health and Safety Code, is amended by adding Section 382.059 to read as follows:

> Sec. 382.059. HEARING AND DECISION ON PERMIT AMENDMENT APPLICATION OF CERTAIN ELECTRIC GENERATING FACILITIES. (a) This section applies to a permit amendment application submitted solely to allow an electric generating facility to reduce emissions and comply with a requirement imposed by Section 112 of the federal Clean Air Act (42 U.S.C. Section 7412) to use applicable maximum achievable control technology. A permit amendment application shall include a condition that the applicant is required to complete the actions needed for compliance by the time allowed

under Section 112 of the federal Clean Air Act (42 U.S.C. Section 7412).

(b) The commission shall provide an opportunity for a public hearing and the submission of public comment on the application in the manner provided by Section 382.0561.

(c) Not later than the 45th day after the date the application is received, the executive director shall issue a draft permit.

(d) Not later than the 30th day after the date of issuance of the draft permit under Subsection (c), parties may submit to the commission any legitimate issues of material fact regarding whether the choice of technology approved in the draft permit is the maximum achievable control technology required under Section 112 of the federal Clean Air Act (42 U.S.C. Section 7412) and may request a contested case hearing before the commission. If a party requests a contested case hearing under this subsection, the commission shall conduct a contested case hearing and issue a final order issuing or denying the permit amendment not later than the 120th day after the date of issuance of the draft permit under Subsection (c).

(e) The commission shall send notice of a decision on an application for a permit amendment under this section in the manner provided by Section 382.0562.

(f) A person affected by a decision of the commission to issue or deny a permit amendment may move for rehearing and is entitled to judicial review under Section 382.032.

(g) This section expires on the sixth anniversary of the date the administrator adopts standards for existing electric generating facilities under Section 112 of the federal Clean Air Act (42 U.S.C. Section 7412), unless a stay of the rules is granted.

(h) The commission shall adopt rules to implement this section.

Title V Hearings Process

Sec. 382.0561. FEDERAL OPERATING PERMIT: HEARING. (a) Public hearings on applications for issuance, revision, reopening, or renewal of a federal operating permit shall be conducted under this section only and not under Chapter 2001, Government Code.

(b) On determination that an application for a federal operating permit under Sections 382.054-382.0542 or a renewal of a federal operating permit under Section 382.0543 is administratively complete and before the beginning of the public comment period, the commission or its designee shall prepare a draft permit.

(c) The commission or its designee shall hold a public hearing on a federal operating permit, a reopening of a federal operating permit, or renewal application before granting the permit or renewal if within the public comment period a person who may be affected by the emissions or a member of the legislature from the general area in which the facility is located requests a hearing. The commission or its designee is not required to hold a hearing if the basis of the request by a person who may be affected is determined to be unreasonable.

(d) The following shall be available for public inspection in at least one location in the general area where the facility is located:

(1) information submitted by the application, subject to applicable confidentiality laws;

(2) the executive director's analysis of the proposed action; and

(3) a copy of the draft permit.

(e) The commission or its designee shall hold a public comment period on a federal operating permit application, a federal operating permit reopening application, or a federal operating permit renewal application under Sections 382.054-382.0542 or 382.0543. Any person may submit a written statement to the commission during the public comment period. The commission or its designee shall receive public comment for 30 days after the date on which notice of the public comment period is published. The commission or its designee may extend or reopen the comment period if the executive director finds an extension or reopening to be appropriate.

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(f) Notice of the public comment period and opportunity for a hearing under this section shall be published in accordance with Section 382.056.

(g) Any person may submit an oral or written statement concerning the application at the hearing. The individual holding the hearing may set reasonable limits on the time allowed for oral statements at the hearing. The public comment period extends to the close of the hearing and may be further extended or reopened if the commission or its designee finds an extension or reopening to be appropriate.

(h) Any person, including the applicant, who believes that any condition of the draft permit is inappropriate or that the preliminary decision of the commission or its designee to issue or deny a permit is inappropriate must raise all reasonably ascertainable issues and submit all reasonably available arguments supporting that position by the end of the public comment period.

(i) The commission or its designee shall consider all comments received during the public comment period and at the public hearing in determining whether to issue the permit and what conditions should be included if a permit is issued.

Added by Acts 1991, 72nd Leg., 1st C.S., ch. 3, Sec. 2.13, eff. Sept. 1, 1991. Amended by Acts 1993, 73rd Leg., ch. 485, Sec. 16, eff. June 9, 1993; Acts 1995, 74th Leg., ch. 76, Sec. 5.95(49), 11.168, eff. Sept. 1, 1995.

Aggregation of Oil and Gas Facilities

Historically, oil and gas development has been a rural activity. While it is common to see pump jacks, drilling and work over rigs while travelling on Texas highways, it has been uncommon to see that machinery operating in populated areas. However, technological advances including horizontal drilling and sophisticated fracking techniques have accelerated the development of shale plays in and near metropolitan areas. The use of these new extraction technologies has been most evident in the Barnett Shale play in the Dallas/Fort Worth area and the Eagle Ford shale play in South Texas. In those areas, oil and gas activities have increased dramatically. Along with that increased activity came new, and at times intense, attention from the public, local governments, the EPA, the TCEQ and finally the Texas Legislature all of whom to varying degrees were concerned about the effect that the drilling and production activities would have on human health and the environment.

The increase scrutiny of these oil and gas production activities resulted in several legislative bills being filed all with different approaches as to the best way to regulate pervasive oil and gas activities. Most notable with respect to regulating air quality from certain oil and gas activities was legislation passed by Senator Hegar. Senator Hegar authored SB 1134 which among other things gave direction to the TCEQ as to when it is permissible to aggregate the environmental impact of a collection of localized oil and gas facilities. While the discussion below only addresses the aggregation section of SB 1134, the bill also made significant changes to the requirements for new oil and gas permits by rule and standard permits. For those interested in reading all of the changes, I have included the complete bill language at the end of this section.

SB 1134 specifically addressed aggregation of new facilities or modifications of existing facilities that belong to Standard Industrial Classification (SIC) Codes 1311 (Crude Petroleum and Natural Gas), 1321 (Natural Gas Liquids), 4612 (Crude Petroleum Pipelines), 4613 (Refined Petroleum Pipelines), 4922 (Natural Gas Transmission), and 4923 (Natural Gas Transmission and Distribution). The aggregation section of SB 1134 applies only to a new permit by rule or a new standard permit or any amendment to an existing permit by rule or amendment to an

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existing standard permit adopted by the Texas Commission on Environmental Quality on or after the effective date of the Act. Since SB 1134 was passed by a greater than two thirds majority in both the Senate and the House, the bill had immediate effect.

In passing this bill, the Texas Legislature limited the extent to which the TCEQ could ask an applicant to include the emissions from surrounding facilities when determining whether an application has demonstrated that all permitting requirements have been met. The legislation prohibited the TCEQ from aggregating facilities within the six SIC codes above unless certain criteria were met.

In order for the TCEQ to require the aggregation of oil and gas facilities for purposes of consideration as an oil and gas site, a stationary source, or another single source in a permit by rule or a standard permit, the facilities must be under common control, must belong to the same first two-digit major grouping of SIC codes and must be operationally dependent. In addition, aggregated facilities must be located not more than one-quarter mile from a condensate tank, oil tank, produced water storage tank, or combustion facility that is under the same common control, classified in the same first two-digit major grouping of SIC code, and operationally dependent with the other facilities being aggregated.

In moving forward, the TCEQ will have to determine whether it is required or advantageous to submit this statutory language to the EPA for their approval into the Texas State Implementation Plan. If the TCEQ ultimately does decide to submit the legislation and any associated rules to the EPA and the EPA subsequently disapproves them for being inconsistent with the Federal Clean Air Act, then the upstream oil and gas industry could face the same uncertainty that flexible permit holders have faced for the last two years.

AN ACT

relating to the issuance of permits for certain facilities regulated by the Texas Commission on Environmental Quality.

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF TEXAS:

SECTION 1. Subchapter C, Chapter 382, Health and Safety Code, is amended by adding Sections 382.051961, 382.051962, 382.051963, and 382.051964 to read as follows:

Sec. 382.051961. PERMIT FOR CERTAIN OIL AND GAS FACILITIES. (a) This section applies only to new facilities or modifications of existing facilities that belong to Standard Industrial Classification Codes 1311 (Crude Petroleum and Natural Gas), 1321 (Natural Gas Liquids), 4612 (Crude Petroleum Pipelines), 4613 (Refined Petroleum Pipelines), 4922 (Natural Gas Transmission), and 4923 (Natural Gas Transmission and Distribution).

(b) The commission may not adopt a new permit by rule or a new standard permit or amend an existing permit by rule or an existing standard permit relating to a facility to which this section applies unless the commission:

(1) conducts a regulatory analysis as provided by Section 2001.0225, Government Code;

(2) determines, based on the evaluation of credible air quality monitoring data, that the emissions limits or other emissions-related requirements of the permit are necessary to ensure that the intent of this chapter is not contravened, including the protection of the public's health and physical property;

(3) establishes any required emissions limits or other emissions-related requirements based on:

(A) the evaluation of credible air quality monitoring data; and

(B) credible air quality modeling that is not based on the worst-case scenario of emissions or other worst-case modeling scenarios unless the actual air quality monitoring data and evaluation of that data indicate that the worst-case scenario of emissions or other worst-case modeling scenarios yield modeling results that reflect the actual air quality monitoring data and evaluation; and

(4) considers whether the requirements of the permit should be imposed only on facilities that are located in a particular geographic region of the state.

(c) The air quality monitoring data and the evaluation of that data under Subsection (b):

(1) must be relevant and technically and scientifically credible, as determined by the commission; and

(2) may be generated by an ambient air quality monitoring program conducted by or on behalf of the commission in any part of the state or by another governmental entity of this state, a local or federal governmental entity, or a private organization.

Sec. 382.051962. AUTHORIZATION FOR PLANNED MAINTENANCE, START-UP, OR SHUTDOWN ACTIVITIES RELATING TO CERTAIN OIL AND GAS FACILITIES. (a) In this section, "planned maintenance, start-up, or shutdown activity" means an activity with emissions or opacity that:

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(1) is not expressly authorized by commission permit, rule, or order and involves the maintenance, start-up, or shutdown of a facility;

(2) is part of normal or routine facility operations;

(3) is predictable as to timing; and

(4) involves the type of emissions normally authorized by permit.

(b) The commission may adopt one or more permits by rule or one or more standard permits and may amend one or more existing permits by rule or standard permits to authorize planned maintenance, start-up, or shutdown activities for facilities described by Section 382.051961(a). The adoption or amendment of a permit under this subsection must comply with Section 382.051961(b).

(c) An unauthorized emission or opacity event from a planned maintenance, start-up, or shutdown activity is subject to an affirmative defense as established by commission rules as those rules exist on the effective date of this section if:

(1) the emission or opacity event occurs at a facility described by Section 382.051961(a);

(2) an application or registration to authorize the planned maintenance, start-up, or shutdown activities of the facility is submitted to the commission on or before the earlier of:

(A) January 5, 2014; or

(B) the 120th day after the effective date of a new or amended permit adopted by the commission under Subsection (b); and

(3) the affirmative defense criteria in the rules are met.

(d) The affirmative defense described by Subsection (c) is not available for a facility on or after the date that an application or registration to authorize the planned maintenance, start-up, or shutdown activities of the facility is approved, denied, or voided.

Sec. 382.051963. AMENDMENT OF CERTAIN PERMITS. (a) A permit by rule or standard permit that has been adopted by the commission under this subchapter and is in effect on the effective date of this section may be amended to require:

(1) the permit holder to provide to the commission information about a facility authorized by the permit, including the location of the facility; and

(2) any facility handling sour gas to be a minimum distance from a recreational area, a residence, or another structure not occupied or used solely by the operator of the facility or by the owner of the property upon which the facility is located.

(b) The amendment of a permit under this section is not subject to Section 382.051961(b).

Sec. 382.051964. AGGREGATION OF FACILITIES. Notwithstanding any other provision of this chapter, the commission may not aggregate a facility that belongs to a Standard Industrial Classification code identified by Section 382.051961(a) with another facility that belongs to a Standard Industrial Classification code identified by that section for purposes of consideration as an oil and gas site, a stationary source, or another single source in a permit by rule or a standard permit unless the facilities being aggregated:

(1) are under the control of the same person or are under the control of persons under common control;

(2) belong to the same first two-digit major grouping of Standard Industrial Classification codes;

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(3) are operationally dependant; and

(4) are located not more than one-quarter mile from a condensate tank, oil tank, produced water storage tank, or combustion facility that:

(A) is under the control of the same person who controls the facilities being aggregated or is under the control of persons under common control;

(B) belongs to the same first two-digit major grouping of Standard Industrial Classification codes as the facilities being aggregated; and

(C) is operationally dependant on the facilities being aggregated.

SECTION 2. (a) Sections 382.051961, 382.051962, 382.051963, and 382.051964, Health and Safety Code, as added by this Act, apply only to a new permit by rule or a new standard permit or any amendment to an existing permit by rule or amendment to an existing standard permit adopted by the Texas Commission on Environmental Quality on or after the effective date of this Act.

(b) A permit by rule or standard permit adopted by the Texas Commission on Environmental Quality and in effect before the effective date of this Act is not subject to Sections 382.051961, 382.051962, and 382.051964, Health and Safety Code, as added by this Act.

SECTION 3. This Act takes effect immediately if it receives a vote of two-thirds of all the members elected to each house, as provided by Section 39, Article III, Texas Constitution. If this Act does not receive the vote necessary for immediate effect, this Act takes effect September 1, 2011.

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President of the Senate Speaker of the House

I hereby certify that S.B. No. 1134 passed the Senate on April 19, 2011, by the following vote: Yeas 29, Nays 2; May 26, 2011, Senate refused to concur in House amendments and requested appointment of Conference Committee; May 27, 2011, House granted request of the Senate; May 28, 2011, Senate adopted Conference Committee Report by the following vote: Yeas 26, Nays 5.

Secretary of the Senate

I hereby certify that S.B. No. 1134 passed the House, with amendments, on May 23, 2011, by the following vote: Yeas 129, Nays 17, two present not voting; May 27, 2011, House granted request of the Senate for appointment of Conference Committee; May 29, 2011, House adopted Conference Committee Report by the following vote: Yeas 138, Nays 4, one present not voting.

Chief Clerk of the House

Approved:

Date

Governor

Rod Johnson, Partner Brown McCarroll, LLP 111 Congress Avenue, Suite 1400 Austin, Texas 78701 512 / 479-1125

rjohnson@brownmccarroll.com

Legal Experience

Mr. Johnson's practice covers environmental, health, and safety counseling on permitting, compliance, enforcement, auditing, due diligence, rulemaking and legislative initiatives with a particular emphasis on air quality new source review and Title V operating permit issues before the Texas Commission on Environmental Quality and the U.S. Environmental Protection Agency. He also represents clients before the Occupational Safety and Health Administration on compliance and enforcement activities involving, among other areas, process safety management (PSM) compliance.

As a staff attorney for the former Texas Air Control Board and TNRCC (now, Texas Commission on Environmental Quality), Mr. Johnson handled air quality permitting, rulemaking, and administrative and civil-judicial enforcement matters. His experience includes serving as the former enforcement coordinator for all air quality enforcement matters in the Legal Services Division.

Representative industries include: Synthetic and Organic Chemical Manufacturing; Metals Production; Refining; Electric Power Generation, Efficiency and Renewables; Ship Building and Repair; and Construction.

Education

- Doctor of Jurisprudence, University of Houston Law Center, 1991
- Bachelor of Arts, Geology and Geophysics, Rice University, 1986

Professional Licenses

• Attorney at Law, Texas, 1992

Prior Professional Experience

- Bracewell & Patterson (Bracewell & Guilliani), L.L.P., Associate, 1995-1999
- Texas Air Control Board and Texas Natural Resource Conservation Commission, Staff Attorney, 1992-1995

Speeches, Presentations and Publications

- *Maintenance, Startup and Shutdown Air Permitting Issues in Texas*, Texas Chemical Counsel /Associated Chemical Industries of Texas Environmental, Health & Safety Seminar, June 2009, Presenter
- The Impact of Environmental Regulation on the Siting of New U.S. Petroleum Refineries, American Bar Association Section of Environment, Energy, and Resources Newsletter, July/August 2008
- *Current Directions in Regulating Nanotechnology*, Zephyr Currents, January 2007, Author
- Ethical Considerations When Attorneys Submit and Certify Complex Factual Statements: How Much Diligence is Due?, University of Texas Advanced Administrative Law Conference, July 2006, Presenter
- Air Quality Panel of the Texas Environmental Superconference, August 2004, Moderator
- American Bar Association Air Quality Committee Newsletter, 2000-2001, Regional Reporter
- Environment, Energy and Resource Law Year in Review, American Bar Association, 1999 and 2000, Reviewer
- Clean Air Act Primer, Government Institutes, July 1999, Presenter

Recent Accomplishments

- Obtained necessary preconstruction air permits from TCEQ after extended administrative trial for a green field coal fired power plant with commerical scale CO2 capture, including state new source review, federal prevention of significant deterioration review; and case-by-case MACT hazardous air pollutant determination permits.
- Obtained necessary preconstruction air permits from TCEQ for a green field chemical manufacturing plant including state new source review, federal prevention of significant deterioration review; federal non-attainment new source review; and case-by-case MACT hazardous air pollutant determination permits.
- Obtained necessary preconstruction air permit from TCEQ for frac sand mining operation.
- Successfully negotiated favorable settlement for confidential client with OSHA involving willful violations resulting in significant reduction in penalty and abatement requirements.
- Defended multiple TCEQ and EPA enforcement actions and activities for various clients, including complete withdrawal of allegation for failure to obtain preconstruction permit.
- Developed successful strategy to shorten permitting time frame and address outstanding compliance obligations for modifications of existing facilities.

Professional Memberships and Activities

• State Bar of Texas

- o Administrative and Public Law Section
- o Environmental and Natural Resources Section
- American Bar Association
 - o Administrative Law and Regulatory Practice Section
 - Environment, Energy and Natural Resources Section
- Austin Bar Association
 - Environmental Law Section
 - o Adminsitrative Law Section
- Volunteer Legal Services of Central Texas

Community Involvement

- Meals on Wheels, Volunteer
- Mobile Loaves and Fishes, Volunteer
- Austin Arts Festival, Volunteer
- Austin ISD Mentor Program
- Habitat for Humanity, Volunteer

Professional Recognitions

- Best Lawyers in America 2010, 2011
- Leaders in Their Field Environmental Law, Chambers USA Guide 2010, 2011

Clean Air Act Update - Selected Regulatory Issues and Case Law

Texas Environmental Super Conference, 2011

Rod Johnson, Partner Brown McCarroll, LLP 111 Congress Avenue, Suite 1400 Austin, Texas 78701

Direct 512-479-1125 E-mail rjohnson@brownmccaroll.com

"Change" ("Uncertainty"?) remains the word of the day under the Clean Air Act ("CAA") over the past year and into the future.

Diving right in, a brief description of a few examples of bigger issues will help illustrate the flavor, starting with...

... Greenhouse Gas Regulation Under the CAA

At the macro level, EPA's Tailoring Rule¹ went into effect on January 2, 2011, requiring best available control technology ("BACT") review for regulating greenhouse gases (or "GHG") under the prevention of deterioration ("PSD") new source review program. Consequently, owners of major projects across the U.S. began filing GHG preconstruction applications with governmental entities willing to accept them.²

Back in Texas, the State has refused to implement the rules, instead filing multiple suits challenging the Tailoring Rule and each prefatory and subsequent implementing regulatory action related to it.³ In Texas source owners may file applications with U.S. EPA Region 6.⁴

¹ 75 Fed. Reg. 31,514 (June 3, 2010).

² A poorly phrased April 2011 FOIA request to, and a somewhat unscientific response by, EPA yielded an estimated 20-30 GHG PSD applications have been filed nationwide. Some responses counted only applications filed with EPA itself, others included copies of applications filed with SIP approved programs. Some were not keeping a running count. ³ Detailed, *infra*.

⁴ 76 Fed. Reg. 25,178 (April 22, 2011).

... Greenhouse Gas Tort Suits in Federal Court

Still at the macro level, but on the non-regulatory side of GHG law, in American Electric Power v Connecticut the U.S. Supreme Court closed the door on the exercise of federal common law over nuisance claims for greenhouse gas emissions.⁵ Recognizing a history of federal courts exercising jurisdiction over interstate pollution claims in diversity cases, the Court upheld the jurisdictional question as to whether the courts could hear the case,⁶ but did so only long enough to rule that federal courts may not exercise federal common law over GHG tort cases.⁷

Holding that congressional action addressing greenhouse gases, as interpreted in Massachusetts v. EPA,⁸ establishes a statutory framework to decide whether and how to address those air pollutants, the Court ruled that once Congress speaks to an issue - and regardless of whether actual regulation has occurred – the federal courts are barred from resolving such disputes outside the statutory frame work.⁹

Fortunately,¹⁰ the Court left open the possibility of maintaining state law nuisance claims in the event the Clean Air Act does not preempt state law claims.¹¹ That option may be limited in Texas, where in the last regular session, the Legislature passed SB 875 prohibiting such claims under certain circumstances.¹²

... A Space Shuttle-High View of EPA's Regulatory Plate

The simplest and most illustrative point one can make about EPA regulatory activities is by looking at the agency's most recent semi-annual regulatory agenda.¹³ In it, EPA identifies approximately 358 items agency-wide, and 195 of them air quality-related. At a rate of one per day, the air quality agenda would consume every calendar day from January 1st through July 13th.¹⁴ The remaining non-air quality agenda items would be complete just in time for Christmas.¹⁵

Within that morass, EPA focused an enormous amount of attention on combustion sources, promulgating hazardous air pollutant emission standards for industrial, commercial, and institutional boilers and process heaters¹⁶ and standards for commercial and industrial solid waste incineration units.¹⁷ Less than 60 days later, EPA issued a

⁵ 564 U.S. _ (2011).

⁶ AEP, Op. at 6.

⁷ Id. at 6-9.

⁸ 549 U.S. 497 (2007).

⁹ AEP, Op. at 9-11.

¹⁰ (for lawyers). ¹¹ *AEP*, Op. at 15-16.

¹² Tex. S.B. 875, 81st Leg. (2011).

¹³ Thursday, July 7, 2011. Available at www.reginfo.gov/public/do/eAgendaMain.

¹⁴ Counting in a leap year.

¹⁵ December 23rd – Christmas Eve in non-leap years.

¹⁶ "Industrial Boiler MACT", 76 Fed. Reg. 15,608 (March 21, 2011).

¹⁷ "CISWI Rule", 76 Fed. Reg. 15,704 (March 21, 2011).

delay of the effective dates for both rules pending the outcome of judicial appeals or EPA's reconsideration of the rules.¹⁸

Standards for power plants, particularly liquid and solid fuel fired plants, were high on the priority list. EPA simultaneously proposed hazardous air pollutant emission standards for electric utilities and criteria pollutant standards of performance for electric utility, industrial, commercial and institutional boilers.¹⁹

Only three months later, EPA has now finalized a major revamp of its multi-state cap and trade rule for ozone and particulate matter – the Cross-States Air Pollution Rule²⁰ or "CSAPR".²¹

... New National Ambient Air Quality Standards ("NAAQS")

Among EPA's accomplishments in 2010, though not as well publicized by the general media as climate change, EPA was busy with a host of developments on NAAQS pollutant standards. EPA issued revised and new one-hour standards for SO₂²² and NO₂,²³ proposed to retain existing CO standards,²⁴ continues to mull finalizing stricter ozone standards,²⁵ and is evaluating the science of PM for possible revisions to the NAAQS,²⁶ as well as issued new sampling methods.²⁷ All this, while taking a well deserved rest after having finalized revisions to the lead (Pb) NAAQS downward by an order of magnitude in late 2009...but not resting on actions to designate lead non-attainment areas²⁸ or changing lead monitoring requirements for states.²⁹

Of course, each new NAAQS revision triggers mandatory deadlines for states to respond, evaluate ambient air quality, and develop and submit to EPA plans to implement the standard.³⁰ Consequently, this generates plenty of activity at the Texas Commission on

¹⁸ 76 Fed. Reg. 28,662 (May 19, 2011).

¹⁹ "Utility Boiler MACT" and "Utility and Industrial Boiler NSPS" 76 Fed. Reg. 24,976 (May 3, 2011).

²⁰ The culmination of a long regulatory and legal history, the final "Cross-States Air Pollution Rule", signed by Administrator Jackson on July 7, 2011, replaces the Clean Air Transport Rule ("CATR") proposed in 2010. 75 Fed. Reg. 45,210 (Aug. 2, 2010). CSAPR, EPA announced, cures the multiple flaws in its Clean Air Interstate Rule ("CAIR") identified by the D.C. Circuit in *North Carolina v. EPA*, 531 F.3d 896 (D.C. Cir. 2008).

²¹ Sadly, the author believes EPA missed a significant opportunity to name the rule the "Cross Air Shed Pollution Elimination Rule," thus coining the acronym "CASPER." If you agree and would like assistance filing a petition, you may contact me at rjohnson@brownmccarroll.com.

²² 75 Fed. Reg. 35,520 (June 22, 2010).

²³ 75 Fed. Reg. 6474 (Feb. 9, 2010).

²⁴ 76 Fed. Reg. 8,158 (Feb. 11, 2011).

²⁵ 76 Fed. Reg. 10,895 (Feb. 28, 2011).

²⁶ 76 Fed. Reg. 22,665 (April 22, 2011).

²⁷ 75 Fed. Reg. 80,118 (Dec. 21, 2010).

²⁸ 75 Fed. Reg. 71,033 (Nov. 22, 2010).

²⁹ 75 Fed. Reg. 81,129 (Dec. 27, 2010).

³⁰ Generally, 42 U.S.C. Sec. 7410.

Environmental Quality ("TCEQ") revising state implementation plans ("SIPs") for each new and revised standard.³¹

Implementation of new regulatory standards for SO₂ and NO₂ made for interesting legal analysis, raising a number of questions with sometimes surprising answers. For example, the NO₂ NAAQS played a role in remand of EPA-issued prevention of significant deterioration ("PSD") permits even though the revised standards had not been finalized when EPA issued the permits. The Environmental Appeals Board ("EAB") held that EPA Region 10 PSD permits issued after proposal of new NO₂ standards, but before the final standards were promulgated, were flawed, because EPA should have considered the proposed standards in evaluating environmental justice impacts on Alaska Native communities.³² The questions concerning applicability are particularly interesting in light of EPA taking the unusual stance of establishing a policy grandfathering from the new 1-hour NO₂ NAAQS for a PSD permit issued after the effective date of the NO₂ NAAOS.³³

... PM₁₀ Surrogacy Policy

Finally, applicability questions of whether standards apply, if answered in the affirmative, immediately lead to "how" questions with surprisingly elusive answers. For example, with its 2008 promulgation of implementation rules for the PM_{2.5} NAAQS, EPA adopted through rule making an existing surrogacy policy allowing a demonstration – that PM_{10} emission limits meet BACT, and that those emissions do not cause or contribute to a violation of the respective NAAQS for PM10 - would serve as a surrogate for demonstrating BACT and NAAQS for PM_{2.5} emission limits.³⁴ In doing so, EPA provided state implementation plan ("SIP") approved states up to three to use the policy. Yet, only a year later EPA stayed the surrogate provision and later proposed to repeal it insofar as delegated and EPA-issued permits were concerned.³⁵

Possibly more frustrating for permit applicants, during that same time, EPA applied increasing scrutiny over the appropriate use of the policy, qualifying that it is not a blanket policy, and permitting authorities must prepare detailed technical analyses to

³¹ Currently, TCEQ has seven separate SIP rules in development or proposal stage for the 1997 8-hour ozone standard in Houston and Dallas/Fort Worth ("D/FW"), for the revised lead standard, and for the general conformity SIP.

See, http://www.tceq.state.tx.us/assets/public/implementation/air/sip/miscdocs/SIP Timeline External.pdf (last accessed July 11, 2011). Not counted in this total are activities concerning the implementation of the revised PM_{2.5}, SO₂, and NO₂ standards, nor does the total reflect ongoing 8-hour ozone SIP activities for attainment in the Austin-San Antonio, Corpus Christi, Victoria, Beaumont-Port Arthur and Tyler-Longview areas.

³² In re Shell Gulf of Mexico, Inc., OCS Appeal Nos. 10-01 through 10-04, Order Denying Review In Part and Remanding Permits, December 30, 2010.

³³ Avenal Power Center, LLC v. EPA, D.D.C. No. 10-cv-00383 (May 26, 2011) Memorandum Opinion, at p. 4. ³⁴ 73 Fed. Reg. 28,321 (May 16, 2008).

³⁵ 74 Fed. Reg. 26,098 (June 1, 2009) staying the policy until September 1, 2009, and 74 Fed. Reg. 48,153 extending the stay until June 22, 2010. 75 Fed. Reg. 6,827 (Feb. 11, 2010).

justify why imposition of the surrogate policy would be appropriate in a particular permitting action.³⁶

... Texas Fights Back

As previously mentioned, Texas has filed suits against EPA on multiple fronts over regulation of greenhouse gases. The state also filed appeals of the national one-hour SO_2 NAAQS rule and a key $PM_{2.5}$ implementation rule. Finally, Texas has filed multiple appeals of EPA SIP approval / disapproval decisions. Each of these are discussed further below.

Notably, the referenced EPA final rule, CSAPR, will likely find Texas on the court house steps again before the end of 2011.

...Significant (or Interesting) Court Decisions

The following 2010 and 2011 court decisions resolve significant legal issues in the area of tort law over greenhouse gas emissions, EPA's authority to enforce in the context of approve SIPs and to interpret the Clean Air Act, as well as its authority to with hold making final decisions on permits. Two of the cases are interesting for their outcomes, even if the issues they resolve are somewhat esoteric.

American Electric Power v. Connecticut, 564 U.S. (2011)

Issue: Whether plaintiff states can maintain suit against private companies for their greenhouse gas emissions under federal common law public nuisance.

Held: After affirming (barely) that some plaintiffs have Article III standing, the Court concluded federal courts have jurisdiction to hear the case. The Court confirmed the existence of federal common law over interstate pollution only when Congress has not spoken directly to the issue. Congress enacted the Clean Air Act giving EPA the authority to decide whether and how to regulate greenhouse gases. In complex scientific areas, courts are ill equipped to make the type of judgments required, and even if they did, the exercise of federal common law would interfere with Congress' statutory scheme. Whether EPA has actually exercised its authority is irrelevant as to whether federal courts may intervene. The only relevant question is whether Congress has spoken to the specific issue which the Court found Congress had. The federal courts' The Clean Air Act prescribes remedies for inaction and eventual appeal to the federal courts.

³⁶ See, e.g., In re Vulcan Construction Materials, LP, PSD Appeal No. 10-11, Remand Order, Slip Op. March 2, 2011.

United States v. Cinergy Corp., Nos. 09-3344, 09-3350, 09-3351, slip op. (7th Cir., October 12, 2010)

Issue 1: Whether alleged modifications conducted pursuant to, and in compliance with, an approved SIP are shielded from enforcement where EPA had expressed a differing interpretation and had approved the plan with a requirement that the state revise its SIP.

Issue 2: Whether the admission of testimony calculating predicted actual emission increases for base load plants was admissible in a case involving a cycling plant.

Held as to Issue 1: The 7th Circuit held that actions taken pursuant to an approved SIP are legal, even though EPA had expressed an interpretation that the SIP was deficient and required correction.

EPA has subsequently distinguished this case from greenhouse gas PSD permitting issues in its federal implementation plan ("FIP") decisions for states which do not have the authority to issue GHG permits. EPA theorizes that the underlying facts in *Cinergy* involved nonattainment new source review, not PSD review, and that PSD review is both a regulatory and self-implementing statutory requirement.³⁷

Held as to Issue 2: The court found that testimony relying on a "model" that presumes an increase in the annual utilization of an electric generating plant (hours of operation) due to reliability improvements made to the plant, and that therefore predicts an increase annual emissions, should not have been admitted where the electric generating plant is operated as a load following (cycling) plant.

The court agreed with Cinergy in finding the testimony was inappropriate in light of the facts concerning the operational realities of the plant in question. Improvements in reliability at base load plants would lead to an expectation of increased annual hours of operation, because base load plants are inexpensive to operate and generally reliably. Thus, they operate essentially continuously, as long as they are able. Reliability improvements would anticipate increased hours of operation and cause an increase in annual emissions. A "base load" model would be appropriate testimony.

By contrast, the Cinergy plants were load following plants which dispatch only when electricity demand (load) requires power above that provided by base load plants. Thus, an increase in reliability at the Cinergy plants would not necessarily lead to an increase in the annual utilization of a load following plant. The limiting factor for such plants is demand, not reliability, and the use of a base load model assuming increased hours of operation was therefore inappropriate.

The holding is interesting in the context of actual to future predicted actual calculations for determining the applicability of major new source review. It appears a source limited by demand, rather than reliability, may be able to exclude emissions increases caused by changes which improve reliability. Whether the logic applies to the more traditional actual to potential test is not clear.

³⁷ 76 Fed. Reg. 26,933 (May 10, 2011).

Natural Resources Defense Council v. Environmental Protection Agency, D.C. Cir. No. 10-1056 (decided July 1, 2011).

Issue 1: Whether EPA may issue guidance interpreting the Clean Air Act as allowing alternatives to statutory emission penalty fees, to be imposed on sources in areas failing to attain the 1-hour ozone standard, without Administrative Procedure Act ("APA") notice and comment rule making.

Issue 2: Whether the anti-backsliding provisions in Sec. 172(e) allow EPA to approve an alternative to Sec. 185 emission penalty fees, by finding that control requirements in place upon the area attaining the 8-hour ozone standard are no less stringent than the Sec. 185 fees required for 1-hour non-attaining areas.

Held as to Issue 1: The guidance is subject to APA notice and comment requirements. To reach this decision, the court found that the guidance definitively altered the legal regime under which EPA Regional Administrators may approve state implementation plans, and found that the guidance was final because it immediately bound Regional Administrators by prohibiting them from outright rejection of any plan which did not include Sec. 185 emission penalty fees. As such, the guidance amounted to a legislative rule subject to APA notice and comment requirements.

Held as to Issue 2: The court found that the anti-backsliding provision of Sec. 172(e) prohibits removal of 1-hour controls in place prior to a change in the ozone NAAQS, including the Sec. 185 fee, unless the 1-hour control is replaced with equivalent controls for attaining the 1-hour standard. EPA may not equate controls successful in meeting the 8-hour ozone standard with those in place to meet the 1-hour ozone controls.

Although it did not directly address the question, the court may have left open the possibility that if EPA does not condition fee replacement on 8-hour attainment, EPA may yet evaluate whether the 8-hour control requirements are at least as stringent as the fee program for the 1-hour standard. It is clear, however, that EPA cannot *presume* that attainment of the 8-hour standard is sufficient to release an area from those 1-hour controls which were in place immediately prior to the NAAQS revision.

Sierra Club v. Sandy Creek Energy Associates, 627 F.3d 134 (5th Cir. 2010)

Issue: Whether lack of a case-by-case maximum available control technology ("MACT") review determination required by § 112(g) prohibits only the commencement of construction or prohibits ongoing construction of a major source of hazardous air pollutants ("HAPs").

Held: The court found that the CAA prohibition not only prohibits the commencement of construction but any phase of it. The wording in the statute does not refer to

"commencement." On collateral issues of what constitutes a "determination," the court found in favor of appellant, Sierra Club.

Sierra Club v. Federal Highway Administration, 715 F. Supp. 2d 721 (S.D. Tex. 2010)

Issue: Whether a National Environmental Policy Act ("NEPA") analysis in which the Federal Highway Administration ("FHA") used established EPA techniques and regulations to assess the air quality impacts caused by a proposed highway improvement project is a sufficiently hard look to withstand a challenge under the federal APA's arbitrary or capricious standard, 5 USC sec. 706(2)(A).

Held: Relying on air dispersion models and EPA-established NAAQS was not arbitrary or capricious. Contrast this holding with the EAB decision in *Shell Offshore* concerning environmental justice impacts evaluations where the EAB came to a contrary conclusion, albeit under different review standards.

Avenal Power Center, LLC v. EPA, No. 10-cv-00383, mem. op. (D.D.C. May 26, 2011)

Issue: Whether EPA's delay in issuing a PSD permit for the Avenal power project violated the Clean Air Act § 165(c) requirement to issue a final decision on a PSD application within one year, and if so, what is the appropriate remedy.

Held: Winner of the 2011 "Most Satisfying CAA Holding in Favor of Industry" Award, Judge Richard Leon chastised EPA for its failure to comply with the Clean Air Act's mandatory deadline for making decisions on PSD permit application. His Honor went so far as to imply EPA's Environmental Appeals Board process may be illegal if it prevents EPA from meeting its obligation.

The memorandum opinion is recommended as a tonic to all industry practitioners, preferably on a Friday afternoon.

Angry Birds³⁸ - Lawsuits Filed ... Appeals of TCEQ Air Permits

Guadalupe Neighborhood Association v. Vickery, (Highland Concrete)³⁹

This petition challenged the adequacy of public notice for a concrete batch plant. Although the case was not-suited it was interesting in that plaintiffs filed two petitions –

³⁸ Even though the author owns an iPhone, he has never played this game.

³⁹ Cause No. D-1-GN-10-000850, filed March 18, 2010, Travis County District Court, 345th Judicial District; Cause No. D-1-GN-10-001717, filed May 27, 2010, Travis County District Court, 200th Judicial District.

one within 30 days of the date of issuance of the permit, a second after exhaustion of administrative remedies.

ADA Carbon Solutions, LLC v. Texas Commission on Environmental Quality (Norit Americas)⁴⁰

The petition challenges TCEQ's issuance of an air permit issued to Norit Americas, Inc. Plaintiff alleges a failure to require BACT; inadequate Class I and Class II visibility modeling; failure to require compliance with maximum available control technology ("MACT") standards for boilers; failure to require compliance with new source performance standards ("NSPS") for boilers.

The case is interesting in that the plaintiff, ADA, is a direct competitor and owns a nearby plant. ADA claims injury, because TCEQ imposed far less strict conditions on defendant's permit than those the agency imposed on plaintiff's permit for a similar process.

... More Angry Birds... Appeals of Coal Plant Air Permit

Each of the recent coal fired electric generating permits issued by TCEQ have been appealed on a range of issues, including some or all of the following topics: public notice; BACT analyses (including arguments concerning alternative fuels and processes); MACT analyses; modeling evaluations and demonstrations for existing NAAQS, and for new 1-hour standards for SO₂ and NO₂; reliance on the PM₁₀ / PM_{2.5} surrogacy policy, monitoring requirements, and absence of greenhouse gas emission limitation. The cases (in which other opponent groups have also filed) include the following:

Sierra Club v. TCEQ (Las Brisas)⁴¹

Sierra Club v. TCEQ (Trailblazer Energy Center)⁴²

Sierra Club, Inc. v. TCEQ (White Stallion)⁴³

These cases join the appeals filed in 2010 by EDF and Sierra Club over IPA's Coleto Creek Unit 2⁴⁴ and by Sierra Club over NRG's Limestone Unit 3.⁴⁵

⁴⁰ Cause No. D-1-GN-10-003272, filed September 17, 2010, Travis County District Court.

⁴¹ Cause No. D-1-GN-11-001383, filed May 9, 2011, Travis County District Court.

⁴² Cause No. D-1-GN-11-000763, filed March 14, 2011, Travis County District Court.

⁴³ Cause No. D-1-GN-11-000036, filed January 4, 2011, Travis County District Court.

⁴⁴ Cause No. D-1-GN-10-002485, filed July 19, 2010, Travis County District Court.

⁴⁵ Cause No. D-1-GN-10-000668, filed March 3, 2010, Travis County District Court. The court issued its decision on March 7, 2011, upholding the issuance of the permit.

... Angrier Birds... Citizen Suit and Local Government Enforcement Actions

A few citizen suits and local government enforcement actions were filed for a variety of alleged violations of emission standards and permit conditions. Those cases and a general description of the allegations follows:

Citizen Suits

Sierra Club v. Energy Future Holdings Corporation (Luminant Martin Lake Plant)⁴⁶

Alleges opacity violations from three boilers and exceeding heat input limits represented in the permit application.

Environment Texas Citizen Lobby v. ExxonMobil Corporation (Baytown Plant)⁴⁷

Alleges unlawful emissions during upsets; exceeding hourly emission limits; exceeding highly reactive volatile organic compounds ("HRVOC") limits; smoking flares (NSPS limit on visible emissions); flare pilot flame outages (NSPS); unauthorized releases of fugitive emissions; and additional violations referenced in deviation reports. The complaint appears to be based on federal operating permit deviation and other reports filed with TCEQ.

Environmental Integrity Project (Texas Campaign for the Environment) v. LCRA (Seymour / Fayette Plant)⁴⁸

Alleges violations of particulate matter emission limitations, exceeding heat input representations, and undertaking unspecified modifications without obtaining PSD review. EIP has withdrawn from the case leaving TCE as the plaintiff.

Local Government Suits

Harris County v. Total Petrochemicals USA, Inc.⁴⁹

⁴⁶ Case No. 5:10-cv-00156-DF-CMC, filed September 2, 2010, E.D. Tex.

⁴⁷ Case No. 4:10-cv-04969, filed December 13, 2010, S.D. Tex..

⁴⁸ Case No. 4:11-cv-00791, filed March 7, 2011, S.D. Tex.

⁴⁹ Cause No. 2011-31488, filed May 25, 2011, Harris County District Court.

Alleging air permit emission limitations violations during a February 11, 2011, release consisting of propylene, NOx, CO, propane and ethylene totaling 1370 pounds.

Harris County v. Akzo Nobel Polymer Chemicals⁵⁰

Alleging air permit emission limitations violations during a December 6, 2008, release of "over 400 lbs.", consisting of isobutylene, NOx, and CO.

...And, Quite Possibly the Angriest Birds Ever... Texas v. EPA

To the consternation of stationary source owners and operators regulated under the new source review programs, no immediate end is in sight to long simmering disputes involving basic regulatory philosophy and great economic import to Texas. Suits over GHG regulation raise questions about permitting coordination and time lines for projects, while suits over EPA SIP disapprovals of long standing state air permitting programs raise questions about past and ongoing compliance obligations, as well as about whether and how to unravel permitting actions and changes which may have occurred under those authorizations.

Round 1: Greenhouse Gas Regulation Suits

Wide spread media attention has focused on EPA's remorseless march ticking through the necessary findings which are preconditions under the CAA for EPA to regulate GHGs under the PSD program. Texas has jumped in challenging each of the findings, and a list of the petitions is a handy guide to the timing and history of procedural requirements for the GHG PSD program:

Texas v. EPA Case No. 10-1041, filed February 16, 2010, D.C. Circuit

Challenging EPA's "Endangerment and Cause or Contribute Findings for Greenhouse Gases under Section 202(a) of the Clean Air Act, Final Rule."⁵¹

Texas v. EPA, Case No. 10-1128, filed June 1, 2010, D.C. Circuit

Challenging EPA's "Reconsideration of Interpretation of Regulations That Determine Pollutants Covered by Clean Air Act Permitting Programs."⁵²

Texas v. EPA, Case No. 10-1182, filed July 7, 2010, D.C. Circuit

⁵⁰ Cause No. 2010-82264, filed December 20, 2010, Harris County District Court.

⁵¹ 74 Fed. Reg. 66,496 et seq. (Dec. 15, 2009).

⁵² 75 Fed. Reg. 17,004 et seq. (April 2, 2010).

Challenging EPA's "Light-Duty Vehicle Greenhouse Gas Emission Standards and Corporate Average Fuel Economy Standards; Final Rule."⁵³

Texas v. EPA, Case No. 10-1222, filed August 2, 2010, D.C. Circuit

Challenging EPA's "Prevention of Significant Deterioration and Title V Greenhouse Gas Tailoring Rule; Final Rule."⁵⁴

Texas v. EPA, Case No. 10-1281, filed September 13, 2010, D.C. Circuit

Challenging "EPA's Denial of Petitions To Reconsider the Endangerment and Cause or Contribute Findings for Greenhouse Gases Under Section 202(a) of the Clean Air Act; Final Rule."⁵⁵

Texas v. EPA, Case No. 10-1425, filed December 30, 2010, D.C. Circuit

Challenging EPA's "Determinations Concerning Need for Error Correction, Partial Approval and Partial Disapproval, and Federal Implementation Plan Regarding Texas Prevention of Significant Deterioration Program."⁵⁶

Texas v. EPA,, Case No. 11-1038, filed February 11, 2011, D.C. Circuit

Challenging EPA's "Action To Ensure Authority To Issue Permits Under the Prevention of Significant Deterioration Program to Sources of Greenhouse Gas Emissions: Finding of Substantial Inadequacy and SIP Call."⁵⁷

Texas v. EPA, Case No. 10-60961, filed March 1, 2011, Fifth Circuit

Challenging EPA's "Action To Ensure Authority To Issue Permits Under the Prevention of Significant Deterioration Program to Sources of Greenhouse Gas Emissions: Finding of Substantial Inadequacy and SIP Call."⁵⁸

Texas v. EPA, Case No. 11-1128, filed May 4, 2011, D.C. Circuit

Challenging EPA's "Determinations Concerning Need for Error Correction, Partial Approval and Partial Disapproval, and Federal Implementation Plan Regarding Texas's Prevention of Significant Deterioration Program."⁵⁹

Round 2: State Implementation Plan Disapproval Suits

⁵³ 75 Fed. Reg. 25,324 et seq. (May 7, 2010).

⁵⁴ 75 Fed. Reg. 31,514 (June 3, 2010).

⁵⁵ 75 Fed. Reg. 49,556 (August 13, 2010).

⁵⁶ 75 Fed. Reg. 82,430 (Dec. 30, 2010).

⁵⁷ 75 Fed. Reg. 77,698 (Dec. 13, 2010).

⁵⁸ 75 Fed. Reg. 77,698 (Dec. 13, 2010).

⁵⁹ 76 Fed. Reg. 25,178 (May 3, 2011).

Texas has filed suit over a number of EPA disapprovals of regulatory flexibility programs involving new source review permits: flexible permits, qualified facility changes and standard permits for pollution control.⁶⁰ At bottom, there are both legal interpretation and philosophical differences between the two agencies as to whether the programs provide loop holes for circumvention of major new source review. In addition to these suits. Luminant has filed an appeal in the Fifth Circuit⁶¹ involving EPA's disapproval of the Texas SIP concerning affirmative defenses for emissions during maintenance, startup and shutdown.⁶² A number of environmental groups also intervened.⁶³

Round 3: NAAQS Suits

Finally, Texas has filed suit over two NAAQS issues: the revisions to the SO₂ NAAQS promulgating the new 1-hour standard and making other changes.⁶⁴ rules promulgating increments and significance levels for implementing the previously revised PM_{2.5} NAAOS.⁶⁵

Both of these rules potentially affect solid fuel fired combustion sources such as coal fired power plants and cement kilns. Filed with little fanfare, Texas's specific concerns with the rules were not spelled out in the petitions.

If you occasionally find yourself green around the gills from the storm tossed seascape of clean air law, the author (me) commends a deep breath and a brisk walk outside.

- RCJ

Texas v. United States Environmental Protection Agency, Case No. 11-60158, filed March 14, 2011, 60 Fifth Circuit, Grandfathered Facility Permitting for Electric Generating Facilities: SIP disapproval involving TCEQ's standard permit for pollution control, 76 Fed. Reg. 1525 (Jan. 11, 2011); Texas v. United States Environmental Protection Agency, Case No. M-10-60459, filed June 14, 2010, Fifth Circuit, EPA disapproval of TCEQ's SIP revision for the qualified facilities program, 75 Fed. Reg. 19,468, et seq. (April 14, 2010); Texas v. United States Environmental Protection Agency, Case No. 10-60614, filed July 26, 2010, Fifth Circuit, EPA disapproval of TCEQ's SIP revision for the flexible permits program, 75 Fed. Reg. 41,312 (July 15, 2010); Texas v. United States Environmental Protection Agency, Case No. 10-60891, filed November 15, 2010, Fifth Circuit, EPA disapproval of TCEQ's SIP revision for its standard permit for ⁶¹ Luminant Generation Company v. EPA, 5^{Th} Cir. No. 10-60934 filed Dec. 7, 2010. ⁶² 75 Fed. Reg. 68,989 (Nov. 10, 2010).

⁶³ Environmental Integrity Project, et al., filed Jan. 10, 2011.

⁶⁴ Texas v. United States Environmental Protection Agency, Case No. 10-1259, filed August 23, 2010, D.C. Circuit; EPA Primary National Ambient Air Quality Standards for Sulfur Dioxide; Final Rule. 75 Fed. Reg. 35,520, et seq. (June 22, 2010).

⁶⁵ Texas v. United States Environmental Protection Agency, Case No. 10-1415, filed December 20, 2010, D.C. Circuit; EPA Prevention of Significant Deterioration for Particulate Matter Less Than 2.5 Micrometers - Increments, Significant Impact Levels and Significant Monitoring Concentrations. 75 Fed. Reg. 64,864 (Oct. 20, 2010).

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Texas v. U.S. Departments of Health & Human Services, Labor, and Treasury

State challenge to federal authority to enact Obamacare (26 states).

Texas v. U.S. Environmental Protection Agency

State challenge to federal authority to order greenhouse gas regulation (14 states).

Texas v. U.S. Environmental Protection Agency

State challenge to federal authority to reject state air quality rules (flexible permits).

Texas v. U.S. Department of Interior

State challenge to federal authority to ban Gulf oil drilling.

Texas v. U.S. Department of Education

State challenge to federal authority to deny Texas education funds.

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John C. Cruden is a graduate of the United States Military Academy, University of Santa Clara (summa cum laude), and University of Virginia (honors). He is a member of the bars of the District of Columbia, California, and the U.S. Supreme Court. Mr. Cruden serves as the Deputy Assistant Attorney General, Environment and Natural Resources Division, U.S. Department of Justice.

After graduation from West Point, Mr. Cruden served in airborne, ranger, and special forces units in Germany and Vietnam before attending law school. After clerking for Justice Stanley Mosk, California Supreme Court, John attended the Army's Judge Advocate General's Graduate Course where he was named the outstanding graduate. His subsequent military assignments includes being a criminal prosecutor in Germany; Chief of Litigation Branch, Europe; General Counsel, Defense Nuclear Agency; and Chief, Administrative and Civil Law, Judge Advocate General's School, Charlottesville, Va. His last assignment in the Pentagon was Chief Legislative Counsel for the Army. His military education includes being a Fellow, Army War College and Honor Graduate, Command and General Staff College.

In the Department of Justice, Mr Cruden was Special Counsel to the Assistant Attorney General, Civil Division; Chief, Environmental Enforcement Section; and has been a career Deputy Assistant Attorney General since 1995. In his current capacity he oversees federal civil environmental litigation involving the Department of Justice and supervises the Environmental Enforcement Section and Environmental Defense Section. He has personally litigated and led settlement negotiations in numerous environmental cases, many with reported decisions, and led DoJ delegations to international environmental conferences.

Mr. Cruden has received a number of military awards including the Legion of Merit, Defense Meritorious Service Medal, Air Medal, and the Vietnamese Cross of Gallantry with Silver Star. He has also received the Federal Bar Association's annual Younger Award and the ABA's award for Outstanding Government Service. While at DoJ, he has received from two President's the distinguished Presidential Rank Award. He is also on the Board of Directors of the DC Bar Foundation and is a member of the D.C. Circuit Judicial Conference Standing Committee on Pro Bono Services.

From 2005-2006 Mr. Cruden was the first government lawyer to be elected and serve as the President, DC Bar, the second largest bar in the nation. He is an ABA Fellow, a member of the American College of Environmental Lawyers, and served on the Council of the National Conference of Bar Presidents the past three years. A frequent lecturer for ALI-ABA, John is listed in Who's Who in American Law and has been designated by a national publication as one of the top 500 lawyers in the nation. He is currently serving in the ABA House of Delegates as the elected representative of the DC Bar and is Past-Chair of the ABA Section on Environment, Natural Resources, and Energy.

Mr. Cruden is a swim coach for Special Olympics and a past recipient of Fairfax County's Volunteer of the year award for his work with handicapped children.



Melinda E. Taylor

Taylor is a Senior Lecturer and Executive Director of the Center for Global Energy, International Arbitration, and Environmental Law at the University of Texas School of Law. At the law school, she teaches courses on environmental law and oversees the Center, which launched in the Fall of 2009. The Center was created for the interdisciplinary study of energy, dispute resolution, science, and policy.

Prior to joining the faculty of the Law School in 2005, Taylor was the Director of the Ecosystem Restoration Program for the Environmental Defense Fund, a national, nonprofit conservation organization. At EDF, from 1993-2005 she supervised a staff of 50 attorneys, scientists, engineers, and economists working to protect rare species, water quality, and sensitive habitats across the United States. She promoted the use of financial and regulatory incentives to encourage conservation on private lands and participated in the formulation and implementation of the nation's first "Safe Harbor" permit to encourage endangered species protection.

Taylor was a partner at the law firm Henry, Lowerre, Kelly & Taylor from 1991-1993. She served as Deputy General Counsel of the National Audubon Society from 1988-1991. At Audubon, she was responsible for managing the organization's litigation docket and supervising a project aimed at reducing pollution from oil and gas drilling. She was an associate at Bracewell & Patterson in Washington, DC from 1986-1988, where she specialized in energy and environmental law.

Taylor is Of Counsel to the law firm Smith, Robertson, Elliot, Glen, Klein & Bell in Austin.

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Mark MacLeod

Mark MacLeod is the Director for Special Projects in the Environmental Defense Fund's Climate and Air program working out of the DC office. The Climate and Air program's goals are to reduce harmful air emissions and stabilize the concentration of greenhouse gases in the Earth's atmosphere. Mark works on a range of issues before Congress and the EPA.

Before moving to EDF, Mark was the Policy Director for the Texas Senate Interim Committee on Electric Utility Restructuring. Prior to that position, Mark was an Assistant Director in the Office of Policy Development at the Texas Public Utility Commission where he led the Commission's investigation of electric utility restructuring.

Mark has received three Master's degrees in Natural Resources, Public Policy, and Economics from Ohio State University and the University of Wyoming.

Mark has served on several EPA advisory committees and work groups. Most recently he served as co-chair of the Clean Air Act Advisory Committee's Climate Change Work Group.

Environmental Defense Fund (EDF) is a leading national nonprofit organization representing more than 700,000 members. Since 1967, EDF has linked science, economics and law to create innovative, equitable and cost-effective solutions to society's most urgent environmental problems.

REPORT Z Hidden Costs of Energy Unpriced Consequences of Energy Production and Use

Energy production and use have many well-known benefits to society, but they also have many adverse effects that are not reflected in market prices. This report from the National Research Council, requested by Congress, examines these "hidden costs," including impacts on human health and the environment. The report calculates the monetary value of a wide range of energy-related burdens and damages, although many other external effects could not be monetized because of insufficient data or for other reasons. Monetized damages totaled more than \$120 billion in 2005.

odern society relies on a supply of cheap, ready energy. Yet, as beneficial as energy is, its production, distribution, and use also cause negative impacts. For example, pollutants from the burning of fossil fuels have effects on human health, grain crops, timber yields, building

materials, recreation, and outdoor vistas.

Today's energy prices do not reflect all of its effects. Those costs and benefits, termed "externalities" by economists, are therefore unaccounted for within the current energy system. As a result, consumers and those who make decisions about energy do not receive a

complete picture of the energy landscape. Meanwhile, these "hidden" costs, or damages, are passed on to society at large.

To reach a more complete accounting of energy in America, Congress asked the National Research Council to define and evaluate key energy externalities not included in pricing or not fully addressed by government policies. The process used to monetize damages is described in Box 1.

Damages from Electricity

Coal and natural gas together account for about 70 percent of the nation's electricity

generation. In terms of greenhouse gases as well as other pollutants, these two forms of electricity substantially exceed nuclear power and dwarf renewable power.

Coal

Coal is a non-renewable fossil fuel that currently accounts for approximately one-third of total U.S. energy production and nearly half

of electricity produced; it has also produced more damages in aggregate than any other form of energy production whose damages were monetized by the committee. The model that was used to estimate coal's external costs calculates damages associated with pollution's effects on health, crop yields, building materials, and other areas. Health damages include

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premature mortality and morbidity (the development of chronic bronchitis or asthma, for example).

Non-climate damages resulting from the use of coal in electricity generation amounted to \$62 billion in 2005, or 3.2 cents per kilowatt-hour (kWh). These damages are twenty times higher per kWh than damages from electricity generated by natural gas. More than 90 percent of the damages are associated with premature human mortality. Approximately 85 percent come from SO_2 emissions, most of which are transformed into airborne particulate matter. The differences in damages among plants were substantial: the 10 percent of plants with the highest damages produced 43 percent of aggregate damages from all plants (see Figure 1); while the 50 percent of plants with the lowest damages produced only 12% of aggregate damages. Each group of plants accounted for 25% of electricity generated from coal. Thus, the damages per kWh were almost 4 times higher for the highest 10% of plants than for the lowest 50%. Most variation in damages per kWh were due to differences in pollution intensity—i.e., to differences in pounds of SO₂ or NO_x emitted per kWh, although plant

Box 1. How Energy Damages Were Assessed

The committee studied the energy technologies that constitute the largest portion of the U.S. energy system or that represent energy sources showing substantial increases (more than 20 percent) in consumption over the past several years. It evaluated the technologies over their full life cycle: fuel extraction, production, distribution, use, and waste disposal.

The damage function approach was used to monetize the impacts associated with air pollution those emissions from electricity generation and transportation. This entailed measuring the emissions of particulate matter (PM), sulfur dioxide (SO₂), and oxides of nitrogen (NO_x) from various sources, translating emissions into ambient air quality and estimating the health and other impacts associated with changes in ambient air quality. Impacts were monetized using estimates of what people would pay to avoid them. Health damage constituted the vast majority of monetized damages, with premature mortality being the single largest health-damage category.

The committee applied these methods to a year close to the present (2005) for which data were available and also to a future year (2030) to gauge the impacts of possible changes in technology.

Though this was a wide-ranging analysis, the committee documented but was not able to monetize health effects related to a class of contaminants referred to as "hazardous pollutants," including lead and mercury. Ecosystem damages, water pollution impacts and the effects of energy on national security were also described but not assigned monetary damages.

To estimate damages from climate change, the committee began by evaluating the greenhouse gas emissions of each technology. Greenhouse gas emissions are the major cause of climate change, which could have severe economic, health, agricultural, and ecological impacts. The committee then considered results from three major Integrated Assessment Models (IAMs). Defining the economic damage of climate change is complex, because it depends on how different levels of emissions change the earth's climate, what impacts those changes will have, and when they will occur. Of particular importance is the rate at which damages increase with temperature (gradually or rapidly) and the discount rate used to bring future damages to bear on the present. However, there is no definitive rate at which to discount future climate damages and the committee did not endorse one. Using the range of rates used in the IAMs, the committee found that the possible damages per ton of CO₂-eq¹ ranged from \$1 to \$100. However, this range does not adequately account for the possibility of catastrophic changes, such as rapid sea level rise, which would have a drastic effect on these estimates if they could be accounted for.

For illustrative purposes, the committee chose three possible levels of damages per ton of CO_2 -eq: low (\$10 per ton), middle (\$30 per ton), and high (\$100 per ton). These were used to compare the magnitude of climate and non-climate damages from energy use.

The analysis did not attempt to anticipate the creation of new policies or technology breakthroughs.

¹ CO₂-eq represents the term carbon dioxide-equivalent. As different greenhouse gases have differing effects on climate change, CO₂-eq expresses the global warming potential of a given stream of greenhouse gases, such as methane, in terms of tons of CO₂.

location also played a role. Differences in pollution intensity reflect the fact that newer plants are subject to more stringent pollution controls.

Estimated Climate-Related Damages from Coal

The CO₂ emissions from coal-fired power are the largest single source of greenhouse gas emissions in the United States. Individual plants differ in how much CO₂ they produce, determined by the technology used to generate power and the plant's age. Depending on how much damage is assigned to one ton of CO₂-eq, climate damages from the average coal plant can range from 1 to 3.0 to 10 cents per kWh, corresponding to damages of \$10, \$30 and \$100 per ton of CO₂-eq. The 3 cents per kWh estimate (equivalent to the \$30 per ton figure) marks the point at which climate-related damages equal or exceed the nonclimate damages associated with coal.

Natural Gas

Damages from natural gas-fired power plants are much lower than from coal plants. Aggregate nonclimate damages associated with air pollutants from the sampled facilities, which generated 71 percent of the electricity from natural gas, were approximately \$740 million in 2005. Average annual non-climate damages per plant were \$1.49 million, which reflects both lower damages per kWh at gas plants, but also the smaller size of gas-fired plants compared

with coal-fired plants. Net generation at the median coal plant was more than 6 times higher than the median gas facility. Non-climate damages per kWh were, on average, an order of magnitude lower for natural gas than for coal, at 0.16 cents



Figure 1. (A) Distribution of aggregate damages by decile (tenths) from 406 coalfired and 498 natural gas-fired plants. The far left bars represent the 10 percent of plants with the lowest damages while the far right bars are the 10 percent with the highest damages. The numbers at the top of each column are the average damages associated with emissions from coal plants, specifically from sulfur dioxide, nitrogen oxide and particulate matter. (B) Detail from graph A on a smaller scale, showing distribution of aggregate damages by decile among natural gas fired plants.

- 3 -

per kWh for natural gas compared to 3.2 cents per kWh for coal.

As with coal, larger gas-fired plants are often less damaging than smaller ones. Although gas plants are, on average, far less polluting than coal-fired power plants, there are some gas facilities with damages per kWh as large as those of some coal plants. Again, as with coal, there are significant distinctions between plants. The least damaging 50 percent of gas plants, which accounted for 23 percent of net generation, produced 4 percent of the damages, while the most damaging 10 percent of plants, which accounted for 24 percent of net generation, produced 65 percent of the damages (see Figure 1-B).

Estimated Climate-Related Damages from Natural Gas

The CO_2 emissions from gas-fired power plants are significant. A gas-fired power plant produces roughly half of the climate-related damages per unit of energy than a coal-fired plant, from 0.5 to 1.5 to 5 cents per kWh, corresponding to damages of \$10, \$30 and \$100 per ton of CO_2 -eq.

Coal and Natural Gas in the Future

Predictions for the future of coal-fired electricity see air pollution damages per kWh falling. It is expected that demand for electricity will increase by 20 percent by 2030. But external costs should decrease by about 40 percent, to around \$38 billion, based on expected technological changes and pollution controls assumed by the U.S. Energy Information Administration.

On average, electricity production from natural gas is predicted to increase by 9 percent in 2030 from 2005 levels. Reductions in pollution intensity from natural gas facilities are not as dramatic as for coal plants, but the aggregate damages generated by the 498 gas facilities examined by the committee are still expected to fall from \$740 million in 2005 to \$650 million in 2030.

Other Sources of Electricity

In general, other sources of electricity, including nuclear power and renewable sources such as wind and solar, have very small external costs in comparison to fossil fuels.

Nuclear power currently provides almost 20 percent of electricity in the United States and

has very low lifecycle emissions. Although accidents, security breaches, and releases of high-level nuclear waste are possible, the chances of these situations occurring are so small that it is difficult to accurately compute their damages. In addition, low-level nuclear waste does not pose an immediate threat to human health, safety, or the environment. However, having a permanent repository for high-level radioactive waste is a very contentious issue, and warrants considerably more study on such a repository's potential externalities.

Wind power currently provides only 1.1 percent of the United States' electricity, but has the most potential for growth in renewable energy production. In general, the lifecycle emissions and damages from wind power are extremely low. However, turbine manufacturing does require a significant amount of copper, iron, and rare earth metals, and mining can threaten local water quality and cause significant environmental impacts. Once the turbine is operating, the impacts, including those to wildlife and the landscape, are small and localized.

Solar power is also expanding rapidly but currently provides less than 1 percent of electricity in the United States. It too uses materials that require resource-intensive mining, including silicon and rare minerals. In addition, solar panel manufacturing is energy intensive. However, because solar panels produce no emissions during operation, they still have low lifecycle costs.

As wind and solar technology improves and provides a higher percentage of electricity in the United States, the externalities from these sources will need to be re-evaluated.

Nuclear, wind, and solar power all produce very low lifecycle greenhouse gas emissions, and are expected to have negligible impacts on climate change.

Damages from Transportation

Transportation accounts for one-third of energy use in the United States and is almost completely dependent on petroleum.

In 2005, highway vehicles caused \$56 billion in health and other non-climate damages, with \$36 billion from light-duty vehicles (cars and SUVs) and \$20 billion from heavy-duty (trucks and buses). That year, the least damaging vehicle-fuel combinations generated 1.2 cents in non-climate damages per vehicle mile travelled, while the most



Figure 2. The non-climate lifecycle damages of several different combinations of fuels and vehicles for 2005 and projected for 2030. The feedstock damages are the damages produced from the extraction of the resource (oil for gasoline, biomass for ethanol or predominantly fossil fuels for electricity) and its transportation to the refinery. The fuel damages are those from the refining or conversion of the feedstock to usable fuel and its transportation to the dispenser. The vehicle damages are those from the manufacture and production of the vehicle. The operation damages are the tailpipe and evaporative emissions produced while using the vehicle.

damaging generated a little more than 1.70 cents per vehicle mile travelled. Although most people consider only the emissions coming out of their vehicle's tailpipe, emissions from driving a vehicle accounted for only one-quarter to one-third of its total damages. Vehicle manufacturing, the extraction and transportation of raw materials, and the refining or conversion of raw materials into fuel accounted for the rest of the estimated damages.

Surprisingly, nearly all of the combinations of light-duty fuel and vehicle technologies had very similar external damages (see Figure 2). Therefore, it is important to be cautious when interpreting small differences. These distinctions are expected to shrink even further by 2030 when the Corporate Average Fuel Economy (CAFE) standards will require the vehicle fleet to achieve an average fuel economy of 35.5 miles per gallon.

However, some fuels and vehicles had higher non-climate hidden costs than others. Electric vehicles produced some of the highest non-climate damages in 2005 (more than 1.70 cents per vehicle miles travelled). Although they produce no emissions during operation, they rely on electricity powered largely by fossil fuels for their fuel and energy intensive battery manufacturing. These costs are lower in 2030 as new rules reduce pollutant emissions from electricity generation. Although the committee did not include indirect land use in its estimates, corn ethanol also had high hidden costs in 2005 (at 1.52 cents per vehicle mile travelled for E85, which is fuel made with 85% ethanol). Producing corn and converting it into fuel requires a significant amount of electricity and petroleum.

Cellulosic ethanol, generally made of corn stalks or non-food crops that require little energy to grow, had some of the lowest non-climate external costs (in 2005, 1.20-1.21 cents per vehicle mile travelled for E85). Similarly, the fuel production and operation of compressed natural gas vehicles created very few emissions (in 2005, 1.20 cents per vehicle mile travelled). However, there are few compressed natural gas vehicles on the road today and the estimates for growth are low. Hybrid electric vehicles also had some of the lowest costs (in 2005, 1.22 cents per vehicle mile travelled), but as general vehicle efficiency increases, the differences between hybrid and conventional vehicles are expected to shrink. Diesel vehicles are expected to experience the largest shift in hidden costs over time. In 2005, diesel had some of the highest costs when used in both light and heavy-duty vehicles. However, recent diesel emission standards, which require vehicles beginning in model years 2006 (light duty) and 2007 (heavy duty) to use low-sulfur diesel and particle emission control technology, is expected to dramatically lower tailpipe emissions. If the rule is fully implemented by 2030 as planned, vehicles using low-sulfur diesel should become one of the least damaging vehicles.

Estimated Climate-Related Damages from Transportation

Most vehicle and fuel combinations had similar levels of greenhouse gas emissions in 2005 (see Figure 3). Nonetheless, some fuels and vehicles produced more greenhouse gases over their lifecycle than others. Vehicles using petroleum derived from tar sands² produced the most greenhouse gases per vehicle mile travelled. In contrast, cellulosic ethanol had some of the lowest greenhouse gas emissions, because biomass crops can store CO_2 in the soil. As was the case with electricity generation from coal, the mid-range figure used to illustrate climate damages (\$30 per ton of CO₂) marks the point at which climaterelated damages of transportation across fuel types could be expected to equal or exceed non-climate damages.

By 2030, implementing the higher fuel economy standards will reduce the vehicle fleet's lifecycle contribution to climate change even more than its contribution to non-climate damages.

However, substantially reducing external damages from transportation will require one or more technological breakthroughs. For example, advances that reduce emissions from electricity production, such as the development of affordable technologies for reducing emissions from coal production or achieving a vast increase in lowcarbon energy, could drastically decrease damages from electric vehicles.

² A very small proportion of petroleum today is produced from tar sands, mostly in Canada. However, that amount may grow substantially in the future if the cost of oil and concerns about national security increase.



Figure 3. The lifecycle greenhouse gas emissions (in tons of carbon dioxide-equivalents) of several different combinations of fuels and vehicles for 2005 and projected for 2030. It should be noted that for the four forms of E85 biofuel, the carbon dioxide consumed in their production should be subtracted from the CO_2 generated in their use in order to determine their net CO_2 emissions.

Damages from Heating

Heating is a key part of the energy picture. Around 30 percent of the energy used in the United States goes towards heat, most of it provided by natural gas (electricity also accounts for a small percentage of heat energy). The total non-climate damages from burning natural gas for heat were about \$1.4 billion in 2005. Damages from heat in 2030 are anticipated to remain largely the same, as rising demands are offset by lower-emitting sources. Depending on how much damage is assigned to one ton of CO₂-eq, climate damages from heat could be from 70 to 210 to 700 cents per 1000 cubic feet.

Conclusion

In aggregate, the damage estimates presented in this report for various external effects are substantial. The external effects the committee was able to quantify for 2005 add up to more than \$120 billion in damages. Although large uncertainties are associated with the committee's estimates, there is little doubt that this aggregate total substantially underestimates the actual damages. Costs cannot presently be estimated with confidence for some effects, including national security.

While not a comprehensive guide to policy, the committee's analysis indicates that regulatory actions can significantly affect energy-related damages. The damages associated with coal-fired electricity generation capture the benefits of further reductions in power plant emissions beyond those required in the 1990 Clean Air Act Amendments. In the case of transportation, recent diesel emission standards are expected to dramatically lower hidden costs of diesel vehicles. Similarly, advances in energy efficiency technologies or policies that reduce emissions (either greenhouse gases or non-climate pollutants) in electricity production could have a ripple effect into many sectors. Not only would such advances reduce emissions from electricity production, but they would also reduce vehicle lifecycle damages, particularly for electric vehicles.

Committee on Health, Environmental, and Other External Costs and Benefits of Energy Production and Consumption: Jared L. Cohon (*Chair*), Carnegie Mellon University; Maureen L. Cropper (*Vice Chair*), University of Maryland; Mark R. Cullen, Stanford University School of Medicine; Elisabeth M. Drake, Massachusetts Institute of Technology (retired); Mary English, The University of Tennessee; Christopher B. Field, Carnegie Institution of Washington; Daniel S. Greenbaum, Health Effects Institute; James K. Hammitt, Harvard University Center for Risk Analysis; Rogene F. Henderson, Lovelace Respiratory Research Institute; Catherine L. Kling, Iowa State University; Alan J. Krupnick, Resources for the Future; Russell Lee, Oak Ridge National Laboratory; H. Scott Matthews, Carnegie Mellon University; Thomas E. McKone, Lawrence Berkeley National Laboratory; Gilbert E. Metcalf, Tufts University; Richard G. Newell, Duke University*; Richard L. Revesz, New York University School of Law; Ian Sue Wing, Boston University; Terrance G. Surles, University of Hawaii at Manoa; Raymond A. Wassel (*Project Director*); James J. Reisa (*Director, Board on Environmental Studies and Toxicology*), National Research Council.

> * Resigned from the committee on August 2, 2009, to accept an appointment as the administrator of the U.S. Energy Information Administration.

The National Academies appointed the above committee of experts to address the specific task requested by the United States Congress. The members volunteered their time for this activity; their report is peer-reviewed and the final product approved by both the committee members and the National Academies. This report brief was prepared by the National Research Council based on the committee's report.



For more information, contact the Board on Environmental Studies and Toxicology at (202) 334-3060 or http://dels.nas.edu/best. *Hidden Costs of Energy: Unpriced Consequences of Energy Production and Use* is available from the National Academies Press; call (800) 624-6242 or (202) 334-3313, or visit the NAP website at www.nap.edu.

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After receiving his doctorate, Ken joined the Reason Foundation, a free-market think tank in California, where he studied air quality policy, climate policy, and other state-based and national environmental policy issues for 8 years. While at Reason, Ken served on several high-profile task forces attempting to improve air quality and reduce traffic congestion, testified before the State Air Resources Board, South Coast Air Quality Management District, the California State Senate and the California State House of Representatives. He received a Governor's appointment to the California Department of Transportation's Advisory Committee in 1996. In 2002, Ken moved to Vancouver to study Canadian environmental policy for three years at The Fraser Institute, one of Canada's largest free market think tanks.

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23rd Annual **Texas Environmental Superconference**

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NUCLEAR POWER

Lawrence R. "Rick" Jacobi, Jr., P.E., J.D. Austin, Texas

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This paper will discuss the current status of nuclear power in the US, with emphasis on Texas.

In the early years of nuclear technology, many believed civilian nuclear power would usher in an era of energy too cheap to meter. As the luster wore off, the technical difficulties of harnessing the atom became better understood and it soon became apparent that nuclear energy, while an excellent new source of power, would require prolonged development. By the 1960s, nuclear power had matured as a source of electrical power and reactor orders surged. But, enthusiasm soon waned. The last reactor order occurred in 1974, and no new reactors have been ordered since. During the 1980s, forty-two nuclear reactors came on line in the US, but the last to come on line was in 1996. At the turn of the century, nuclear power was expected to undergo a renaissance and rise to new importance as a means to cost-effectively avoid the inherent environmental and climatic difficulties associated with the burning of fossil fuels. However, shifting fuel economics, primarily the abundance of cheap natural gas, projected cost overruns, potential regulatory impediments and diminished public confidence post-Fukushima has worked to once again dampen the enthusiasm for nuclear power.

I. The Promise of Nuclear Power

"...Too cheap to meter...."

Those were the infamous words uttered by Lewis Strauss, the chairman of the US Atomic Energy Commission, before the 1954 meeting of the National Association of Science Writers, suggesting that nuclear power would produce electricity so cheaply that it would usher in a world of luxury and leisure. As it turns out, that has been proven to be overly optimistic. The nuclear age began at 3:25 PM on December 2, 1942 on the floor of a squash court under the University of Chicago's athletic stadium. On that day, Professors Enrico Fermi and Leo Szilard brought the first man-made nuclear reactor, known as Chicago Pile 1, to criticality.¹ Four years later, the US Congress provided for the civilian control of nuclear weapons and nuclear energy when they enacted the Atomic Energy Act of 1946. The Act established the Atomic Energy Commission that was authorized, among other things, to conduct research and development activities related to the theory and production of atomic energy.

On December 20, 1951, the Experimental Fast Breeder reactor (EBR-1) produced about 100 kilowatts of electricity lighting a string of four light bulbs at the plant in Arco Idaho.² The first reactor to produce electricity for a power grid was the Obninsk Nuclear Power Plant in the Soviet Union in 1954. That was quickly followed by the world's first commercial nuclear power station at Calder Hall in Sellafield, England, which delivered approximately 50 Megawatts of electricity to the grid. The Shippingport Nuclear Power Station, the first commercial US nuclear reactor, opened in 1957. Work continued on other nuclear reactor applications, especially marine propulsion systems. In 1955, the world's first nuclear powered submarine, the Nautilus, was launched.

In 1954, the US Congress enacted amendments to the Atomic Energy Act that provided for the rapid declassification of nuclear technology and development of nuclear power by the private sector. After the Shippingport Nuclear Power Station proved the viability of commercial nuclear power, installed capacity rose quickly from one Gigawatt in 1960 to more than 100 Gigawatts in 2011.

¹ Chicago Pile 1 was the first *man-made* nuclear reactor. A natural, self-sustaining nuclear chain reaction occurred in Gabon, Africa about 2 billion years ago. The reactor ran for a few thousand years producing about 100 kW of power during that time.

² EBR-1 also has the distinction of being the first reactor to experience a partial core melt down. During some experimental tests in 1955, coolant flow to the core was restricted causing the fuel to melt.

Beginning in the early 1970s, the luster began to wear off nuclear power. Rising public opposition, regulatory difficulties, design difficulties, safety concerns, cost overruns, political opposition and continuous litigation combined to slow the licensing and construction of new plants. Older plants were required to redesign, modify or install expensive safety systems. These issues made nuclear power considerably more expensive than was anticipated just a decade earlier. At the same time, fossil fuel prices began to fall, economic growth slowed, and load growth flattened out, which made nuclear power plants, with all the attendant policy and safety issues, less attractive. More than 67% of all nuclear plants ordered after 1970 were eventually cancelled.

After 1970, opposition to nuclear power plants began to rise. The nuclear power conflict spread across North America and Europe and reached such an intensity that protests at individual reactor sites could number several hundred thousand persons. Protest frequently became violent and protestors tried to occupy the plant site to shut down operations.

In 1979, the Three Mile Island nuclear power plant in Pennsylvania experienced a partial meltdown due to operator error. In 1986, the Chernobyl nuclear power plant experienced a massive meltdown and fire, once again attributed to operator error. These two incidents, coupled with changing economics that favored fossil fuel, particularly coal, led to a general aversion to nuclear power. New plant construction around the world ground to a halt.

During the next two decades, the 104 nuclear power reactors that had been built at 65 nuclear power stations before 1974 continued to operate safely. Cumulatively, they produce about 20% of the electricity in the United States.³ Though nuclear reactors were originally licensed to operate for 40 years; as of July 2011, seventy reactors have been re-licensed to operate for another 20 years beyond their original

³ Interestingly enough, though no new plants have been built and several have been shut down, the existing operating plants have been uprated and have increased their capacity factors and availability to the extent that they have held their proportion of the nation's energy mix.

lifetimes. More than a dozen applications for operating life extensions are under review.

In 2002, the US Department of Energy instituted Nuclear Power 2010, a program designed to encourage the construction of new nuclear power plants. The goal was to have at least two new reactors online by 2010. Two dozen projects were eventually considered, but only two progressed beyond the conceptual stage. One of these was an additional two units at the South Texas Project. Both of the South Texas new units were cancelled in 2011 following the Fukushima reactor incident in Japan.

II. Nuclear Power in Texas

Texas currently has four operating nuclear reactors operating at two nuclear plants. Both were ordered prior to 1974 and completed construction during the late 1980s and early 1990s. Both have been among the best operating plants in the United States. At the height of the nuclear renaissance euphoria of the past few years, a developer in Amarillo proposed a two-unit nuclear plant for the Panhandle and Exelon Nuclear proposed a two-unit station near Victoria. New units were likewise proposed for the existing power plants at Bay City and Glen Rose. All have since been either cancelled or suspended due to shifting power economics, the potential for new regulations, withering public acceptance and jittery Wall Street financing due to the Fukushima incident.

South Texas Project

The South Texas Project Electric Generating Station is located 90 miles southwest of Houston near Bay City. It consists of two Westinghouse Pressurized Water Reactors (PWRs). The plant was announced in 1971 and construction began in 1975. By 1981, the plant was four years behind schedule and the cost had risen to 4.8 billion (over an original estimate of \$0.97 billion). Unit one of the plant finally went online in 1988 followed by unit two in 1989. The plant has operated safely since and has been rated among the best performing plants in the world.

In 2006, NRG Energy filed a letter of intent with the US Nuclear Regulatory Commission announcing their intention to build two 1360 MWe Advanced Boiling Water Reactors (ABWRs) at the existing reactor station. A little more than a year later, NRC filed a full application with the NRC. CPS Energy was named a 50% partner and Toshiba was selected as the architectural engineer. This was the first application for a nuclear power reactor to be filed with the NRC since 1979. Three years later, Toshiba announced that the estimated construction cost had risen from \$10 billion to more than \$14 billion. This unexpected cost increase caused CPS Energy to reduce its participation in the plan to 7.625%. In 2010, Tokyo Electric Power Corporation (TEPCO) announced they would take an initial 9.2375% stake in the plant, with an option to purchase an additional stake for a total 18% ownership.

Not long after the Fukushima incident in March 2011, NRG announced they were going to abandon the licensing process. According to NRG, the decision to cancel was based on the diminished prospects of successfully completing the project, but did not specifically mention the Fukushima incident. Other factors that likely affected the decision were TEPCO's precarious financial position following Fukushima and the potential for modified design requirements post-Fukushima.

<u>Comanche Peak</u>

The Comanche Peak Nuclear Power Plant is located 40 miles southwest of Fort Worth near Glen Rose. The plant consists of two Westinghouse Pressurized Water Reactors (PWRs). Construction of the two reactor stations began in 1974. Unit one commenced operations in 1990 and Unit two followed in 1993. Each unit has a 40year operating license. The units were initially rated at 1080 MWe, but were uprated in 2008 to 1250 MWe.

In 2008, Luminant filed an application with the US Nuclear Regulatory Commission for a Combined Construction and Operating License for two new reactors. The design proposed for the new reactor systems is the Advanced Pressurized Water Reactor (US-APWR). On March 14, 2011, Luminant announced the project had been delayed for two to three years because the US Nuclear Regulatory Commission was postponing for 18 months its safety review of the plant expansion, and for other commercial considerations. Luminant stressed that the delay had nothing to do with the incident at Fukushima, but the incident likely influenced the decision to delay.

Amarillo Power

In 2005, George Chapman, a local developer in Amarillo, announced his plan to form a partnership with the Amarillo Economic Development Commission (AEDC) to pursue a nuclear power plant to be constructed near Amarillo. A few months later, he notified the US Nuclear Regulatory Commission of his intent to secure an early site permit for a two-unit, 2700 MWe reactor site in the Amarillo vicinity, using the General Electric Advanced Boiling Water Reactor (ABWR). After the AEDC failed to pledge funds to the venture, Chapman entered a joint venture with UniStar Nuclear Energy in 2007 and announced a change in reactor design to the Areva 1600 MWe US Evolutionary Power Reactor (US-EPR). A Combined Construction and Operating License Application was expected in 2010, but to date no further activity has been reported.

Exelon Victoria County Station

The Exelon Nuclear Victoria County Station was a two unit GE Advanced Boiling Water Reactor (ABWR) that would have been built near McFaddin. Exelon filed a Combined Construction and Operating License Application in 2008, but announced in mid-2009 that the application would be suspended. In March 2010, Exelon withdrew the application, and submitted an application for an Early Site Permit. The US Nuclear Regulatory Commission is expected to take three to four years to complete the review of the application.

III. Will There Be a Nuclear Renaissance?

Nuclear power plants fell out of favor in the 1980s after significant public opposition to nuclear power was reinforced by the incidents at Three Mile Island and Chenobyl, while significant cost overruns and regulatory uncertainty made nuclear power a financially risky investment for utilities. All of the plants operating today were ordered prior to 1974 and were completed prior to 1996. However, since the late 1990s, concerns over greenhouse gas emissions leading to climate change have made nuclear power an increasingly desirable alternative to fossil fuel.

Unlike other alternative energy sources like wind and solar power, nuclear power plants can reliably provide large amounts of base load electricity. Moreover, as fossil fuel prices increase, the economics of nuclear power increase proportionately. Inversely, when fossil fuel prices decrease the economics of nuclear power decrease by the same proportion. The difficulty is that fossil fuel prices have had a tendency to swing wildly in the past decade. At the turn of the century when talk of a nuclear renaissance first began, natural gas prices increased to all-time highs and continued to increase and spike through 2008. In 2008, new oil and gas production technology opened onshore sources of natural gas with had the effect of driving down the price. Nuclear power economics have suffered proportionately.⁴

Public opinion has also shifted up and down in the last decade. Public acceptance of nuclear power began to ascend around 2000 when it was recognized that nuclear power could significantly offset the consumption of fossil fuel that many scientists believe is leading to global warming and climate change.

⁴ Uranium prices also rise and fall on the promise of nuclear power. Uranium prices rose to more than \$40 per pound in the late 1970s and then fell to a low of \$6 per pound by 2002. When talk of the renaissance began, uranium prices spiked in 2007 at \$134 per pound before falling back in July 2011 to \$53 per pound on the spot market. Even if the nuclear renaissance falters and no new plants are built in the US, world demand for uranium will fall short some 30,000 metric tons per year.

In 2000, fully 87% of those polled expressed a desire to continue operating existing nuclear power plants in the US and 51% supported construction of new plants. Sixty-three percent were confident that nuclear plants could be operated safely. By 2008, the support for the construction of new nuclear plants soared to 69%. But, then along came Fukushima.

A poll conducted immediately after the Fukushima crisis indicated that, even though 67% of Americans think nuclear power plants are safe, support for the construction of new nuclear plants had dropped to 43%. Sixty-five percent say they are worried about a nuclear plant accident in the US.

At the beginning of the century, prior to Fukushima, and in response to the increasing price of fossil fuels and recognizing the positive shift in public acceptance of nuclear power, in 2002 the Bush administration announced a \$38 million program called Initiative 2010 that was designed to encourage building new advanced-design nuclear power plants by the end of the decade (2010). The initiative was a joint industry-government effort to identify new sites for nuclear reactors, to develop and bring to market new reactor designs, to make a solid business case for building new reactors and to improve regulatory processes.

The Energy Policy Act of 2005 authorized \$18.5 billion in loan guarantees for new nuclear plants, and in 2010 an \$8 billion loan guarantee was approved for the construction of two reactors in the state of Georgia. In January 2010, the Obama administration recommended tripling the amount of federal loan guarantees.

These factors all came together to encourage utility companies to embrace nuclear power once again. By March 2010, the US Nuclear Regulatory Commission projected 26 applications for new nuclear reactors would be received in short order. These projections have turned out to be optimistic. In the past year, most of the new reactor projects initially proposed have been cancelled or suspended.

Why this sudden shift away from new and expanded nuclear power?

The primary driver has been energy economics. The presumed glut of natural gas has driven prices down from their historic highs in the early part of the century. Nuclear plants, with their attendant construction and regulatory difficulties, have simply become noncompetitive with natural gas powered electrical generators.

IV. A Prediction from the Sidelines

I am an unabashed proponent of nuclear power. Nuclear power provides the best available technology to produce safe, clean and efficient electricity.

My prediction is that the natural gas bubble will burst and fossil fuel prices will continue to trend upward. Once that happens, nuclear power will once again become cost-competitive as a base load power source. Utilities will reconsider nuclear power and the number of nuclear plants in the US will increase. The resurgence in nuclear plant construction will find the US behind the rest of the world in the design and operation of these plants and will also find that uranium supplies have become tight as other developing countries, primarily China, India and South Korea, have tied up all the available resources.

I further believe that the Fukushima incident will fade into the dark recesses of the public's minds and support for nuclear power will once again begin to rise. This rise in public opinion will be reinforced by continued concerns over global warming and by the public's desire to have cheap (not too cheap to meter) and reliable power.

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She is active in bar, law school and community activities promoting issues concerning the environment, minority advancement and gender equality issues, among others. Ms. Baker was featured on the cover of Diversity & The Bar magazine, a publication of the Minority Corporate Counsel Association, in connection with her work in the area of diversity. She is the 2008 recipient of the Ma'at Justice Award, awarded annually by the State Bar of Texas Women and the Law Section to an individual who has actively addressed the needs and issues of women in the legal profession and the community. Ms. Baker was also the 2006 award winner of the Texas Bar Foundation's Dan Rugeley Price Award presented to an outstanding practitioner dedicated to the bar and public. She has served as an Adjunct Professor of Environmental Law at both the University of Houston Law Center and the South Texas College of Law, and was co-founder and past Chair of the Houston Bar Association's Environmental Law Section. She was also a founder and Chair of the American Bar Association's national Environmental Law Group, supervising 10 environmental committees integrating issues of environmental law with real estate, landlord and tenant issues, due diligence, and merger and acquisition transactions. Ms. Baker was the 2008 Chair of the Houston Bar Foundation, the HBA's 501(c)(3) charitable foundation, and other bar appointments have included serving on the Board of Directors of the Asian American Bar Association, as Vice Chair of the State Bar of Texas Standing Committee on Women in the Profession, and Co-Chair of the Houston Bar Association's Gender Fairness Committee, among others. Prior to forming the Connelly · Baker Firm, Ms. Baker headed the Environmental Law Practice group for the 120-lawyer firm of Mayor, Day, Caldwell & Keeton, L.L.P. for over a decade and also practiced environmental law in the D.C. and Houston offices of Fulbright & Jaworski, L.L.P. She is admitted to practice in both the District of Columbia and Texas.

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Before joining Bracewell, Mr. Alonso was the Chief of the Stationary Source Enforcement Branch at the U.S. Environmental Protection Agency's Office of Enforcement and Compliance Assurance. In this capacity, he was EPA's second-ranking official for Clean Air Act enforcement. Mr. Alonso managed and negotiated Clean Air Act enforcement cases involving issues of national significance representing billions of dollars in injunctive relief, including the New Source Review coal-fired power plant enforcement initiative.

At the EPA, Mr. Alonso was also instrumental in the development and implementation of national enforcement and compliance initiatives addressing alleged non-compliance from various industrial and agricultural industries, as well as efforts addressing the importation of products that were in non-conformance with U.S. environmental law. He has unique experience in regulatory and policy development in the areas of New Source Review (NSR), clean air market-based programs. National Emission Standards for Hazardous Air Pollutants (NESHAP), and New Source Performance Standards (NSPS). His duties also included oversight of EPA Regional enforcement programs, training EPA regional and state staff and managers in legal theories and case development techniques.

Some of the major policy issues he tackled include addressing excess air emissions in State Implementation Plans, the use and availability of Credible Evidence under the Clean Air Act, and the development of NSR reforms. Mr. Alonso also was the special assistant to the Assistant Administrator of the Office of Compliance and Assurance, J.P. Suarez, where he ensured coordination of the national enforcement program with all other EPA Headquarters and Regional offices.

Before obtaining his experience in Clean Air Act matters, Mr. Alonso was a staff attorney in the Water Enforcement Division at EPA Headquarters. He was a key player in the enforcement of the National Pollutant Discharge Effluent Standards program with a concentration in wet weather issues such as Combined Sewer Overflows, Sanitary Sewer Overflows and Stormwater compliance issues. Mr. Alonso also represented EPA in pretreatment and industrial discharge matters, led targeting efforts, and worked closely with EPA's Office of Water in policy development. While in the Water Enforcement Division, Mr. Alonso gained vast knowledge and experience in EPA's regulatory process through participating in the variance and exemption, consumer confidence report, public notification and arsenic regulations under the Safe Drinking Water Act.

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Publications and Speeches

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"The Basics of Clean Air Law," Clean Air: Law, Policy and Practice, Fourth Annual Advanced ALI-ABA Course of Study, December 2, 2010.

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EPA GREENHOUSE GAS PERMITTING APPLICABILITY AND ITS IMPACT ON TRADITIONAL CLEAN AIR ACT PERMITTING

By Richard Alonso Partner, Bracewell & Giuliani LLP

The United States is well on its way to regulating greenhouse gases (GHGs) under the Clean Air Act. While there is litigation pending before the D.C. Circuit Court of Appeals that may reverse this regulatory course, companies wanting to construct new industrial facilities or expand existing plants in the near term must yield to U.S. EPA's regulatory agenda. As of today – this is regulatory reality. Regardless of what people may think about EPA's actions in the GHG arena or how the political situation pushed us to where we are, GHG Prevention of Significant Deterioration (PSD) permits must be obtained before construction if certain permitting thresholds cannot be avoided. PSD permitting under the Clean Air Act is the most feared authorization facing any planned industrial project today and has single handedly "killed" many large scale industrial projects in the United States.

While EPA has issued guidance on GHG permitting, in the rush of meeting deadlines imposed by the political leadership at EPA, staff was unable to think through all of the unique issues that would be presented by GHG permitting. One issue that State permit writers and many within EPA did not fully think through while pushing forward with GHG permitting was the collateral impact on the permitting of non-GHG pollutants. It took EPA until March of 2011 (close to one year after finalizing the Tailoring Rule) to highlight this issue to the regulated community through its GHG permitting website. EPA has a longstanding policy in New Source Review (NSR) permitting that "if a source is major for one pollutant – the source is major for all pollutants." Therefore, if a source is above the permitting threshold for GHGs, then non-GHG pollutants, such as NOx, PM, SO2 and VOCs, will need major source NSR permits if the non-GHG pollutants are above the significance level, even if they are being emitted below the major source threshold. Many sources that were traditionally permitted as minor sources or permitted through permit-by-rule or standard permits may now need to be permitted as major sources simply because of EPA's GHGs permitting program.

THE THREE PHASES OF GHG PERMITTING APPLICABILITY

The GHG Tailoring Rule was promulgated by EPA on June 3, 2010 to address GHG emissions from stationary sources under the Clean Air Act permitting programs. 75 Fed. Reg. 31514 (June 3, 2010). GHG permitting is being implemented in three phases. Phase I was applicable from January 2011 through June 2011 and applied only to sources that were already subject to NSR permitting programs due to their non-GHG pollutant emissions. These sources were known as "anyway" sources. Phase II of the Tailoring Rule started July 1, 2011 and continues through June 30, 2013, and expands the permitting requirements to construction or modification of facilities based solely on GHG emissions. EPA creatively labeled these sources as "non-anyway" sources. The creation of "non-anyway" sources was one of the most significant NSR reforms since the original 1980 NSR regulations.

There are two steps in determining whether new non-anyway sources are subject to GHGs PSD permitting requirements. The first step is to determine whether if the potential to emit (PTE) of the source is at least 100,000 tons per year (tpy) CO₂e. CO₂e is not a measure of mass,

but the sum of the mass emissions of each individual GHG adjusted for the global warming potential (GWP) of each GHG. The pollutants included in the CO₂e calculation are carbon dioxide, nitrous oxide, methane, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. If the source's CO₂e is above 100,000 tpy then the second step is to determine whether the source's PTE is at or above the Clean Air Act mass-based major source threshold (*i.e.*, either 100 or 250 tpy) for GHGs. This is determined by adding up the mass emissions in tpy of all six GHGs. If these thresholds are met, the source would need a PSD permit for GHGs.

As with any concept within the NSR program, the analysis is even more complicated for a non-anyway modified source. For modified sources, the first step is to determine whether the source has an overall PTE of 100,000 tpy CO2e. If yes, the second step is to determine if the modification has a projected increase in emissions of more than 75,000 tpy CO2e. Keep in mind, the 75,000 tpy CO2e is an arbitrary threshold devised by EPA to avoid politically unpalatable permitting for non-industrial sources such as schools and churches. It is *not* the regulatory significant threshold for GHGs. The PSD significance threshold for GHGs is *zero*. If there is a mass emissions increase above zero, modified source can "net-out" of permitting using emission decreases 5 years before construction of the modification. If a source cannot "net-out" of GHG permitting, then GHG permitting will apply.

Eventually, EPA will enter into Phase III of GHG permitting. EPA will conduct further rulemaking to establish permitting thresholds to be applicable from July 2013 to April 2016. EPA expects a final Phase III rule by July 2012. While the GHG permitting threshold is expected to be reduced to 50,000 tpy CO₂e, EPA could reduce the threshold further depending on the administrative manageability of the GHG permitting program. We will all need to wait for the results of an on-going EPA study on GHG permitting to figure out what it will do with this program after April 2016.

IMPACT OF GHG PERMITTING ON NON-GHG POLLUTANTS

The kicker with GHG permitting is that EPA is not flexible with its "major for one, major for all" PSD policy. If a source is major for GHGs, EPA believes the source must then obtain a PSD or nonattainment- NSR permit for all non-GHG pollutants emitted above the significance threshold. Generally, the significance threshold is much lower than the major source permitting threshold. Therefore, a source that has traditionally been a minor source under the Clean Air Act could now be forced to be a major source for NOx, VOC, SO2, PM and other traditional pollutants solely because of the GHG emissions. As an example, where the major source permitting threshold of NOx emissions was once 250 tpy, if a source is required to obtain a PSD permit for GHGs, the NSR permitting threshold for NOx is reduced to 40 tpy. This revised threshold for NOx would apply to both new and modified sources.

Even though GHG PSD permitting does not require modeling to ensure protection of the National Ambient Air Quality Standards (NAAQS) (because there is not a NAAQS for GHGs), extensive modeling may be needed for the non-GHG pollutants, which was never an issue for many sources. As if a Best Available Control Technology (BACT) analysis for GHG were not enough for a small project to handle, the permit record will now need to include a BACT analysis for all of the non-GHG pollutants above the significance threshold. Many minor sources will be required to upgrade and install new state-of-the-art and expensive pollution controls as a result of the BACT analysis. If a source is in a nonattainment area for the non-GHG pollutant, the source will likely need to purchase offsets and meet the Lowest Achievable Emission Rate (LAER). To top it all off, where EPA is the permitting authority for GHG

permitting, such as in Texas, EPA, not the State, would be the permitting authority for *both* the non-GHG pollutant and GHGs. Permits issued by EPA draw attention of national environmental groups and routinely end up the abyss of the Environmental Appeals Board in Washington, DC.

Given the complex applicability matrix and the likelihood of a complicated permitting process, please bring your protective gear when you visit with your capital development executives. Plus, be sure to take cover when you tell the people who want to invest in U.S. facilities that air permitting for their projects will now take at least 18 months when just last year the same project would have been permitted in three months.

A MITIGATING SOLUTION

Despite the somewhat grim outlook, believe it or not – there is hope. A mitigating solution to this wreck is to perform all the permitting work yourself. Permit applications need to be more robust than ever and geared towards giving the permitting authority all the information it needs to draft a defensible Statement of Basis for the permit. Investments and time devoted to the development of the permit application will pay off later in the permitting process. If permit applications do not fully consider technical and legal deficiencies and challenges, the permitting process could easily result in delay at the permitting authority or the permit could be remanded by a reviewing appeals board or administrative hearing officer. Once the permit is issued and the permitting record is closed, it is very difficult for private and government lawyers handling an appeal to counter arguments from challengers to the permit with information that is not in the permitting record. It is imperative that the permit application contain all technical and legal justifications for the conclusions used to develop each permit term. In NSR permitting, the goal is to not to only obtain a permit from the permitting authority, but to obtain a permit that will withstand legal challenge. These two necessities are not the same.

BENEFITS OF GHG PERMITTING

EPA started this particular train (one of many trains EPA started and are expected to collide in the near future, also known as the "EPA train wreck") to reduce GHG emissions under the Clean Air Act through permitting of stationary sources. As a general rule, the environmental benefit EPA intends to gain through GHG permitting is the reduction of GHG emissions from industrial America and thus (presumably) actual reductions in global GHGs contributing to climate change. And yet, proof of such reductions is exceedingly hard to come by. The problem presented by the greenhouse effect is widely understood to be international in nature. EPA regulations, unfortunately, are not. Indeed, in the case of energy-intensive products like refined petroleum or other products that depend on affordable and reliable electric power, it is possible that poorly calibrated GHG permitting processes could simply result in more goods being imported from countries with no controls and often less efficient manufacturing processes. Ironically, if the GHG permitting process results in this outcome, GHGs will increase per unit of manufacturing as a result of fuel used in transporting goods back to the United States.

Even though EPA's sole reason for GHG permitting was to combat climate change, to EPA's surprise, the most compelling environmental benefit from GHG permitting is likely the increased NSR permitting of non-GHG pollutants. Many minor sources that have legally avoided the installation of BACT and air quality modeling analyses for many years will no longer be able to avoid the major NSR program for the traditional NSR pollutants. It is much more difficult to reduce the PTE for traditional NSR pollutants below the significance threshold than it is to stay under the major source NSR permitting thresholds. The GHG permitting thresholds not only impose GHG permitting requirements, but reduce the permitting threshold for non-GHGs at a significant number of new and existing minor sources. While industry and States focus on challenging EPA's GHG regulations at stationary sources to avoid costly carbon capture and sequestration technology, the true costs of EPA's GHG permitting program could easily be the costs associated with installation of new scrubbers, baghouses and selective catalytic reduction technologies, where such capital investment easily could shut-down many small facilities. So while GHG permitting may have absolutely no impact on the earth's temperature and may actually cause more adverse climate change impact, the Tailoring Rule should result in a substantial reduction of non-GHG pollutants throughout the country by increasing the number of construction activities that would need NSR permitting for non-GHG pollutants.
PEGGY HATCH BIO

Governor Bobby Jindal appointed Peggy Hatch as Secretary of the Department of Environmental Quality effective January 15, 2010. Peggy most recently served as Assistant Secretary of the Office of Environmental Compliance, where she oversaw surveillance, emergency response, radiological services and enforcement activities in the department.

Peggy has worked for the state of Louisiana since 1985 and with DEQ since 1990 in a number of technical and management capacities including her time as Enforcement Division Administrator from 2002 through 2007.

Chairman Bryan W. Shaw

Dr. Bryan W. Shaw of Bryan was appointed to the Texas Commission on Environmental Quality by Gov. Rick Perry on Nov. 1, 2007. The Texas Senate confirmed his appointment on May 5, 2009 and he was appointed chairman on Sept. 10, 2009. His term will expire on Aug. 31, 2013.

Shaw is an associate professor in the Biological and Agricultural Engineering Department of Texas A&M University (TAMU) with many of his courses focused on air pollution engineering. The majority of his research at TAMU concentrates on air pollution, air pollution abatement, dispersion model development and emission factor development. Shaw was formerly associate director of the Center for Agricultural Air Quality Engineering and Science, and formerly served as Acting Lead Scientist for Air Quality and Special Assistant to the Chief of the U.S. Department of Agriculture Natural Resources Conservation Service.

Shaw is a member of the U.S. Environmental Protection Agency (EPA) Science Advisory Board (SAB) Committee on Integrated Nitrogen, and he served on the EPA SAB Environmental Engineering Committee and the Ad Hoc Panel for review of EPA's Risk and Technology Review Assessment Plan. Additionally, he is a member of the U.S. Department of Agriculture - Agricultural Air Quality Task Force. Since his appointment to the TCEQ, Shaw has served on the Texas Environmental Flows Advisory Group and as chair of the Texas Advisory Panel on Federal Environmental Regulations.

Shaw received a bachelor's and master's degree in agricultural engineering from TAMU and a doctorate degree in agricultural engineering from the University of Illinois at Urbana-Champaign.





Education and Honors

J.D., The University of Texas School of Law, 1970 Member, *Texas International Law*

Journal

B.A. (*with honors*), government, The University of Texas, 1967

Listed in *The Best Lawyers in* America, 1989 - 2010 and *Chambers* USA, 2003 - 2011

Recognized by *Chambers USA*, 2010 and 2011 as a "Star Performer" (Environment)

First woman to receive the Travis County Bar Association's Distinguished Lawyer Award, 2003

Recognized as a *Texas Super Lawyer*, 2003 - 2010, one of the "Top 50 Central and West Texas Super Lawyers," 2003 - 2005 and one of the "Top 50 Female Super Lawyers," 2003, 2004 and 2007

Named a "Go-To Lawyer" for Environmental Law by *Texas Lawyer*, 2007

Recognized in *The International* Who's Who of Business Lawyers, 2008

Court Admissions and Affiliations

State Bar of Texas, Environmental and Natural Resources Law Section United States Supreme Court

United States Court of Appeals for the Fifth Circuit

United States District Court for the Western District of Texas

Board Certified in Administrative Law by the Texas Board of Legal Specialization

Austin Commission on Electric Rates, former Chair

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Concentration

Permitting, acquisitions and enforcement under state and federal laws dealing with air, water and hazardous waste

Summary

Pam Giblin is a partner in the Austin office of Baker Botts. She has practiced environmental law since 1970 and has had extensive experience in advising clients on a broad array of environmental issues, particularly in the area of air quality.

Ms. Giblin serves as a member of the EPA's Clean Air Act Advisory Committee and is a member of the American College of Environmental Lawyers. Ms. Giblin is listed in the environmental law section of *The Best Lawyers in America*.

She is the first woman to receive the Distinguished Lawyer Award from the Travis County Bar Association. Ms. Giblin serves on the Seton Family of Hospitals Board of Trustees.

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Education
J.D., Suffolk University Law School, 1983
College of Arch. and Urban Planning, University of Michigan, 1978
B.S., Business Administration, University of South Carolina, 1977

Bar Admissions

- Massachusetts
- Texas

Court Admissions

U.S. District Court for

Michael J. Mazzone michael.mazzone@haynesboone.com

Michael Mazzone is licensed to practice in both Texas and Massachusetts as well as in all of the federal courts in Texas, the United States Court of Appeals for the Fifth Circuit, and the United States Supreme Court. He is Board Certified In Civil Trial Law and has tried numerous jury and non-jury cases In both state and federal court.

Michael frequently represents energy companies in environmental contamination, indemnity, and toxic tort cases. He also represents parties in construction litigation and arbitration.

Michael has also handled appeals in a number of reported cases including a takings case that reached the United States Supreme Court.

Michael is also an arbitrator and an advocate in arbitration matters. He has presided over numerous arbitration matters and, as a member of the American Arbitration Association's National Panel of Arbitrators, is regularly called on to preside over arbitrations.

Michael has given speeches and written papers on trial advocacy, arbitration, and litigation, and has also been a speaker at the AAA's National and Regional Panel Retreats, seminars providing training to AAA arbitrators.

For five years, Michael taught pre-trial litigation at the University of Houston Law School as an adjunct professor of law. He has served on the Editorial Board of the *Houston Lawyer* magazine, a publication of the Houston Bar Association.

Michael was born in Boston, Massachusetts. He received his undergraduate degree in Business Administration in 1977 from the University of South Carolina, attended graduate school at the University of Michigan, and obtained his law degree in 1983 from Suffolk University Law School in Boston, finishing in the top 10% of his class.

Recent Trials/Arbitrations

- Concepcion and Rosario Acosta, 5th Judicial District, Lea County, New Mexico: Represented a major energy company in lawsult by approximately 200 plaintiffs who claimed that a tank battery/oil storage facility in their neighborhood caused personal injuries and property damages. At trial, plaintiffs sought over \$54 million dollars for nine "trial plaintiffs." The jury returned a verdict for the company on all issues.
- Conroe Express Concrete, 410th Judicial District Court, Montgomery County, Texas: Represented a national homebuilder in a breach of contract and warranty lawsuit against concrete supplier. Foundations of a number of homes built with the supplied concrete failed. The jury returned a verdict for the builder against the concrete supplier and the court entered a judgment on the verdict.

the Eastern District of Texas
U.S. District Court for the Northern District of Texas
U.S. District Court for the Southern District

- of Texas • U.S. District Court for
- the Western District

of Texas

- EDI Architecture, Inc., International Arbitration Association: Represented architectural firm in dispute with contractor over project in Luanda, Angola. Resolved by settlement prior to hearing.
- Darr Angell, U. S. District Court for the District of New Mexico: Represented a major energy company in lawsuit by a landowner for environmental damages and injunctive relief. Claims against the company were dismissed (with prejudice) after opening statements and cross-examination of Plaintiff's witnesses. No money was paid.
- Jeanie R. Carter, 214th Judicial District Court, Nueces County, Texas: Represented a major energy company in lawsuit brought by approximately 40 families who claimed that a refinery waste disposal pit in their neighborhood caused personal injuries and property damages. Before trial, plaintiffs dropped their personal injury claims. At trial, plaintiffs sought in excess of \$170 million dollars for six "trial plaintiff" families. The jury returned a verdict for the company, and the untried claims of the remaining plaintiff families were settled for a token sum.

Recent Publications/Presentations

- Co-Presenter, "Lessons from the Trenches (con't): Trying Cancer Cluster Cases as Community Exposure Cases," Toxic Tort Litigation Conference, Law Seminars International, May 5-6, 2011.
- "American Law and Jurisprudence on Fracing," with Thomas Kurth, Mary Mendoza, and Christopher Kulander, *Rocky Mountain Mineral Law Foundation Journal*, Vol. 47, No. 2, 2010.
- "Hydraulic Fracturing The Legal Issues," Texas Environmental Law Journal's First Annual Symposium: The Legal and Environmental Impacts of Extracting Gas from Shale, October 29, 2010, Austin, Texas.
- "Hydraulic Fracturing The Legal Issues," 3rd Annual Unconventional Gas International Conference, October 5-7, 2010, Fort Worth, Texas.
- "Current Operating Regulations and Future Trends," ALM's 9th Annual Gas Shales Summit, June 2-3, 2010, Houston, Texas.
- "Assessing the Claims Asserted in the Global Warming Debate," presented to the Emerson Unitarian Universalist Church, January 10, 2010.
- "Asserting Contrary Policy Arguments in 'Public Policy' Litigation," *Trials* and *Tribulations*, newsletter of DRI Trial Tactics Committee, Spring 2009 (co-author)
- "Climate Change Risk," 80th Annual Meeting, New Mexico Oil & Gas Association, Santa Fe, NM, October 2008
- "Actions Reduce Climate Change Risks," The American Oil & Gas Reporter, September 2008.
- "Climate Change," SPE-Hobbs Section and SPE-Environmental Study Group of Midland, Hobbs, NM, April 2008
- "Practical Issues in Commercial Arbitration Agreements," Fort Bend County Bar Association, October 2007 and Houston Bar Association, January 2007
- "Climate Change and the Law," 79th Annual Meeting, New Mexico Oil & Gas Association, Santa Fe, NM, October 2007

- "Standing in Environmental Property Damage Cases," Ethical Principles for Corporate Counsel, Houston, January 2006; Ch. 28 (Torts) of Vol. 46 (Environmental Law) of Texas Practice Series (West 2005) (co-author)
- "Prosecute, Never Defend How to Aggressively Handle Your Company's Matters," ACCA Houston Chapter - Summer Leadership Speaker Series, Houston, June 2003

Professional Recognition

• Recognized as a Super Lawyer - Civil Litigation Defense (2009-2010)

Memberships

- American Arbitration Association
- Defense Research Institute (DRI)
- Houston Bar Association
- New Mexico Oil & Gas Association
- State Bar of Texas
- Texas Independent Producers and Royalty Owners Association
- Texas Oll & Gas Association

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Education

- J.D., Vanderbilt University Law School, 2010, Executive Editor, Vanderbilt Journal of Entertainment and Technology Law; Journal of Entertainment and Technology Law Student Writing Award; Certificate of Specialization in Law and Business M.S.I.S., Information Studies with an Advanced Certificate In Preservation Administration, University of Texas at Austin, 2007 M.M., Musicology, University of Texas at Austin, 2005 B.M., Vocal Performance and German Studles, University of Alabama - Tuscaloosa, 2003,
- magna cum laude

Megan Bibb

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Megan Bibb is an associate in the Business Litigation Practice Group in the Houston office of Haynes and Boone, LLP.

Selected Publications

- "An Analysis of the Federal Disease Clusters Act: Pros, Cons, and Legal Implications," Co-author with Stan Perry, *Toxics Law Reporter, BNA Insight,* June 23, 2011.
- "House Bill Could Make Impairment of Mineral Estates a Compensable Regulatory Taking," Co-author with Liz Klingensmith, Energy Litigation News & Developments, American Bar Association Section of Litigation, April 5, 2011.
- "Proposed Legislation Would Repeal Tax Break for Costly Natural Gas Production," News and Developments, American Bar Association Section of Litigation, March 15, 2011.
- "Revving the U.S. Cleantech Policy Engine to Beat China," Cocontributor, presented at the Institute for Energy Law's 62nd Annual Oil and Gas Law Conference, February 2011.
- "Applying Old Theories to New Problems: How Adverse Possession Can Help Solve the Orphan Works Crisis," Note, 12 Vand. J. Ent. & Tech. L. 1 (2009), which won the *Journal of Entertainment and Technology Law* Student Writing Award.

Memberships

- American Bar Association
- Institute for Energy Law, Young Energy Professionals Committee Member



OILFIELD LITIGATION: "HOW THE GRINCH STOLE CHRISTMAS"

by

Michael J. Mazzone

and

Megan Bibb

Haynes and Boone, LLP www.haynesboone.com

23rd Annual Texas Environmental Superconference

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Oilfield Litigation: "How the Grinch Stole Christmas"

With oil and gas drilling comes both literal and figurative rumbling. The drilling, production, and transportation processes—from the fracing trucks' arrival at the well site to the disposal of used frac fluid—are loud, smelly, and potentially disruptive to others even if done perfectly. As urban drilling operations now occur more often in populous areas—particularly around the Marcellus and the Barnett Shales—the rumbling of litigation grows louder as well.¹ Some surface estate owners object to the commotion caused by urban drilling, and some are suing oil and gas companies alleging a variety of causes of action, including negligence, nuisance, and trespass.

Surface owners' complaints about noise, odors, and alleged water contamination are nothing new. Although one drilling technique in particular—hydraulic fracturing or "fracing"— has become the latest lightening rod for controversy related to oil and gas drilling, recent litigation attacks all aspects of oil and gas drilling, production, and transportation, not just fracing. The claims asserted in the current wave of litigation resemble those brought by surface owners' against oil and gas companies in the 1990s.²

This Article provides an overview of recent litigation concerning onshore oil and gas drilling, and explores the validity (or lack thereof) of the surface owner claims.

I. What's All the Grumbling About? Common Complaints Related to Oil and Gas Drilling

When it comes to urban drilling litigation, the names and jurisdictions change, but the complaints remain virtually the same. A family owns the surface estate of a tract of land. They live on the land. Under the land there is a valuable mineral estate. The family does not own the mineral estate. The mineral owner leases the minerals to an oil and gas company, and one or more wells are drilled on or near the land, and transportation and production facilities (tanks, compressors, pipelines, etc.) are built on or near the land. One day there is peace and quiet in a rural or suburban setting; the next day, there is industry. The landowners then complain about contamination, odors, noise, and excessive light.³ If there is litigation, the landowners ask for injunctions and/or monetary damages.⁴

A. Contamination

One of the chief complaints of surface owners is contamination of the air, water, and soil. Landowners seek retribution for the alleged contamination by asserting a variety of causes of action, including, but not limited to, negligence, gross negligence, trespass, and nuisance.⁵ When

¹ Ramit Plushnick-Masti and Michael Rubinkam, *Gas Drilling's Promise, Perils Rile Townsfolk*, AUSTIN AMERICAN STATESMAN, http://www.statesman.com/opinion/insight/gas-drillings-promise-perils-rile-townsfolk-1430553.html.

² See, e.g., Mitchell Energy Corp. v. Bartlett, 958 S.W.2d 430 (Tex. App.—Fort Worth 1997, no pet.).

³ See infra text accompanying notes

⁴ See infra text accompanying notes

⁵ See generally, e.g., Complaint, Harris v. Devon Energy Production, 4:10-CV-00708-ALM (N.D. Tex. April 8, 2011); Complaint, Scoma v. Chesapeake, No. 3:10-cv-01385-N, (N.D. Tex. Aug. 11, 2010); Complaint, Fiorentino, et. al. v Cabot Oil and Gas Corp, No. 3:09-cv-02284-JEJ, (M.D. Pa. May 17, 2010).

it comes to water, surface owners lament that nearby drilling has turned their water either an orange or yellow color, or that it contains gray sediment.⁶ They claim that the water tastes and smells bad, and in some cases has become flammable.⁷ Filed complaints contain a long list of chemicals alleged to have been found in their water wells: benzene, arsenic, lead, iron, potassium, zinc, ethyl benzene, toluene, barium, and even methane gas.⁸

With regard to the methane gas, the theory is that fracing releases underground methane gas, the gas migrates to groundwater aquifers, and gets into the landowners' water wells.⁹ The methane escapes the wells via home faucets, creating a fire hazard.¹⁰ Landowners complain that other chemicals, like benzene, are entering the water supply via above-ground contamination, e.g., from spills and improper disposal techniques.¹¹ Landowners claim that careless treatment of fracing fluids-the mixture of water, sand, and various chemicals that facilitates the breaking of the rock layer (shale) in which minerals are located—causes chemicals to enter groundwater aquifers and water wells,¹² Soil contamination claims are similar; when the companies spill fracing fluid, produced water and/or oil, the soil becomes contaminated.¹³

In cases complaining of air pollution, landowners contend that fumes from the dieselpowered engines are causing them to inhale large quantities of chemicals, like nitrogen oxides and carbon monoxide, on a daily basis.¹⁴ Additionally, landowners claim that fracing and drilling create particulate matter, like smog and dust. In at least one instance-the Parr case in Dallas—the landowners assert claims for assault and intentional infliction of emotional distress, because the "severe air pollution" they allege caused physical distress and injuries like tremors, confusion, irregular heartbeat, headaches, and rashes.¹⁵

Recent news stories indicate that the *Parr* case may be just the beginning of these kinds of claims. Other potential litigants across the country are threatening to sue after suffering nosebleeds and blackouts they believed to be caused by nearby oil and gas drilling.¹⁶

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⁶ See, Scoma Complaint, supra note 5: Harris Complaint, supra note 5.

⁷ See Scoma Complaint, supra note 5; Fiorentino Complaint, supra note 5.

⁸ Id.

⁹ See Fiorentino Complaint, supra note 5; see also Bryan Walsh, Another Fracking Mess for the Shale-Gas Industry, TIME (May 9, 2011), available at http://www.time.com/time/health/article/0,8599,2070533,00.html. ¹⁰ The Internet is littered with home movies of people setting their water on fire to demonstrate the combustibility of

tap water. http://www.youtube.com/watch?v=VEQMA0zwMM4;

http://www.youtube.com/watch?v=U01EK76Sy4Al; http://www.youtube.com/watch?v=TEtgvwllNpg.

¹¹ Scoma Complaint, supra note 5; Complaint, Berish, et. al v. Southwestern Energy Production Company,

^{3:2010}cy01981, (M.D. Pa, Sept. 22, 2010); Complaint, Mitchell v. Encana oil & Gas; Chesapeake, 3:10-cv-02555-L (N.D. Tex. April 25, 2011). ¹² Id.

¹³ Complaint, Rine v. Chesapeake Appalachia, LLC, Case No. 5:11-cv-00004-FPS, N.D. W.Va.(April 10, 2011); Petition, Ruggiero v. Aruba Petroleum, Inc., Cause No. CV-10-10-801 (Wise County, District Court, Oct. 18, 2010). ¹⁴ Petition, Parr v. Aruba Petroleum, Inc.; Ash Grove Resources, LLC; Encana Oil & Gas (USA), Inc.; Halliburton Company; Republic Energy Inc.; Ryder Scott Oil Company; Tejas Production Services, Inc.; Tejas Western Corp., No. 2011-01650-E, (Dallas County Court at Law, no. 5, March 16, 2011).

¹⁵ Id.

¹⁶ Gas Drilling's Promise, Perils Rile Townsfolk, supra note 1; John Colston, Lawsuit against Antero to be filed Thursday in Denver, GLENWOOD SPRINGS POST INDEPENDENT (March 22, 2011), available at http://www.postindependent.com/article/20110322/VALLEYNEWS/110329943.

B. Noise, Odors, and Light

Often going hand in hand with contamination claims are nuisance claims related to excessive noise, odor, and light. Surface owners claim that unpleasant odors, the pounding and grinding of the drilling equipment, and the constantly shining lights interfere with the use and enjoyment of their property.¹⁷ They believe that the production activities are abnormal, out of place in their current locations, and create harmful living conditions.¹⁸ As drilling activities occur more often in populous areas, the frequency of nuisance claims may also increase.

C. Breach of Contract

In addition to claims rooted in concerns about quality of life, landowners often assert breach of contract claims. The contracts involved are typically oil and gas leases or surface use agreements.¹⁹ In the *Ruggiero* case for example, the Ruggieros claim that by erecting a well within 300 feet of their home the operator violated a "Surface Use Agreement," under which they claimed the location of all wells would be mutually agreed upon by the parties.²⁰ Similarly, in the Fiorentino case, the landowners insist that Cabot Oil breached its oil and gas lease with the owners because it refused to take actions necessary to return groundwater to "pre-drilling condition."²¹

D. Other Potential Litigants

Surface owners are not the only ones suing oil and gas operators. Oil and gas companies need to be on the look out for lawsuits from the federal, state, and local governments. Often seeking injunctive relief and civil penalties, governmental entities are asserting claims similar to those asserted by landowners. For example, the Town of Dish recently sued a handful of oil and gas companies in Denton County, Texas for trespass and private and public nuisance.²² The petition complains that the companies have polluted the air with deleterious substances, odors and hydrocarbons, and that compressor stations emit excessive noise and light.²³ Although Dish appears to be the only municipality with pending litigation at this time, other state and local governments may also sue. Notably, reports indicate that the state of Maryland may sue Chesapeake Energy as a result of a recent spill into the Chesapeake Bay.²⁴

¹⁷ Ruggiero Petition, supra note 13; Petition, Dow, et. al. v. Atmos Energy Corp; Crosstex North Texas Gathering, L.P.; Enbridge Gather (North Texas) L.P.; Energy Transfer Fuel, L.P.; and Texas Midstream Gas Services, LLC; and Enterprise Texas Pipeline, LLC, No. 2011-30097-211 (Denton County, Tex. Feb. 28, 2011); Petition, Sciscoe v. Atmos Energy Corp; Crosstex North Texas Gathering, L.P.; Enbridge Gather (North Texas) L.P.; Energy Transfer Fuel, L.P.; and Texas Midstream Gas Services, LLC; and Enterprise Texas Pipeline, LLC, No. 2011-70084-431 (Denton County, Tex. Feb 28, 2011). ¹⁸ *Id*.

¹⁹ Ruggiero Petition, supra note 13; Fiorentino Complaint, supra note 5.

²⁰ Ruggiero Petition, supra note 13.

²¹ Fiorentino Complaint, supra note 5.

²² Petition, Town of Dish v. Atmos Energy Corp; Crosstex North Texas Gathering, L.P.; Enbridge Gather (North Texas) L.P.; Energy Transfer Fuel, L.P.; and Texas Midstream Gas Services, LLC; and Enterprise Texas Pipeline, *LLC*, Case no. 2011-40097-362 (Denton County, Tex. Feb 28, 2011). ²³ *Id*.

²⁴ Allison Grande, Maryland to Sue Chesapeake Energy Over Fracking Spill, Law360.com (May 2, 2011), http://www.law360.com/energy/articles/242734.

The Environmental Protection Agency ("EPA") has also crashed the fracing and drilling party. The EPA's now infamous suit against Range Resources was filed in the Northern District of Texas after Range failed to comply with an Emergency Administrative Order issued by the EPA.²⁵ The EPA issued the order after it discovered methane, ethane, propane, benzene, toluene, and hexane in water wells in Hood County, Texas.²⁶ In response to the order, Range was supposed to survey all of the private water wells within 3000 feet of its drilling tracts and public water supply wells.²⁷ Range disputes that its operations contaminate the water wells, and, after some testing, the Texas Railroad Commission sided with Range. This appears to be the only such case currently pending by the EPA, but it is certainly possible that the EPA could bring similar cases against more companies, should the EPA investigate water wells near other fracing or drilling sites.

II. The Validity of Claims

All in all, these claims seem to attack every aspect of oil and gas drilling, production, and transportation. Landowners do not like the trucks, the lights, the noise, the odors, or anything else associated with oil and gas drilling, production, and transportation. Essentially, it seems that they want oil companies to get off of their land, and move out of sight and out of mind.

A. The Mineral Estate Dominates

Unfortunately for surface owners, the law gives mineral estate owners and their lessees a significant amount of authority when it comes to exploring and producing minerals. When the mineral estate and surface estate are severed, absent language to the contrary in the deeds, the mineral estate is the dominant estate.²⁸ The mineral estate has an implied easement to use the surface in any way that is reasonably necessary for the exploration, drilling, production, transportation, and marketing of the minerals.²⁹ With that comes the right to choose the proper location for these activities, to construct roads or other necessary infrastructure, to cut down trees, and to use groundwater.³⁰

What does that mean for landowners' claims of nuisance, negligence, trespass, etc.? Basically, it means that unless the operator conducts operations in an unreasonable or negligent manner, or in violation of statutes or leases, the operator can do whatever it needs to do to extract oil and gas, no matter how much of a nuisance it may cause to surface owners.³¹ But there are limits to these rights, so it is necessary to explore where those boundaries are.

1. Reasonable Use

First and foremost, a mineral lessee needs to use the surface estate reasonably. Excessive use of the mineral estate that goes beyond this implied easement could give rise to a cause of

²⁵ Complaint, EPA v. Range Resources, No. 3:11-cv-00116-F (N.D. Tex., Jan 18, 2011).

²⁶ Id.

²⁷ Id.

²⁸ 1-2 Williams & Meyers, Oil and Gas Law § 218.

²⁹ Id.

³⁰ Id. ³¹ Id.

[&]quot; Id.

action in trespass or nuisance.³² The focus of the court's analysis will be on whether or not the offending use is "reasonably necessary" to develop the minerals. In general, this is a very broad standard, and it is relatively rare for a court to find that a lessee's activity was unreasonable.³³ Some examples of unreasonable activities include the construction of more roads than reasonably necessary, taking up more surface area than is needed, or taking water in excess of what the lessee could reasonably use.³⁴

Courts seem reluctant to find a nuisance due to noise, odors, or light. According to an early Texas case, if one purchases a "premises burdened with the terms of a mineral lease, he is in no position to complain of conditions produced...he is further presumed to have known that conditions would naturally arise during the drilling of said well which would make the use of the premises as a home disagreeable, inconvenient, and perhaps dangerous."³⁵ In short, the surface owner should have known what he was in for when he bought a property subject to a severed mineral estate. Drilling is not considered a nuisance per se.³⁶ Without proof of negligence, breach of contract, or breach of statutory duty, surface owners have a difficult time winning on a nuisance theory.

2. Accommodating Pre-Existing Uses

One limitation on oil and gas companies' reasonable use allowance is the accommodation doctrine, which exists in many states, including Texas, Colorado, West Virginia, and Arkansas.³⁷ The doctrine requires companies to accommodate an existing use of the surface estate. To win under the doctrine, the surface owner must demonstrate that: (1) the use was in existence prior to drilling activity; (2) the use will be substantially impaired; and (3) the company's use is not reasonably necessary because other alternatives exist.³⁸ Mere inconvenience to the surface owner is not enough; there has to a *substantial* impairment of the existing use.³⁹ Additionally, if the accommodation would prevent the full development of minerals or if any alternatives would be unreasonably expensive or burdensome, then the surface use must surrender to the mineral owner.⁴⁰ Surface owners have, however, prevailed over operators in cases involving pre-existing sprinkler systems and irrigation systems.⁴

3. Reasonable Care

Despite all the leeway granted to operators, they still must conduct their operations in a non-negligent manner. Companies must fulfill their basic duty to act as a reasonable and prudent operator. Some examples of negligent operations include:

³² Id.

³³ Id.

³⁴ Id

³⁵ Grimes v. Goodman Drilling, Co., 216 S.W.202 (Tex. Civ. App.-Fort Worth 1919, rehr'g denied). ³⁶ Id.

³⁷ 1-2 Williams & Meyers, Oil and Gas Law § 218.

 ³⁸ Getty Oil Co. v. Jones, 470 S.W.2d 618 (Tex. 1971).
 ³⁹ Davis v. Devon Energy Prod. Co., LP, 136 S.W.3d 419 (Tex. App.—Amarillo 2004).

⁴⁰ Vest v. Exxon Corp., 752 F.2d 959 (5th Cir. 1985).

⁴¹ Getty Oil, supra note 13; Flying Diamond Corp. v. Rust, 551 P.2d 509 (Utah 1976).

- Property damage caused by the operation of broken equipment,
- Allowing a salt water disposal pit to overflow,
- Failure to advise surface owner in advance of its plan to drill thereby denying the surface owner a chance to fence his livestock, and
- Failing to guard against the escape of gas from a well.⁴²

B. Contamination and Surface Damage

But the question remains: how do the contamination claims come out under these rules? While the answer varies depending on jurisdiction, the general rules are simple. If contamination occurs because of unreasonable or negligent use of the surface estate, then the operator could be liable for negligence, trespass, and perhaps nuisance. The surface owner might have a breach of contract claim if an oil and gas lease or a surface lease requires the operator to restore the land to pre-drilling condition. Operators also need to be cognizant of the relevant statutes, rules, and regulations, as violating any of those would potentially give rise to regulatory action, penalties, injunctions, or a finding of negligence *per se*.

C. What about the Neighbors?

While operators might have a lot of leeway when it comes to surface owners, the same cannot be said for neighbors. While there may be an implied easement or similar right to use the surface estate, there is no implied right to infringe upon neighboring property that does not sit on the mineral estate. A recent Texas case demonstrates this point. In *Natural Gas Pipeline Company of America v. Justiss*, a Texas Court of Appeals held that NGPC's compressor station constituted a nuisance to neighboring properties.⁴³ This means that when the person complaining is a neighbor or other third party, the dominance of the mineral estate over the surface estate does not protect the operator. So, although operators can engage in a reasonable and necessary amount of non-negligent disruption when it comes to surfaces on which they operate, the same cannot be said for neighboring surfaces.

III. Conclusion

Oil and gas drilling is now frequently occurring closer and closer to residential areas. As a result, there is a wave of litigation similar to that of the 1990s, asserting claims of nuisance, trespass, and negligence. Although fracing has received most of the media attention, recent litigation focuses not only on fracing, but also on all aspects of oil and gas drilling, production, and transportation. Landowners challenging drillers operating on their land will have a difficult time recovering on any of these claims, however, unless they can demonstrate that operators conducted activities negligently or unreasonably. The same cannot be said for government entities or neighboring landowners who are not subject to dominant estate of the operator. Urban drilling is not only going to be around for the foreseeable future, but also it is likely to increase. As a result, litigation will probably increase as well.

⁴² 1-2 Williams & Meyers, Oil and Gas Law § 218.

⁴³ No. 06-09-00047-CV (pet. granted). The case is currently pending before the Texas Supreme Court.

J. STEPHEN RAVEL

BIOGRAPHY

J. Stephen Ravel is Partner in Charge of the firm's Austin office and a member of the firm's Litigation, Business Reorganization and Bankruptcy, and Intellectual Property practice groups and brings to Kelly Hart & Hallman LLP almost 30 years of experience in handling the full gamut of business litigation matters at trial and on appeal. Mr. Ravel has worked on significant matters on both sides of the docket, including breach of contract/business torts, regulatory takings, lender liability/breach of trust matters, environmental matters, securities claims, insurance coverage/claims practices, Patent/trademark/trade secret/migrating employee engagements,



construction litigation, telecommunication/internet regulation, class actions, and challenges to administrative rules and other regulatory actions. He has been involved in a number of high technology matters. He often teams with the firm's administrative lawyers when regulatory matters progress to the courthouse.

Mr. Ravel has tried a number of cases relating to the limits of government power. He also has an established financial institutions practice in which he defends claims by borrowers and trust department customers that banks are liable to them pursuant to claims of oral commitment, control, duress, fraud, illegality, mistake, violation of duty of good faith and fair dealing, breach of fiduciary duty, usury and other evolving plaintiffs' theories. He has been involved in a number of bankruptcy reorganizations and state court receiverships. He also represents lenders and large syndicated credits and defends lenders in the fiduciary arena.

Mr. Ravel is a graduate of Tufts University, where he received his bachelor of arts, *magna cum laude*, in 1977. He received his juris doctor from the University of Texas School of Law in 1981. He has been recognized as a "Super Lawyer" in *Texas Monthly* magazine in 2005. Prior to and during his law school years, Mr. Ravel worked in television news at WNAC-TV, Boston and KTBC-TV, Austin. He is an instrument rated pilot, endorsed to fly technically advanced aircraft. Steve and his wife, Suzanne, are raising 14-year old twins, a boy and a girl. In his pro bono practice, Mr. Ravel seeks to obtain healthcare benefits for seriously ill individuals who have been denied coverage.

EDUCATION & HONORS

- Tufts University, B.A., magna cum laude, 1977
- University of Texas School of Law, J.D., 1981
- Honored as Super Lawyer by Texas Monthly magazine, 2005

ADMISSION & AFFILIATIONS

- Texas, 1981
- U.S. Supreme Court
- U.S. Court of Appeals, 4th Circuit
- U.S. Court of Appeals, 5th Circuit
- U.S. District Court, Western District of Texas
- U.S. District Court, Northern District of Texas
- U.S. District Court, Southern District of Texas
- U.S. District Court, Eastern District of Texas
- Chair, Banking Law Section, Travis County Bar Association, 1994
- Fellow, Texas Bar Foundation
- Master, Robert W. Calvert American Inns of Court

SIGNIFICANT MATTERS'

- Lead trial counsel in obtaining the largest government contracts judgment ever obtained against the State of Texas;case settled for \$170 million during the State's appeal
- Lead trial counsel in obtaining expedited, emergency force majeure relief related to a billion dollar construction project
- Successfully defended Bank Trust Department (and obtained reimbursement of a portion of the Bank's legal fees) where plaintiffs claimed that the trust's principal assets had been diminished by \$11 million during the Bank's tenure as trustee.
- Lead trial court counsel in obtaining Federal Court approval of an electric plant over environmental objections, successfully defended the approval on appeal to the Fifth Circuit
- Argued matter in Austin Court of Appeals where Court's opinion drastically reduced amount workers' compensation carriers are required to reimburse hospitals for extensive inpatient services. The ruling impacted approximately 2,000 cases with approximately \$400 million in controversy.
- Obtained a \$10 million recovery for major MCI subcontractor/administrative claimant on a expedited (10 weeks start to finish) basis
- Convinced environmental agency to withdraw, after trial and before decision, administrative rules that would have cost industry more than \$200 million in compliance costs
- Successfully defended the brand name of a service company against a permanent injunction and damage claim asserted by prior user claiming a likelihood of confusion
- Part of the team that recovered 65 cents on the dollar for a class defrauded in a foreign currency trading program

PUBLICATIONS & SPEECHES

- "Manifest Injustice That Cannot in Good Conscience be Tolerated," 18th Annual Advanced Bankruptcy Conference, Austin, Texas, November 18-19, 1999
- "Tejas Litigation: How to Sue the State and Win Under a Privatization Contract," 10th Annual Advanced Administrative Law Course, Austin, Texas, September 24-24, 1998

Hydraulic Fracturing 2011 – The Three Branches of Government and the Fourth Estate

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Kelly Hart & Hallman LLP

2011 Environmental Superconference

Introduction

The last six weeks of 2010 found fracking prominently displayed in the mainstream media. A November first-run episode of the original CSI television show set in Las Vegas was actually titled "Fracked." The crime fighters solved several murders against a back drop of carcinogenic and explosive water wells allegedly caused by the fracking process.

On the evening of December 7, 2010, Dallas area newscast viewers were treated to flame shooting out of a garden hose attached to a Parker County water well. However, the viewers (and perhaps even the television station) were not informed that the *other end* of the hose was *not* attached to the well's water, but instead to a properly operating vent designed to vent the gas which has been present in that area's water wells for many years. Not surprisingly, if the vent designed to remain open at all times is closed long enough, flames can sometimes be coaxed into appearing.

Unfortunately for you readers, the fracking related activities in the three branches of government has not been nearly so dramatic. In fact, it has been a little on the dry side.

I. THE LEGISLATIVE BRANCH

The public outcry for more stringent regulation over hydraulic fracturing (or "fracking") stems largely from allegations that fracking causes underground and surface water contamination, exacerbates water scarcity problems, and, more recently, even causes earthquakes. Despite these concerns – both rational and irrational – federal and state legislatures have primarily focused fracking regulation on (1) the injection of chemicals underground and (2) the disposal of large amounts of "flowback" water or waste water. Regulation of hydraulic fracturing operations is achieved primarily at the state level, thanks in large part to several key exemptions in federal legislation that would otherwise pertain to the fracking industry. This section addresses current and proposed legislation at the federal level and state level in Texas.

A. Federal Legislation

1. Current Federal Legislation

The two major pieces of Federal legislation used to regulate hydraulic fracturing include the Safe Drinking Water Act ("SDWA") and the Clean Water Act ("CWA"). The SDWA pertains to the underground injection of fluids, while the CWA pertains to the discharge of certain fluids into surface waters.

a. The Safe Drinking Water Act

The SDWA was originally passed in 1974, and has since been amended substantially.¹ The Act provides two distinct regulatory schemes for ensuring the safety of public drinking water. The first regulatory scheme regulates "public water systems" primarily through EPA-set regulations concerning maximum contaminant levels in drinking water, as well as monitoring and reporting requirements.²

More importantly for hydraulic fracturing purposes, the second regulatory scheme attempts to protect underground sources of drinking water by prohibiting the "underground injection" of fluids without a permit.³ Under the SDWA, the EPA establishes minimum requirements for state Underground Injection Control ("UIC") programs, including "inspection, monitoring, recordkeeping, and reporting requirements."⁴ Following EPA approval of a state's UIC program, the state has the primary enforcement responsibility for granting UIC permits and ensuring that underground injection of fluids does not endanger underground sources of drinking water ("USDW").⁵

Prior to the Eleventh Circuit's decision in *Legal Environmental Assistance Foundation*, *Inc. v. United States Environmental Protection Agency* ("*LEAF*"), the EPA's interpretation of "underground injection" did not include hydraulic fracturing operations.⁶ In *LEAF*, the plaintiff challenged the EPA's approval of the Alabama UIC program, arguing that the program was deficient for not regulating hydraulic fracturing associated with methane gas production.⁷ The EPA argued that "underground injection" did not include wells using hydraulic fracturing, because "the principal purpose of these wells is not the underground *emplacement* of fluids; their principal function is methane gas production."⁸ The Eleventh Circuit rejected the EPA's interpretation, arguing that the plain meaning of "underground injection," as well as the legislative history regarding the passage of the SDWA, "required the regulation of *all* underground injection activities," including hydraulic fracturing.⁹

¹ Safe Drinking Water Act, Pub. L. No. 93-523 § 2 (a), 88 Stat. 1660 (1974) (codified as 42 U.S.C. § 300f et seq. (West 2003)).

² Id; See 42 U.S.C. § 300g to 300g-9 (West 2011).

 $[\]frac{3}{10}$ Id. at § 300h(b)(1)(a).

⁴ Id. at § 300h(b)(1)(c). The EPA's regulations regarding state UIC programs can be found at 40 C.F.R. pt. 145 (2010).

⁵ Id. at § 300h(b)(1)(b).

⁶ 118 F.3d 1467 (11th Cir. 1997).

⁷ Id. at 1471.

⁸ *Id.* (emphasis added).

⁹ Id. at 1475.

Following the *LEAF* decision, the EPA began studying the process of hydraulic fracturing and its potential effects on drinking water sources. In 2003, the EPA entered into a *voluntary* agreement with BJ Services Co., Halliburton Energy Services, Inc. and Schlumberger Technology Corp. "to eliminate diesel fuel in hydraulic fracturing fluids injected into coalbed methane production wells in underground sources of drinking water."¹⁰ This voluntary agreement applies only to a small portion of hydraulic fracturing operations used for coalbed methane production directly in an underground source of drinking water – it does not apply to other hydraulic fracturing operations. In short succession, the EPA, in 2004, issued a final version of its study on the potential effects on USDWs caused by hydraulic fracturing operations in coalbed methane reservoirs.¹¹ In the 2004 study, the EPA determined "that the injection of hydraulic fracturing fluids into [coal bed methane] wells poses little or no threat to USDWs."¹² Despite this finding, the EPA did identify certain chemicals used in hydraulic fracturing, including diesel fuel, as "constituents of potential concern."¹³

In light of the *LEAF* decision and the EPA's 2004 study, Congress passed the Energy Policy Act of 2005. The Energy Policy Act, in part, amended the SDWA's definition of "underground injection" to exclude "the underground injection of fluids or propping agents (other than diesel fuels) pursuant to hydraulic fracturing operations."¹⁴ Thus, states no longer must require companies to seek permits before engaging in hydraulic fracturing operations (unless diesel fuels are used), as part of their UIC program. Neither the Energy Policy Act, the SDWA, nor EPA regulations shed any light on what constitutes "diesel fuel" for the purposes of the hydraulic fracturing has received growing scrutiny as public fears over underground water contamination have grown. In response, Federal legislation to remove the exclusion from the SDWA has been proposed in both the House and Senate, as discussed in greater detail in the following sections.

b. The Clean Water Act

A recent three-part exposé in the New York Times has sparked a public outcry for more stringent laws and regulations on the disposal of "flow-back water" or wastewater resulting from hydraulic fracturing operations.¹⁵ The controversial exposé focuses primarily on alleged contamination caused by the disposal of wastewater following fracking operations in the Marcellus Shale region, as well as the lack of governmental oversight and regulations regarding such practices. Currently, federal regulations concerning the disposal of flow-back water, other than by underground injection, are governed primarily under the Clean Water Act ("CWA").¹⁶

¹⁰ Memorandum of Agreement Between the U.S. Envt'l Prot. Agency and BJ Services Co., Halliburton Energy Services, Inc., and Schlumberger Tech. Corp. 2 (Dec. 12, 2003), *available at* http://www.epa.gov/ogwdw000/uic/pdf s/moa_uic_hyd-fract.pdf.

¹¹ See U.S. Envt'l Prot. Agency, EPA 816-R-04-003, Evaluation of Impacts to Underground Sources of Drinking Water by Hydraulic Fracturing of Coalbed Methane Reservoirs (June 2004).

 $^{^{12}}$ *Id* at ES-9.

 $^{^{13}}$ *Id.* at 7-3.

¹⁴ 42 U.S.C. § 300h(d)(1)(B)(ii) (West 2011).

 ¹⁵ Ian Urbina, Regulation Lax as Gas Wells' Tainted Water Hits Rivers, NY TIMES, Feb. 26, 2011, at A1; Ian Urbina, Wastewater Recycling No Cure-All in Gas Process, NY TIMES, March 1, 2011, at A1; Ian Urbina, Pressure Limits Efforts to Police Drilling for Gas, NY TIMES, March 3, 2011, at A1.
 ¹⁶ In many states, Texas included, fracking wastewater is disposed of primarily by injection into underground

¹⁰ In many states, Texas included, fracking wastewater is disposed of primarily by injection into underground storage wells below impermeable rock layers. However, the geological formations in the Marcellus Shale region

Public concern over contamination of drinking water from lakes, rivers, and other surface water sources may lead to more stringent enforcement by the EPA under authority granted by the CWA.

The Clean Water Act prohibits the discharge of pollutants by "point sources" into the "waters of the United States,"¹⁷ unless the discharge complies with other CWA provisions. Under the CWA, anyone seeking to discharge a pollutant into waters of the U.S. must first obtain a permit from either the EPA or an authorized state agency, according to the CWA established National Pollutant Discharge Elimination System ("NPDES") program.¹⁸ In establishing requirements for a NPDES permit, the CWA requires the EPA or permit writer to consider both the technology available to control pollutants ("technology-based effluent limits") and limits that will meet water quality standards ("water quality-based effluent limits").¹⁹ As with the SDWA, states are generally delegated primary enforcement authority with regards to the CWA, following the EPA's approval of the state program.²⁰ The indirect disposal of fracking wastewater through sewer systems or by trucks into publicly owned treatment works ("POTW"), that discharge directly into the waters of the U.S., is also regulated by the EPA under the CWA.²¹

c. Other Important Legislation and Exemptions

1) Resource Conservation and Recovery Act

The Resource Conservation and Recovery Act ("RCRA") empowers the EPA to regulate hazardous wastes according to stringent safeguards and waste management procedures as outlined in Subtitle C of the Act.²² Wastes from oil and gas exploration and production operations are exempt from the RCRA's federal hazardous waste regulation.²³ Thus, despite containing trace elements of toxic chemicals, that might otherwise subject fracking wastes to RCRA regulations, hydraulic fracturing operations remain unregulated under RCRA.

make underground disposal more difficult and there are fewer injection wells in this region. Thus, disposal of flowback-water from fracking operations into publicly owned treatment works and centralized waste treatment facilities in states such as New York and Pennsylvania is much more common than in other states.

¹⁷ The definition of "waters of the U.S." at 40 CFR 122.2 and 230.3(s) is a labyrinthine term that has been interpreted by the United States Supreme Court recently in *Solid Waste Agency of Northern Cook County v. U.S. Army Corps of Engineers*, 531 U.S. 159 (2001) and *Rapanos v. U. S.*, 547 U.S. 715 (2006) prompting additional proposed agency guidance, which can be found at http://water.epa.gov/lawsregs/guidance/wetlands/upload/wous_guidance_4-2011.pdf.

¹⁸ 33 U.S.C. § 1342(a) (West 2001).

¹⁹ *Id.* at § 1311; 40 C.F.R. 125.3(a) (2011).

²⁰ Texas has been delegated such authority. See 63 Fed. Reg. 51164 (Sept. 24, 1998).

²¹ Memo from James Hanlon, Director of EPA's Office of Wastewater Management, to the EPA Regions, *Natural Gas Drilling in the Marcellus Shale NPDES Program Frequently Asked Questions* (March 16, 2011), *available at* http://www.epa.gov/npdes/pubs/hydrofracturing_faq_memo.pdf.

²² Resource Conservation and Recovery Act of 1976, 42 U.S.C §§ 6921-6934 (West 2010).

²³ 42 U.S.C. 6921(b)(2)(A); see also Clarification of the Regulatory Determination for Wastes from the Exploration, Development and Production of Crude Oil, Natural Gas and Geothermal Energy, 58 Fed. Reg. 15,284, 15,284 (Mar. 22, 1993). The exemption for wastes from oil and gas E&P operations was originally a temporary exemption set by Congress in 1980. At Congress' request, the EPA conducted a study of oil and gas wastes and ultimately determined that regulation of oil and gas wastes was unwarranted under the RCRA.

2) CERCLA / Superfund

Unlike RCRA which was designed to *prevent* contamination from hazardous wastes, the Comprehensive Environmental Response Compensation and Liability Act ("CERCLA" or as its more commonly known, "Superfund") is a retrospective law designed to provide for the clean up of historic contamination by hazardous substances.²⁴ CERCLA authorizes state or federal government authorities to clean up contaminated sites. Responsible private parties may also clean up contaminated sites voluntarily or by government order.²⁵ CERCLA establishes a "Superfund" to finance government remedial actions. CERCLA also provides a scheme for federal and state governments, as well as certain private parties, to bring suit to hold "potentially responsible parties" ("PRPs") liable for the "release or threatened release" of a "hazardous substance."²⁶ Once a possible contamination site is located, section 104(e) of CERCLA grants the EPA broad authority to investigate the site and any alleged PRP.²⁷ Following an investigation, CERCLA section 106 authorizes the EPA to order a PRP to undertake certain remedial actions.²⁸

In defining "hazardous substance" for determining PRP liability, CERCLA excludes from the definition "petroleum, including crude oil… natural gas, [and] natural gas liquids…."²⁹ The "petroleum exclusion" provides another important exemption from federal regulation for the oil and gas industry. However, because hydraulic fracturing fluids contain non "petroleum" substances, the EPA may have authority under CERCLA to impose remedial orders on operators for contamination allegedly caused by fracking fluids.³⁰ Recently the EPA used its authority under CERCLA section 104(e) to investigate allegations of contamination from hydraulic fracturing operations in the Pavilion, Wyoming area.³¹ Although the EPA "has not reached any conclusions about how constituents of concern are occurring in domestic wells"³² in this area, the investigation shows that EPA considers CERCLA authority for it to at least investigate alleged contamination from hydraulic fracturing activities.

2. Proposed Legislation: The FRAC Act

Environmental groups have been lobbying Congress to repeal the SDWA's hydraulic fracturing exception since the Energy Policy Act passed in 2005. With TV shows, documentaries, and newspaper articles beginning to dramatize the potential harms of fracking in the last few years, the push for federal regulation of fracking has expanded at the grassroots level. As local concerned citizens contact their elected public officials about alleged contaminated water wells and the like, the public outcry has not fallen on deaf ears. The Fracturing Responsibility and Awareness of Chemicals Act of 2011, conveniently and

²⁴ CERCLA, 42 U.S.C. § 9601 (West 2005).

²⁵ 42 U.S.C. § 9606(a) (West 2005).

²⁶ *Id*; 42 U.S.C. § 9601(14), (22) (West 2005).

²⁷ 42 U.S.C. § 9604(e) (West 2005).

²⁸ 42 U.S.C. § 9606(a) (West 2005).

²⁹ 42 U.S.C. § 9601(14) (West 2005).

³⁰ John C. Martin, et al., *Fractured Fairy Tales: The Context and Regulatory Constraints for Hydraulic Fracturing*, ROCKY MTN. MIN. L. FOUND. Paper No. 3 at 8 (2010). ³¹ *Id.*

³² U.S. Envt'l Prot. Agency, *Expanded Site Investigation - Analytical Results Report, Pavillion Area Groundwater Investigation, Pavillion, Fremont County, Wyoming,* dated August 30, 2010, at 38, http://www.epa.gov/region8/superfund/wy/pavillion/PavillionAnalyticalResultsReport.pdf.

appropriately shortened to the FRAC Act, was recently proposed in both the U.S. House³³ and Senate.³⁴

The FRAC Act would impose federal regulation on hydraulic fracturing operations in two ways: (1) the Act would repeal the SDWA's current fracking exception; and (2) require fracking operators to disclose hydraulic fracturing chemicals. Both the House and Senate bills propose removing the fracking exception and modifying the SDWA's definition of "underground injection" to include "the underground injection of fluids or propping agents pursuant to hydraulic fracturing operations related to oil, gas, or geothermal production activities."³⁵ If the bills pass, the EPA would have to promulgate "inspection, monitoring, recordkeeping, and reporting requirements" for fracking operations.³⁶ Moreover, state UIC programs, not currently requiring operators to seek a UIC permit prior to fracking, would have to modify their UIC program and seek EPA approval.³⁷ Consequently, all oil and gas operators, intending to use hydraulic fracturing techniques, would have to first obtain a UIC permit by showing that the underground injection of fracking fluids would not endanger underground sources of drinking water.

The proposed bills would also amend the SDWA to require the disclosure of hydraulic fracturing chemicals.³⁸ Prior to conducting any fracking operations and again within 30 days of completing operations, a company would be required to disclose "a list of chemicals intended for use... including identification of chemical constituents of mixtures... material safety data sheets when available, and the anticipated volume of each chemical."³⁹ The FRAC Act would require the disclosure to be made to the state (or the Administrator if the EPA has primary enforcement responsibility in the state) and would require the state to make the disclosure available to the public, "including posting the information on an appropriate Internet Website."⁴⁰ The bills would further require:

Whenever the State or the Administrator, or a treating physician or nurse, determines that a medical emergency exists and the proprietary chemical formula of a chemical used in hydraulic fracturing operations is necessary for medical treatment, the person conducting the hydraulic operations shall, upon request, immediately disclose the proprietary chemical formulas or the specific chemical identity of a trade secret chemical to the State, the Administrator, or the treating physician...⁴¹

³³ FRAC Act, H.R. 1084, 112th Cong. (2011). The House bill is sponsored by Rep. Diana DeGette (D-CO) and currently has 37 co-sponsors. As of June 21, 2011, the last major action was referral to the House Subcommittee on Environment and the Economy (March 21, 2011).

³⁴ FRAC Act, S. 587, 112th Cong. (2011). The Senate bill is sponsored by Sen. Robert Casey, Jr. (D-PA) and currently has 7 co-sponsors. The bill was referred to the Senate Committee on Environment and Public Works. Hearings were held on the bill with the Subcommittee on Water and Wildlife (April 12, 2011).

³⁵ FRAC Act, H.R. 1084, 112th Cong. § 2(a) (2011); FRAC Act, S. 587, 112th Cong. § 2(a) (2011).

³⁶ 42 U.S.C. § 300h(b)(1)(c).

³⁷ *Id.* at § 300h(b)(1)(b).

³⁸ FRAC Act, H.R. 1084, 112th Cong. § 2(b) (2011); FRAC Act, S. 587, 112th Cong. § 2(b) (2011).

³⁹ Id.

⁴⁰ Id.

⁴¹ Id.

The additional disclosures in medical emergency situations would be required regardless of whether a confidentiality agreement has been reached.⁴² However, the FRAC Act explicitly states that it would "not authorize the State (or the Administrator) to require the public disclosure of proprietary chemical formulas."⁴³

The addition of disclosure mandates is particularly troubling for some drilling companies, fearful that disclosure requirements could force them to reveal valuable trade secret information. Pursuant to its congressionally mandated study of the impacts of hydraulic fracturing, the EPA recently petitioned nine major drilling companies to disclose information regarding the chemicals used for fracking.⁴⁴

B. Texas Legislation

In the most recent legislative session Texas became one of the first states to pass legislation requiring hydraulic fracturing operators to disclose to the public the chemicals used in their operations. The bill,⁴⁵ signed by Governor Perry on July 17, 2011, amends Chapter 91 of

(1) require an operator of a well on which a hydraulic fracturing treatment is performed to:

(A) complete the form posted on the hydraulic fracturing chemical registry Internet website of the Ground Water Protection Council and the Interstate Oil and Gas Compact Commission with regard to the well;

(i) the total volume of water used in the hydraulic fracturing treatment; and

(ii) each chemical ingredient that is subject to the requirements of 29 C.F.R. Section 1910.1200(g)(2), as provided by a service company or chemical supplier or by the operator, if the operator provides its own chemical ingredients;

(C) post the completed form described by Paragraph (A) on the website described by that paragraph or, if the website is discontinued or permanently inoperable, post the completed form on another publicly accessible Internet website specified by the commission;

(D) submit the completed form described by Paragraph (A) to the commission with the well completion report for the well; and

(E) in addition to the completed form specified in Paragraph (D), provide to the commission a list, to be made available on a publicly accessible website, of all other chemical ingredients not listed on the completed form that were intentionally included and used for the purpose of creating a hydraulic fracturing treatment for the well. The commission rule shall ensure that an operator, service company, or supplier is not responsible for disclosing ingredients that:

(i) were not purposely added to the hydraulic fracturing treatment;

(ii) occur incidentally or are otherwise unintentionally present in the treatment; or

(iii) in the case of the operator, are not disclosed to the operator by a service company or supplier. The commission rule shall not require that the ingredients be identified based on the additive in which they are found or that the concentration of such ingredients be provided;

(2) require a service company that performs a hydraulic fracturing treatment on a well or a supplier of an additive used in a hydraulic fracturing treatment on a well to provide the operator of the well with the information necessary for the operator to comply with Subdivision (1);

(3) prescribe a process by which an entity required to comply with Subdivision (1) or (2) may withhold and declare certain information as a trade secret for purposes of Section 552.110,

⁴² Id.

 $^{^{43}}$ Id

⁴⁴ The letter sent by the EPA to the nine hydraulic fracturing service providers is available on the EPA's website at http://water.epa.gov/type/groundwater/uic/class2/hydraulicfracturing/index.cfm.

⁴⁵ Act of May 29, 2011, 82nd Leg., R.S., H.B. 3328 (to be codified at TEX. NAT. RES. CODE ANN. § 91.851). The bill reads as follows:

DISCLOSURE OF COMPOSITION OF HYDRAULIC FRACTURING FLUIDS. (a) The commission by rule shall:

⁽B) include in the form completed under Paragraph (A):

the Natural Resources code. Specifically, the bill requires the Texas Railroad Commission (RRC) to promulgate rules to require fracking operators to complete forms detailing (1) the total amount of water used in the operations and (2) each chemical ingredient used in the operations.⁴⁶ Those forms must then be posted on a publicly available Internet website.⁴⁷ The new law also requires the RRC to prescribe a process by which operators "may withhold and declare certain information as a trade secret."⁴⁸ The law requires persons desiring to challenge a claim of entitlement to trade secret protection to file a challenge within two years of the operators filing a completion report with regards to the relevant well.⁴⁹ Finally, the law sets restrictions on the individuals that may challenge an operator's trade secret protection.⁵⁰

The bill, which includes trade secret protection, was heavily supported by a group of twelve gas producers, seeking to appease the public outcry for disclosure, while keeping their chemical formulas secret.⁵¹ Environmental groups pushing for disclosure laws for fracking operators argued that while the bill did not go far enough, it is at least a first step.⁵² Many states are likely to follow suit in passing disclosure laws.

II. THE EXECUTIVE BRANCH

The Executive Branch's instrument for dealing with hydraulic fracturing is, of course, the Environmental Protection Agency. The EPA has been busy issuing Emergency Administrative Orders, preparing for and beginning its mandated study on hydraulic fracturing, and preparing to promulgate rules applicable to the use of diesel fuel in hydraulic fracturing.

Government Code, including the identity and amount of the chemical ingredient used in a hydraulic fracturing treatment;

(4) require a person who desires to challenge a claim of entitlement to trade secret protection under Subdivision (3) to file the challenge not later than the second anniversary of the date the relevant well completion report is filed with the commission;

(5) limit the persons who may challenge a claim of entitlement to trade secret protection under Subdivision (3) to:

(A) the landowner on whose property the relevant well is located;

(B) a landowner who owns property adjacent to property described by Paragraph (A); or

(C) a department or agency of this state with jurisdiction over a matter to which the claimed trade secret is relevant;

(6) require, in the event of a trade secret challenge, that the commission promptly notify the service company performing the hydraulic fracturing treatment on the relevant well, the supplier of the additive or chemical ingredient for which the trade secret claim is made, or any other owner of the trade secret being challenged and provide the owner an opportunity to substantiate its trade secret claim; and

(7) prescribe a process, consistent with 29 C.F.R. Section 1910.1200, for an entity described by Subdivision (1) or (2) to provide information, including information that is a trade secret as defined by Appendix D to 29 C.F.R. Section 1910.1200, to a health professional or emergency responder who needs the information in accordance with Subsection (i) of that section.

(b) The protection and challenge of trade secrets under this section is governed by Chapter 552, Government Code.

⁴⁷ Id. ⁴⁸ Id.

⁴⁹ *Id*.

⁵⁰ Id.

⁵¹ Ben Casselman, 'Fracking' Disclosure to Rise, WALL ST. J., June 19, 2011, available at http://online.wsj.com/article/SB20001424052702304887904576395630839520062.html.

⁴⁶ Id.

This section provides background on EPA's authority under the Safe Drinking Water Act, the Emergency Administrative Orders issued thereunder, EPA's progress on the fracking study, and the planned rules for permitting the use of diesel in fracking operations.

A. EPA's Emergency Powers Under the Safe Drinking Water Act

Section 1431 of the Safe Drinking Water Act ("SDWA" or the "Act") gives the Environmental Protection Agency ("EPA") the power to issue emergency orders if a contaminant in an underground source of drinking water may present an imminent and substantial endangerment to the health of persons.⁵³

A much debated exception to the SDWA excludes the underground injection of fluids (other than diesel fuels) pursuant to hydraulic fracturing operations related to oil, gas, or geothermal production activities from the definition of the term "underground injection" – thereby virtually excluding fracking activities from regulation pursuant to the SDWA.⁵⁴ However, Section 1431 of the Act gives the EPA its emergency powers "Notwithstanding any other provision of this subchapter," meaning that a violation of the statute or any regulations promulgated thereunder is not required for EPA to exercise its emergency powers.

B. <u>Review of Emergency Administrative Orders Issued Under the SDWA</u>

Section 1448 prescribes the mechanisms for obtaining any review of agency actions.⁵⁵ This section provides that "any other *final action* of the Administrator under this chapter may be filed in the circuit in which the petitioner resides or transacts business which is directly affected by the action."⁵⁶ It further provides that, "Action of the Administrator with respect to which review could have been obtained [in the court of appeals] under this subsection *shall not be subject to judicial review* in any civil or criminal proceeding for enforcement or in any civil action to enjoin enforcement."⁵⁷ Therefore, review of *final* actions in which the court of appeals has jurisdiction precludes jurisdiction in district court.

The applicable standard of review of a final agency action is whether the EPA's action was "arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law."⁵⁸ However, when EPA brings an enforcement action in district court, it has the burden of proof by a preponderance of the evidence.

An important case interpreting a provision of the Clean Air Act ("CAA") similar to Section 1431 of the SDWA held that the CAA provision is unconstitutional and that the order issued thereunder was not a final agency action.⁵⁹ In that case, the EPA issued an administrative compliance order ("ACO") to the Tennessee Valley Authority ("TVA") under Section

⁵³ 42 U.S.C. § 300i(a) (West 2003).

⁵⁴ 42 U.S.C. § 300h(d)(1)(B) (West 2011).

⁵⁵ 42 U.S.C. § 300j-7 (West 2003).

⁵⁶ 42 U.S.C. § 300j-7(a)(2) (West 2003) (emphasis added).

⁵⁷ 42 U.S.C. § 300j-7(a) (West 2003) (emphasis added).

⁵⁸ 5 U.S.C. § 706(2)(A).

⁵⁹ Tennessee Valley Auth. v. Whitman, 336 F.3d 1236, 1239 (11th Cir. 2003).

113(a)(1)(A) of the CAA⁶⁰ alleging that TVA had modified a number of its coal-fired electric power plants without first obtaining a permit.⁶¹

However, the Eleventh Circuit described this statutory scheme "in which the head of an executive branch agency has the power to issue an order that has the status of law after finding 'on the basis of any information available,' that a CAA violation has been committed," as "*repugnant to the Due Process Clause of the Fifth Amendment*."⁶² This is because noncompliance with an order "automatically triggers civil and criminal penalties," such that respondents "never get an opportunity to argue, before a neutral tribunal" that they did not violate the CAA provision or regulation at issue.⁶³ Rather, "[t]he EPA is the ultimate arbiter of guilt or innocence, and the courts are relegated to a forum that conducts a proceeding, akin to a show-cause hearing, on the issue of whether an EPA order has been flouted."⁶⁴ Therefore, EPA "can always avoid the arduous task of proving [a] violation in court," "simply by issu[ing] an ACO based upon 'any information."⁶⁵

The Eleventh Circuit summarizes its holding as follows:

We hold that we lack jurisdiction to review the ACO because it does not constitute "final" agency action. Although the CAA empowers the EPA Administrator to issue ACOs that have the status of law, we believe that the statutory scheme is unconstitutional to the extent that severe civil and criminal penalties can be imposed for noncompliance with the terms of an ACO. Accordingly, ACOs are legally inconsequential and do not constitute final agency action. We therefore decline to assert jurisdiction over TVA's petition for review pursuant to 42 U.S.C. § 7607(b)(1). The EPA must prove the existence of a CAA violation in district court; until then, TVA is free to ignore the ACO without risking the imposition of penalties for noncompliance with its terms.⁶⁶

C. The Range Resources Case in Texas

1. EPA Issues an Emergency Administrative Order to Range

On December 7, 2010 the Environmental Protection Agency issued an Emergency Administrative Order pursuant to Section 1431 of the Act to Range Resources Corporation and Range Production Company (together, "Range"). The EPA Order contains forty-one findings of fact, which include: (1) that certain contaminants in the two domestic water wells "may present an imminent and substantial endangerment to the health of persons;" (2) that the presence of one of these contaminants in the domestic water wells is "likely to be due to impacts from gas development and production activities in the area;" and (3) that two gas wells operated by Range "are the only gas production facilities within approximately 2,000 feet of the domestic wells." Emergency Administrative Order, Docket No. SDWA-06-2010-1208 (hereafter, "Order") at ¶¶

⁶⁰ 42 U.S.C. § 7413(a)(1)(A) (2003).

⁶¹ TVA, 336 F.3d at 1244.

⁶² Id. at 1258 (emphasis added).

 $^{^{63}}$ *Id.* at 1243.

⁶⁴ Id.

⁶⁵ *Id.* at 1250.

⁶⁶ *Id.* at 1239-40.

11, 27, 41. It is interesting to note that the Order does not contain a finding of fact that Range actually caused or contributed to the alleged contamination of the domestic water wells or to the alleged endangerment. Instead, EPA includes that assertion as a *conclusion of law* in paragraph 46 of the Order. The Order specifically requires Range to:

- A. Provide, within forty-eight hours of receipt of the Order, replacement potable water supplies for the consumers of water from the domestic water wells;
- B. Install, within forty-eight hours of receipt of the Order, explosivity meters in the dwellings served by the domestic water wells;
- C. Submit, within five days of receipt of the Order, a survey listing and identifying the location description of all private water wells within 3,000 feet of the wellbore track of one of Range's gas wells and all of the Lake Country Acres⁶⁷ public water supply system wells along with a plan to sample those wells to determine whether they are contaminated;
- D. Submit, within fourteen days of receipt of the Order, a plan to conduct soil gas surveys and indoor air concentration analyses of the properties and dwellings served by the domestic water wells; and
- E. Develop and submit, within sixty days of receipt of the Order, a plan to: (i) identify gas flow pathways to the Trinity Aquifer; (ii) eliminate gas flow to the aquifer if possible; and (iii) remediate areas of the aquifer that are contaminated.⁶⁸

Range was not provided notice or an opportunity for a hearing before the Order was issued requiring the above actions.

2. The RRC Called Hearing and Resulting Discovery Litigation

On December 8, 2010 – the day after the EPA issued its Emergency Order to Range – the Texas Railroad Commission ("RRC") set a hearing "to consider whether the operation of the [Range gas wells] is causing or contributing to contamination of certain domestic water wells in Parker County, Texas and/or whether there is an alternative cause or contributor to any such contamination." RRC Order Calling Hearing, Oil and Gas Docket No. 7B-0268629 (hereafter, "RRC Order") at 1-2. In the RRC Order, the Commission ordered Range to appear at the hearing to present evidence, and "encourage[d] the participation of EPA in this hearing and presentation by EPA of evidence in its possession supporting findings of fact and conclusions of law in the Emergency Administrative Order."

To discover the basis of the allegations in EPA's Order, Range obtained deposition commissions from the RRC for the EPA personnel responsible for preparing the Order. After the EPA refused to allow its personnel to testify or to produce documents and made it known that it would not participate in the RRC hearing to defend its Order, Range filed suit against EPA under the Administrative Procedure Act ("APA") challenging its final decision to refuse to allow its employees to appear for deposition and to produce documents in response to subpoenas issued

⁶⁷ "Lake Country Acres" is the subdivision wherein the domestic water wells are located.

⁶⁸ Order at ¶ 50.

⁶⁹ RRC Order at 3.

by the RRC and immediately after filed a Motion to Compel deposition testimony and document production.⁷⁰

The District Court hearing on Range's Motion to Compel was held on January 18, 2011. Although Judge Yeakel did not order all four depositions requested by Range in its Motion to Compel, he did grant one oral deposition, in the nature of a Federal Rule of Civil Procedure 30(b)(6) deposition, of one person designated by EPA about information relevant to the issuance of its Emergency Administrative Order and the administrative record on which it was based.⁷¹

The RRC hearing was held on January 19, 2011. Range presented its case at the RRC hearing arguing that there exists no evidence that Range's operations at its gas wells caused or contributed to the issues with the domestic water wells in Parker County. Neither EPA nor the owners of the Parker County domestic water wells showed up at the RRC hearing. The Commission left open the record before it so that it could be supplemented with information obtained via the Motion to Compel filed in Federal District Court.

The deposition of Mr. John Blevins, Director of the Compliance Assurance and Enforcement Division of EPA Region 6, was taken on January 25, 2011. During the deposition, counsel for EPA refused to allow Mr. Blevins to answer any questions regarding the basis for EPA's conclusions of law – including the conclusion of law asserting that Range caused or contributed to the alleged contamination or endangerment. January 25, 2010 Deposition Transcript at 91:8-25. Mr. Blevins apparently could not have testified as to the technical issues concerning the alleged causation of the contamination in any case. Deposition Transcript at 99:16-24, 198:5-8, and 210:2-3. Mr. Blevins testified that he was not a part of the "core group" of EPA scientists involved in making that determination.

After the deposition of Mr. Blevins, Range supplemented the record at the RRC. On March 7, 2011 the RRC issued a proposal for decision ("PFD") finding that Range's operations have not caused or contributed to the contamination of either domestic water well. The PFD was revised on March 11 to make minor factual corrections and adopted by the Commission on March 22, 2011.

3. Range's Petition for Review in the Fifth Circuit

Although the EPA did bring an enforcement action in the United States District Court for the Northern District of Texas, to avoid waiving any other right to challenge the Order pursuant to the Act, Range filed a Petition for Review in the Fifth Circuit at the end of the 45 day period on January 20, 2011. This action was necessary because the Order issued by EPA states in Paragraph 70: "This Order *constitutes a final agency action* for purposes of SDWA § 1448, 42 U.S.C. § 300j-7." (emphasis added). In the Petition, Range asserts that the Order does not constitute a final agency action and that, in the enforcement action brought by EPA in district court, EPA has the burden of proving the essential elements of a claim under the SDWA and that Range has the right to assert any applicable defenses and constitutional challenges. Range asks that, after full briefing, the Fifth Circuit issue an opinion holding that the Order is not a final agency action and, thus, is not subject to review under Section 1448 of the Act. Range filed its

⁷⁰ See, Civil Action No. 1:11-CV-11 in the Western District of Texas, Austin Division, Docket No. 1 (Complaint) and Docket No. 4 (Motion to Compel).

⁷¹ See, Civil Action No. 1:11-CV-11, Docket No. 32.

Petitioner's Brief on March 22, EPA's response was filed on May 9, 2011, and Range's Reply was filed on May 26, 2011.

4. EPA Sues to Enforce Its Emergency Order

On January 18, 2011 EPA sued Range in the Northern District of Texas, Dallas Division to enforce its Order. In the enforcement action, EPA alleges that Range has violated provisions of the Order and seeks: (1) a permanent injunction requiring Range to comply with the Order; and (2) entry of a judgment against Range for civil penalties of up to \$16,500 for each day of each violation of the Order. U.S. v. Range Prod. Co. & Range Resources Corp., Civil Action No. 3:11-CV-00116-F, in the Northern District of Texas, Dallas Division, Docket No. 1. Range filed a Motion to Dismiss on March 21. In its motion, Range argues that the Order should not be considered "final" for purposes of an enforcement action and should be dismissed for lack of subject matter jurisdiction because the Order is not ripe for enforcement. Range argues, in the alternative, that EPA's complaint should be dismissed because EPA failed to state a claim by not pleading the requisite elements necessary to satisfy due process or facts necessary to state a claim for relief that is plausible on its face. EPA's Response to Range's Motion to Dismiss was filed on May 9, 2011.

The Northern District held a hearing on Range's Motion to Dismiss on June 14, 2011. The Court issued an Order on June 20 denying Range's motion without prejudice. Docket No. 19. The Court also, however, stayed the case awaiting a decision on the issues before the Fifth Circuit, and importantly, ruled that it would not award any daily civil penalties sought by EPA during the stay period.⁷²

D. The Region 8 Order

On December 16, 2010, less than 10 days after the Emergency Order was issued to Range, EPA Region 8 issued a similar Emergency Administrative Order to three operators: Samson Hydrocarbons Company⁷³ ("Samson"), Murphy Exploration & Production Company – USA ("Murphy"), Pioneer Natural Resources USA, Inc. ("Pioneer"). This order (the "Region 8 Order") alleges contamination in the East Poplar oilfield in Roosevelt County, Montana, which is within the boundaries of the Fort Peck Indian Reservation.⁷⁴ This area of Montana has been plagued with contamination for many years. Region 8 has previously issued four Emergency Orders in this field due to leaking oil wells, documented spills, and mismanagement of produced brine water.⁷⁵ Importantly, none of these previous orders involved hydraulic fracturing operations. However, the new Region 8 Order does mention "secondary recovery injection wells" which may refer to hydraulic fracturing operations.⁷⁶ All three respondents have filed Petitions for Review of the Region 8 Order in the Third Circuit Court of Appeals, however, none of the petitions or the summaries of the case, challenge the finality of the Order.⁷⁷

⁷² *Id.* at 20.

⁷³ Although Samson later became SGH Enterprises, Inc., for convenience, we will refer to the company as "Samson."

⁷⁴ Region 8 Order at 2.

⁷⁵ Id. at 5-6.

 $^{^{76}}$ *Id.* at 3.

⁷⁷ SGH Enterprises, Inc. f/k/a Samson Hydrocarbons Company v. U.S. EPA, Case No. 11-1027; Murphy Exploration & Production Company – USA v. U.S. EPA, Cause No. 11-1042; Pioneer Natural Resources USA, Inc. v. U.S. EPA, Cause No. 11-1044.

The three petitions for review have been consolidated. The EPA has received three extensions to file the Administrative Record, which is now due on August 15, 2011. Thus, the Region 6 Order in the Fifth Circuit case is fully briefed while the Region 8 Order remains stuck in neutral.

E. The EPA Fracking Study

The EPA will be conducting a new hydraulic fracturing study focusing on potential impacts of fracking in natural gas wells on drinking water sources. In 2004 the EPA published a study evaluating the impacts of hydraulic fracturing of coalbed methane ("CBM") wells on underground sources of drinking water ("USDWs").78 The EPA concluded that "the injection of hydraulic fracturing fluids into CBM wells poses little or no threat to USDWs," and that "[c]ontinued investigation under a Phase II study is not warranted at this time."⁷⁹ However, this 2004 study did not include hydraulic fracturing practices for petroleum-based oil and gas production because CBM wells tend to be shallower and closer to drinking water sources than oil and gas wells, EPA had not heard concerns from citizens regarding any other type of hydraulic fracturing at that time, and the litigation concerning hydraulic fracturing at that time involved CBM production, not oil and gas production.⁸⁰ EPA released a plan for the new study, which is now under review by the EPA's Science Advisory Board. In addition, EPA has identified case study locations in 5 major shale plays: Bakken Shale (Killdeer and Dunn Counties, ND); Barnett Shale (Wise and Denton Counties, TX); Marcellus Shale (Bradford and Susquehanna Counties, PA); Marcellus Shale (Washington County, PA); Raton Basin (Los Animas County, CO).⁸¹ Initial research results are expected by the end of 2012 and the agency hopes to have a final report in 2014.⁸² The results of this study may have an impact on the future of regulation of hydraulic fracturing pursuant to the Safe Drinking Water Act.

F. EPA's Plan to Promulgate Rules Governing the use of Diesel Fuels in Fracking Operations

The use of diesel fuels in hydraulic fracturing operations is *not* exempt from the underground injection control permitting requirements in the Safe Drinking Water Act. EPA now plans to promulgate rules governing the permitting of diesel use in hydraulic fracturing.⁸³ Since the carve out for the exemption was initiated, most operators have stopped using diesel altogether in their fracking operations. However, many believe these regulations could become the basis of regulating *all* fracking activities if Congress ever passes the FRAC Act removing the exemption. In addition, these regulations could serve as a model for state regulation of hydraulic

⁷⁸ Evaluation of Impacts to Underground Sources of Drinking Water by Hydraulic Fracturing of Coalbed Methane Reservoirs Study (2004), available at: http://water.epa.gov/type/groundwater/uic/class2/hydraulicfracturing/wells_coalbedmethanestudy.cfm (last visited July 15, 2011).

⁷⁹ Evaluation of Impacts to Underground Sources of Drinking Water by Hydraulic Fracturing of Coalbed Methane Reservoirs, Executive Summary at ES-16, available at: http://www.epa.gov/ogwdw/uic/pdfs/cbmstudy_attach_uic_exec_summ.pdf (last visited July 15, 2011).

⁸⁰ *Id.* at ES-7.

⁸¹ http://water.epa.gov/type/groundwater/uic/class2/hydraulicfracturing/case_studies.cfm (last visited on July 15, 2011).

 ⁸² See http://water.epa.gov/type/groundwater/uic/class2/hydraulicfracturing/index.cfm (last visited on July 15, 2011).
 ⁸³ See presentation materials from June 15, 2011 EPA webinar: "EPA's Approach to Developing Permitting Guidance for Oil and Gas Hydraulic Fracturing Activities Using Diesel Fuels."

fracturing activities; however, the industry is likely to fight such regulation based on preemption arguments.

III. THE JUDICIAL BRANCH

At least Texas cases each involve contamination of water wells allegedly caused by exploration and production activities. Hydraulic fracturing is specifically mentioned in each complaint. All plaintiffs allege at least the three causes of action of nuisance, trespass, and negligence and also request punitive damages.

Scoma v. Chesapeake Energy Corp., et al., Civil Action No. 3:10-CV-1385-N, In A. the Northern District of Texas

Jim and Linda Scoma originally filed their petition in Johnson County district court; however, the defendants removed the case to the Northern District of Texas, Dallas Division. Plaintiffs have not contested removal and filed their Second Amended Complaint on August 8, 2010 requesting a jury trial and alleging that defendants' drilling activities (including hydraulic fracturing) contaminated their water well. Plaintiffs describe the effects of the contamination as an intermittent orange/yellow coloring of the water, bad taste, and foul odor. Plaintiffs tested their wells in 2008 and 2009 and allege that the results show an increase in the concentration of "harmful petroleum byproducts, such as benzene (a well-known cancer-causing agent), toluene, ethylbenzene, xylene, barium and iron."⁸⁴

Plaintiffs assert the causes of action of nuisance, trespass, and negligence. They also claim that the continuing tort doctrine tolls the statute of limitations for these causes of action. Id. at 4-5. The continuing tort doctrine has not been adopted by the Texas Supreme Court and courts of appeals have held that the doctrine does not apply to permanent injury to land.⁸⁵

Chesapeake Energy Corporation ("Chesapeake Energy Corp.") filed a Motion for Summary Judgment on May 10, 2011 claiming that: (1) defendant Chesapeake Energy Corp. is not a proper party to the suit because it does not own any mineral interest and did not drill the wells in question (defendant Chesapeake Exploration, L.L.C. is the lessee and defendant Chesapeake Operating, Inc. drilled the subject wells), (2) Plaintiffs' claims are barred by the two-year statute of limitations because they notified defendants of the issues more than two years prior to filing suit and because the continuing tort doctrine does not apply to their claims, (3) Plaintiffs' nuisance claims fail because Plaintiffs have not suffered actionable damages – their water testing shows that no exceedances of the maximum contaminant levels ("MCLs") established by the Texas Commission on Environmental Quality ("TCEQ") except for iron, which naturally exists at characteristically high levels in the Trinity aquifer where the water well is drilled and completed, and (4) Plaintiffs' trespass claim fails because defendants never did enter, and had no intent to enter, Plaintiffs' property and because Plaintiffs' suffered no injury for the reasons stated above.⁸⁶

⁸⁴ Second Amended Complaint, Cause No. 3:10-CV-01385-N, Docket No. 9 at 4.

⁸⁵ Markwardt v. Texas Industries, Inc., 325 S.W.3d 876, 893-94 (Tex. App.-Houston [14th Dist.] 2010, no pet.) (citing cases). ⁸⁶ Motion for Summary Judgment, Cause No. 3:10-CV-01385-N, Docket No. 42.

Plaintiffs filed an Emergency Motion to Stay the deadline for its response to defendants' Motion for Summary Judgment arguing that they need additional discovery in order to respond to the motion.⁸⁷ The Court granted Plaintiffs' motion such that the response to defendants' Motion for Summary Judgment is due on July 29, 2011.⁸⁸ Trial is currently scheduled for January 8, 2010.⁸⁹

B. *Mitchell v. Encana Oil & Gas (USA), Inc., et al.*, Civil Action No. 3:10-CV-02555-L, in the Northern District of Texas

Grace Mitchell filed her complaint with jury demand against Encana Oil & Gas (USA), Inc. ("Encana"), Chesapeake Operating, Inc. and Chesapeake Exploration, LLC (together, "Chesapeake" and collectively "Defendants") on December 15, 2010.⁹⁰ The complaint alleges that Mitchell's well water began to feel slick to the touch and give off an oily, gasoline-like odor in May 2010.⁹¹ The complaint also states that testing results indicated that the well water contained "various chemicals, including C-12-C28 hydrocarbons, similar to diesel fuel."⁹²

In addition to the nuisance, trespass and negligence claims common to all three Texas cases discussed herein, Mitchell also asserts a cause of action for fraud and fraudulent concealment alleging that "Defendants failed to warn Plaintiff of and have concealed the dangers of the diesel range organic discharges into ground water."⁹³ Mitchell also asserts a cause of action for strict liability due to ultra-hazardous and abnormally hazardous activities, which Mitchell identifies as "[p]etroleum drilling and hydraulic fracking bore holes."⁹⁴ Texas, however, does not recognize a cause of action of strict liability for ultrahazardous or abnormally hazardous activities.⁹⁵ Finally, Mitchell seeks medical monitoring damages.⁹⁶ Although in the "Damages" section of the complaint, the request reads like a cause of action for medical monitoring. The Western District of Texas has held that the Texas Supreme Court would not recognize a cause of action for medical monitoring; thus, it will be interesting to see how this part of the case is handled.⁹⁷

The Chesapeake defendants filed a Motion to Dismiss the Mitchell complaint.⁹⁸ Chesapeake argues that Mitchell's nuisance, trespass, and negligence claims should be dismissed because they fail Fed. R. Civ. P. 8's plausibility test, citing *Ashcroft v. Iqbal*, 129 S. Ct. 1937, 1949 (2009).⁹⁹ Chesapeake also argues that Mitchell's fraud/fraudulent concealment claims should be dismissed because they were not plead with specificity, do not contain facts showing that Chesapeake had a duty to disclose, and do not contain the necessary elements for a fraud by

⁸⁷ Emergency Motion to Stay, Cause No. 3:10-CV-1385-N, Docket No. 47.

⁸⁸ Order, Cause No. 3:10-CV-01385-N, Docket No. 56.

⁸⁹ Amended Scheduling Order, Cause No. 3:10-CV-01385-N, Docket No. 35.

⁹⁰ Original Complaint, Cause No. 3:10-CV-02555-L, Docket No. 1.

⁹¹ Docket No. 1 at 4.

⁹² Id.

⁹³ *Id.* at 7.

⁹⁴ Id.

⁹⁵ Prather v. Brandt, 981 S.W.2d 801, 804 (Tex. App.—Houston [1st Dist.] 1998, pet. denied).

⁹⁶ Docket No. 1 at 8-9.

⁹⁷ Norwood v. Raytheon Co., 414 F. Supp. 2d 659, 668 (W.D. Tex. 2006).

⁹⁸ Docket No. 7.

⁹⁹ Docket No. 7 at 3.

nondisclosure claim.¹⁰⁰ Finally, Chesapeake argues that Mitchell's strict liability claim should be dismissed because Texas does not recognize the abnormally dangerous activities doctrine as a basis for strict liability.¹⁰¹

Encana also filed a Partial Motion to Dismiss the fraud/fraudulent concealment claims and the strict liability claim for the same reasons set out in the Chesapeake brief.¹⁰²

In response to the defendants' motions to dismiss the fraud/fraudulent concealment claims and strict liability claims, Mitchell filed a First Amended Complaint withdrawing these claims.¹⁰³

A scheduling order has not yet been entered in this case.

C. Harris v. Devon Energy Production Company, L.P., Civil Action No. 4:10-CV-00708-MHS-ALM, in the Eastern District of Texas

The Harris' filed their complaint with jury demand against Devon Energy Production Company, L.P. ("Devon") on December 15, 2010 in the Northern District of Texas, Dallas Division. The case was later transferred to the Eastern District of Texas, Sherman Division. The complaint alleges that water from two wells on their property became contaminated with a gray sediment such that it was unusable in April 2008.¹⁰⁴

In addition to the nuisance, trespass, and negligence claims, the Harris' plead a fraud and fraudulent concealment action based on a failure to warn Plaintiffs of the dangers of fracking and the chemicals used in the process.¹⁰⁵ Devon moved to dismiss this cause of action based on the failure to plead the fraud allegation with particularity.¹⁰⁶ Devon also moved to dismiss the strict liability claim alleged by Plaintiffs, which also claims that "[p]etroleum drilling and hydraulic fracturing bore holes are ultra-hazardous and abnormally dangerous activities."107 The Complaint also contains a request for medical monitoring damages.¹⁰⁸

In response to Devon's motion to dismiss, the Harris' withdrew their strict liability claim and amended their complaint to allege additional facts in an attempt to meet the obligation to plead a proper fraud/fraudulent concealment claim.¹⁰⁹ After giving leave to the Harris' to amend their complaint, the court denied Devon's motion to dismiss.¹¹⁰ However, Devon then filed a Rule 12 Motion for Partial Dismissal for Failure to State a Claim ("MPD").¹¹¹ The MPD argued that the Harris' edits actually negated any cause of action for fraud because the alleged statements made regarding the substances found in the plaintiffs' well were made after the well

 $^{^{100}}_{101}$ *Id.* at 6-8. *Id.* at 10.

¹⁰² Docket No. 10.

¹⁰³ See Docket No. 16 at 1.

¹⁰⁴ Original Complaint, Cause No. 4:10-CV-00708-MHS-ALM, Docket No. 1 at 3.

¹⁰⁵ Id. at 7.

¹⁰⁶ Docket No. 7 at 3.

¹⁰⁷ Complaint, Docket No. 1 at 7; Partial Motion to Dismiss, Docket No. 7 at 7.

¹⁰⁸ Complaint, Docket No. 1 at 8.

¹⁰⁹ Docket No. 12.

¹¹⁰ Docket No. 23.

¹¹¹ Docket No. 25.

was contaminated – thus, no injury could have resulted from any reliance on the alleged representations.¹¹² The magistrate judge agreed with Devon and recommended that Devon's motion be granted, and the court adopted the recommendation granting Devon's motion.¹¹³ Trial is currently set for the Fall of 2010.¹¹⁴

D. Parr v. Aruba Petroleum, Inc., et al., No. 11-01650-E (County Court at Law No. 5 of Dallas County, filed March 8, 2011)

The Parr family (including a minor child) filed an Original Petition in the Dallas County Court at Law on March 8, 2011 against 9 companies alleging that the oil and gas exploration and service companies caused releases of various materials causing personal injury to the Parr family, injury to their animals and livestock, property damage, and emotional distress, among other damages.

Plaintiffs assert the causes of action of assault, intentional infliction of emotional distress, negligence, gross negligence, negligence per se, private nuisance, trespass (including subsurface trespass), and strict liability for abnormally dangerous activity. Similar to the other cases, the Parr family also claims that the continuing tort doctrine tolls the statute of limitations for these causes of action.

In addition to monetary damages, the Parr family also requests exemplary damages, remediation, injunctive relief "precluding current and future drilling and fracking activities near Plaintiffs' land," and medical monitoring damages.

E. Lipsky v. Range Production Company, et al., Cause No. CV-11-0798 (In the District Court of Parker County, Texas, 43rd Judicial District, filed June 20, 2011)

After initiating a firestorm of activity from the Environmental Protection Agency and the Texas Railroad Commission (described in detail below) stemming from alleged contamination of their water well, the Lipskys filed suit against Range Production Company and Range Resources Corporation (together, "Range") and against the developers of the subdivision in which the Lipsky's land is located ("Developers"). The Lipskys allege causes of action of breach of contract, violations of the Texas Deceptive Trade Practices Act, and tortitous interference with contract against the various Developers. Against Range, the Lipskys allege causes of action of negligence, gross negligence, and nuisance and request exemplary damages.

The Lipskys request a jury trial and request actual damages in the amount of \$4,500,000, mental anguish damages in the amount of \$2,000,000, and attorneys fees, among other requests.

Conclusion

Fracking will remain center stage in all three branches of government for the next twelve months, with the due process implications of EPA emergency orders probably providing the most legal "sex appeal." See you next year.

¹¹² Id. at 6-7.

¹¹³ Docket Nos. 44 & 49.
¹¹⁴ Scheduling Order, Docket No. 35.

PAT RANKIN

Pat Rankin is currently the Regional Judicial Officer and Cross-cutting Legal Issues Practice Group Leader in the Office of Regional Counsel for EPA Region 6. Since gaining employment with EPA in 1979, he has worked extensively on matters involving the Clean Water Act, Safe Drinking Water Act, Marine Protection, Research, and Sanctuaries Act, National Environmental Policy Act, Endangered Species Act, and National Historic Preservation Act. From 1974 to 1979, he was associated with the general practice firm of Dufour, Levy, Marx, Lucas & Osborne in New Orleans, Louisiana, representing a broad range of clients, including national and local public interest environmental groups.

Mr. Rankin earned his J.D. in 1974, a B.A. in English in 1970, and a B.F.A. in Studio Art in 1970, all from Tulane University. He is a member of the Louisiana State Bar Association.
David W. Cooney, Jr.

Mr. Cooney joined the Texas Railroad Commission's Office of General Counsel to practice Environmental Law in February 2000, after two years as a staff attorney at the Texas Commission on Environmental Quality where he served the Superfund, Voluntary Cleanup and Natural Resource Trustee programs, and helped write and shepherd to adoption the Texas Risk Reduction Program remediation rules.

Before moving to Austin, Mr. Cooney practiced insurance defense, civil, criminal defense and appellate law in Houston, where he received his JD from South Texas College of Law in December 1986. Mr. Cooney grew up in Houston and graduated from Texas Tech University with a B.A. in English in 1983.

Mr. Cooney has spoken at the Environmental Superconference in Austin, the Southwest Legal Foundation Oil and Gas Law and Taxation Institute, for the State Bar of Texas, and the Austin Bar Association. In 2006 and 2007, Mr. Cooney served on Phase II of the Interstate Oil and Gas Compact Commission Geological CO_2 Sequestration Task Force.

At the Railroad Commission, Mr. Cooney primarily serves the Oil and Gas Division Underground Injection Program, Site Remediation, Waste Management and Field Operations throughout the State, where he can finally put to good use his college days experience as roustabout and roughneck in the south Louisiana marsh. Recent projects of note include representing staff in hearings where staff opposed injection well and commercial oil and gas waste facility permit applications, and assisting with rule packages related to carbon sequestration and an amended Memorandum of Understanding with TCEQ.



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RAILROAD COMMISSION OF TEXAS OFFICE OF GENERAL COUNSEL

July 15, 2011

Greetings Superconference Attendees:

It is an honor to participate on the Oil & Gas Regulation, Enforcement, and Litigation panel; timely, too, because 2010 - 2011 has been active with legislation, regulation and litigation involving the Railroad Commission and oil and gas Environmental Law. This note refers to some of the highlights. Also, the attached items from the Railroad Commission website include a discussion of water use in the oil field, and various "Notices to Industry" the Commission released since September 2010.

Legislation

Hydraulic Fracturing

The 82^{nd} Legislature Regular Session, 2011, produced at least three noteworthy bills on oil and gas environmental law: HB 3328 relating to the disclosure of the composition of hydraulic fracturing fluids, SB 1134 relating to air permitting requirements for certain oil and gas facilities, and a portion of TCEQ's Sunset Bill, HB 2694, Sections 2.01 - 2.08, which transfers responsibility for issuing "water board" letters from the TCEQ to the Railroad Commission (RRC).

HB 3328 adds §91.851 to the Natural Resources Code and provides in pertinent part that RRC by rule must require operators involved with hydraulic fracturing to file with its well completion reports the completed form posted on the hydraulic fracturing chemical registry Internet website of the Ground Water Protection Council and the Interstate Oil and Gas Compact Commission listing chemical ingredients of hydraulic fracturing fluids subject to the requirements of 29 C.F.R. Section 1910.1200(g)(2), related to hazard Communication, and requiring the operator to post the completed form on that website. The RRC must also by rule require operators to file with the RRC a list, to be made available on a publicly accessible website, of all other chemical ingredients not listed in the form that were intentionally included and used for the purpose of hydraulic fracturing a well. The RRC must also establish a process for operators to assert trade secret privilege for chemical ingredients of hydraulic fracturing fluids, and a process for providing notice of challenges to the assertion of the trade secret privilege.

The Commissioners have begun the process of initiating rule making to implement HB 3328. With the passage of HB 3328, Texas is one of the first – if not the first – state to pass a disclosure statute. Texas joins Alabama, Arkansas, Colorado, Maryland, Michigan, Montana, Ohio, Oklahoma, Pennsylvania and Wyoming, which have adopted or are considering hydraulic fracturing fluid disclosure regulation. The Railroad Commission home page provides a link to Frac Focus, the hydraulic fracturing chemical registry website, a joint project of the Ground Water Protection Council and the Interstate Oil and Gas Compact Commission, at <u>http://fracfocus.org/</u>.

Air Permitting in the Oil Field

SB 1134 amends Subchapter C, Chapter 382, Health and Safety Code, by adding §382.051961 related to air permits for certain oil and gas facilities, §382.051962 related to certain oil and gas facility authorizations for planned maintenance, start-up or shutdown activities, 382.051963 related to the amendment of certain oil and gas facility permits, and 382.051964, related to the aggregation of facilities. Generally, SB 1134 establishes procedural and technical parameters on new permits by rule, standard permits and aggregation of facilities that belong to Standard Industrial Classification Codes 1311 (Crude Petroleum and Natural Gas), 1321 (Natural Gas Liquids), 4612 (Crude Petroleum Pipelines), 4613 (Refined Petroleum Pipelines), 4922 (Natural Gas Transmission), and 4923 (Natural Gas Transmission and Distribution). In the spring of 2011, TCEQ adopted new permit by rule and non rule standard permit regulations (TCEQ Rule project No. 2010-018-106-PR), related to oil and gas handling and production facilities in the Barnett Shale. TCEQs rule making was proposed with statewide applicability, but narrowed down to the twenty-three county Barnett Shale region at adoption. It will be interesting to see just how SB 1134 impacts future air-related rule makings for oil and gas facilities.

Water protection Letters

HB 2694, Sections 2.01 – 2.08 amends various provisions of the Natural Resources Code and the Water Code to accomplish the transfer from the TCEQ to the RRC the responsibility of issuing to oil well and injection well permit applicants letters advising of the depth to which surface casing must be placed for the protection of fresh groundwater. The bill authorizes the RRC to adopt rules regarding the depth of well casing necessary to meet the requirements of §91.011 of the Natural Resources Code, and adopts new Natural Resources Code §91.020, which authorizes the RRC to work cooperatively with other appropriate state agencies to study and evaluate electronic access to geologic data and surface casing depths necessary to protect usable groundwater in this state. One of the attached Notices to Industry addresses the transfer.

Regulation

Carbon Sequestration

Effective August 30, 2010, the RRC and TCEQ adopted a comprehensive amendment of the agencies' Memorandum of Understanding (MOU), replacing the previous substantive amendments of 1998, and addressing *inter alia* geologic storage of CO2, waste management, water protection and public health and safety.

Effective December 20, 2010, the RRC adopted 16 T.A.C. Ch. 5, relating to the injection and geologic storage of anthropogenic carbon dioxide in a reservoir that initially was or may be productive of oil, gas, or geothermal resources or a saline formation directly above or below that reservoir. Effective July 17, 2011, RRC adoptd a new Subchapter C in 16 T.A.C. Ch. 5, relating to Certification of Geologic Storage of Anthropogenic Carbon Dioxide Incidental to Enhanced Recovery of Oil, Gas, or Geothermal Resources.

TCEQ Air Rules

On January 28, 2011, the TCEQ adopted new Air Permit By Rule and non rule Standard Permit provisions for Oil and Gas Handling Facilities in the Barnett Shale area, which includes Archer, Bosque, Clay, Comanche, Cooke, Coryell, Dallas, Denton, Eastland, Ellis, Erath, Hill, Hood, Jack, Johnson, Montague, Palo Pinto, Parker, Shackelford, Stephens, Somervell, Tarrant, and Wise counties. 36 Tex. Reg. 943. Applicability and effective dates vary. See details for the Permit By Rule at http://www.tceq.texas.gov/permitting/air/permitbyrule/subchapter-o/oil_and_gas.html

Endangered Species Act

On December 14, 2010, the U.S. Fish and Wildlife Service (USFWS) proposed to list the dunes sagebrush lizard, a lizard known from southeastern New Mexico and adjacent West Texas, as endangered. 75 Fed. Reg. 7801 (Dec. 14, 2010). In Texas, the species was historically found in Andrews, Crane, Ward, and Winkler Counties. Representatives of several Texas agencies and business groups, including the oil and gas industry, are participating in a workgroup run by the office of the Comptroller to effect a conservation plan for the lizard before potential listing in December, 2011.

Litigation

UIC and the Safe Drinking Water Act were a magnet for court and administrative cases in 2010 - 2011.

"Public interest" under Texas Water Code §27.051(b)(1)

In *Texas Citizens for a Safe Future and Clean Water v. Railroad Com'n of Texas*, 336 S.W.3d 619 (Tex. 2011), the Supreme Court reversed the Austin Court of Appeals and held that the RRC's construction of the phrase "public interest" as a narrow term that does not include traffic-safety considerations is reasonable and in accord with the plain language of Texas Water Code 27.051(b)(1). "Texas Citizens" protested a Class II injection well permit application at the RRC. The Commission issued the permit and Texas Citizens appealed to the District Court, asserting among other arguments that the RRC erred by not considering truck traffic in its public interest

analysis under water Code §27.051(b). The District Court agreed with the RRC, but the Austin Court of Appeals reversed the district court.

Several factors influenced the Supreme Court's conclusion that the RRC did not err by not considering traffic issues in its public interest analysis under Water Code §27.051(b), including that the Legislature's added traffic-related inquiry to the TCEQ's required findings on public interest under 27.051, but did not add it to the RRC'. The Court stated "When the legislature uses a word or phrase in one portion of a statute but excludes it from another, the term should not be implied where it has been excluded." 336 S.W.3d at 630. Second, the principle of ejusdem generis warns against interpreting broad language where it is immediately preceded by narrow and specific terms. The statutory language surrounding the Commission's authority to consider the "public interest" concerns matters related to the production of oil and gas. Therefore, it was reasonable for the Commission not to consider the unrelated inquiry of traffic safety in weighing public interest. Third, the narrow policy of the statutory scheme under review is to maintain the quality of freshwater in the state to the extent consistent with public health and welfare, and such a narrow policy statement declines to promote a purpose of protecting public safety except where natural resources are concerned. There is no statutory directive for the Commission to consider matters related to traffic safety or any other specific factor in its public interest evaluation. Finally, the Court gave weight to the RRC's area of expertise in natural resources (as opposed to traffic matters) and its history of construing "public interest" to not include traffic concerns. Of interest is that the Supreme Court majority analyzed "public interest" as an ambiguous term (thus using the above factors in coming to its conclusion), but Chief Justice Wallace's concurrence asserts "public interest" is not ambiguous in §27.051(b); that is was unnecessary to look beyond the statute to conclude RRC did not err by not considering traffic in its public interest review of an injection well permit application.

RRC UIC permit application administrative review

Railroad Commission Oil and Gas Docket No. 01-0267764

Pro field Services, Inc. (Pro Field) submitted an application to the RRC for a commercial disposal permit to convert an oil and gas well that had previously received a Statewide Rule 13(b)(2) exception¹ under a different operator, to an injection well. The well did not have surface casing set through the base of the useable quality groundwater and RRC staff denied the application because the well had received a Statewide Rule 13(b)(2) exception and due to lack of multi stage tool being used for cement circulation and staff' determination that the volume of cement circulated could not have come to the surface absent inadequate coverage of the casing.

¹ 16 T.A.C. §3.13(b)(2)(A)(i) requires an operator to set and cement sufficient surface casing to protect all usablequality water strata, as defined by the TCEQ. Before drilling any well in any field or area in which no field rules are in effect or in which surface casing requirements are not specified in the applicable field rules, an operator shall obtain a letter from the TCEQ (from the RRC starting September 1, 2011, pursuant to HB 2694 §2.01, 82nd Reg. Session., 2011) stating the protection depth. 16 T.A.C. §3.13(b)(2)(G) allows an operator to request and the RRC to approve an alternative casing program that, among other options, may allow setting less than specified amounts of surface casing on an individual well basis. This is the type of well that was subject of Pro Field's application.

Pro Field argued that the RRC had previously granted permit applications with converted well that received 13(b)(2) exceptions, and there was no notice to operators of this change in RRC practice. The Examiners recommended approval of the application for commercial disposal permit. The Examiners found that the RRC had issued commercial disposal permits in Frio County for conversion of wells that had received a Statewide Rule 13(b)(2) exception and did not have surface casing set through the base of useable quality groundwater. Since no problems had been reported in these disposal wells, the Examiners believed there to be no evidence that disposal wells that have a Statewide Rule 13(b)(2) exception present a greater risk of contamination to the useable quality groundwater. In light of staff's concerns about the volume of cement, the examiners required that Pro Field run a cement bond log to confirm integrity of the production casing cement. Staff filed exceptions, which were overruled and then filed a Motion for Rehearing. While the Motion for Rehearing was pending, Pro Field ran a cement bond log and discovered discrepancies with cement integrity. Profield and staff agreed that Staff's Motion for rehearing would be granted, and ProField ultimately decided to withdraw its application. The case was dismissed with prejudice.

Railroad Commission Oil and Gas Docket No. 06-0267751:

Applicant, Greer Exploration Corporation (Greer) sought UIC disposal authority under 16 T.A.C. §3.46 for the Bearsheba Well No.1 in Shelby County. RRC staff administratively denied the application and appeared at the hearing to protest the application.

Greer requested authority to dispose of 15,000 barrels of salt water per day (BWPD) into the proposed well. The proposed injection is into the Rodessa formation between 4,800 and 5,200 feet. There are ten wellbores within a ½ mile radius of review and an additional 42 wellbores within a 1-mile radius of the proposed injection well. Greer reviewed completion and plugging reports to determine whether each wellbore was cemented across the Rodessa interval proposed for injection. The review found one well, the Alice B. Johnson No. 1, which had inadequate cement behind the production casing to cover the Rodessa interval. Greer performed pressure front calculations to determine whether the proposed injection of 15,000 BWPD would create sufficient pressure increase to raise a column of fluid to the base of usable quality water in the Alice B. Johnson No. 1.

In Greer's opinion, the proposed injection would not create a sufficient pressure increase in the Rodessa to cause a threat to usable quality water in the nearest well, which may have inadequate cement across the Rodessa. (Numbers used in calculations discussed below) Greer also presented evidence that the Rodessa in the area is under pressured. This evidence included injectivity tests on two injection wells in the area as well as witness testimony discussing loss of fluids when drilling through the Rodessa.

RRC staff's concern was the protection of the Carrizo Wilcox aquifer in light of the number of disposal wells in various stages of the permitting process. This aquifer outcrops over virtually all of Panola and Shelby Counties. Commission staff believed that the number of pending

applications (29) for Rodessa disposal, in conjunction with 23 existing disposal wells in the area, may result in pressure increases in the Rodessa sufficient to raise fluid to the usable quality water zone in offsetting wells which do not have production casing cemented across the Rodessa. Under these circumstances injected fluids would not be confined to the Rodessa.

Commission staff also did not believe that the values reported for top of cement behind production casing was reliable in the area. An example of a nearby well (within ½ a mile) supported this position. The J.M. Taylor No.1 noted that the top of cement behind the production casing was 3,091 feet deep whereas a cement bond log indicated that the actual top of cement was 5,700 feet deep, several hundred feet below the Rodessa. If calculations are unreliable, Commission staff believed the Rodessa injection interval would be open in those wells, allowing fluids to move behind pipe, possibly up to the usable quality water. The Commission staff believed Greer's pressure front calculations to be unreliable as they assumed that no other wells in the area would affect offsetting wells.

The Examiners recommended that the application be denied because Greer failed to meet its burden of proof in showing that injected fluids will be confined to the Rodessa interval. The Examiners agreed with Commission staff on the subject of calculated top of cement behind casing. In the Examiner's opinion, the J.M. Taylor well example raised serious issues about the reliability of calculated values for top of cement for wells in the area. The Examiners believed that Greer's pressure front calculations could not be relied upon to determine that injected fluids would be confined to the Rodessa because the calculations performed by Greer were not adequate to obtain an accurate bottomhole pressure of the Rodessa. Also, the 100md permeability used by Greer in the calculations was taken from a well 30 miles away. The formation thickness included in the calculations was 100 feet, when the average given for the area ranges from 60-180 feet. Assuming the worst case conditions for formation thickness and bottomhole pressure, and the nearest well with inadequate cement being only $\frac{1}{2}$ mile away, the pressure increase in the Rodessa would be sufficient to raise a column of fluid in the problem well up to the base of usable quality water. The Examiners also questioned Greer's analysis for failing to consider the effects of other disposal wells in the area. After the Examiners issued the Proposal for Decision on February 15, 2011, Greer withdrew its permit application.

RRC no harm letter

On January 13, 2011, the RRC issued a final order rescinding a "no harm" letter RRC had administratively issued to TexCom Gulf Disposal in 1995.² Pursuant to §27.015(a) of the Texas Water Code, a person making an application to the TCEQ for a disposal well permit under Chapter 27 of the Code must submit with the application a letter from the RRC concluding that drilling or using the disposal well and injecting industrial and municipal waste into the subsurface stratum will not endanger or injure any known oil or gas reservoir. By 2010 TexCom had not commenced operations at the facility subject of the 2005 RRC letter, and Denbury,

² RRC Docket No. 03-0266270, available at <u>http://www.rrc.state.tx.us/meetings/ogpfd/CommissionCalled.php</u> under the heading for District 03.

which had acquired the mineral rights to the oil field subject of the letter, sought the rescission from the RRC. Denbury and TexCom participated in a hearing at the RRC.

TCEQ's permit for TexCom includes an injection interval to which waste would be injected, and a larger injection zone to where waste may be ultimately located. The RRC found that the proposed injection zone for TexCom's disposal operations includes Upper, Middle and Lower Cockfield sands, which overlaps the unitized interval for the Conroe Field Unit (CFU) for oil and gas production by several hundred feet. RRC also found that there are numerous faults and fractures, which will serve as conduits for migration of fluids as proposed by TexCom. RRC determined the no harm letter issued to TexCom should be rescinded because waste of hydrocarbons will be caused by migration of injected fluids from the TexCom wells into the productive Upper Cockfield sands in the CFU. RRC has continuing jurisdiction to determine whether an order should be adopted or any other action taken to correct, prevent, or lessen the waste,³ and has continuing jurisdiction, and the duty, to make and enforce orders for the prevention of waste of oil or gas.⁴

Range

On December 7, 2010, USEPA Region 6 issued an emergency order under the SDWA that included a conclusion of law that two Range Production Company hydraulically fractured Barnett Shale gas wells caused or contributed to contamination of two domestic water wells.⁵

On December 8, 2010, the RRC issued a notice of hearing on the issue of whether the Range wells caused or contributed to contamination of the water wells. RRC held the hearing, received evidence, and issued a Proposal for Decision and Order finding that the Range wells did not cause or contribute to contamination of the domestic water wells.⁶

It has been an eventful year in the environmental oil patch, with more to come.

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⁶ RRC Docket No. 7B-0268629; PFD and Order available at <u>http://www.rrc.state.tx.us/meetings/ogpfd/CommissionCalled.php</u> under the Dockets for District 7B.

³ Tex. Nat. Res. Code §85.049.

⁴ Tex. Nat. Res. Code §85.201.

⁵ See: Holly A. Vandrovec, *The Fight Over Fracking*, 74 Tex.B.J.390 (2011) (discussing EPA issuance of emergency administrative order).



Barnett Shale

WATER USE IN ASSOCIATION WITH OIL AND GAS ACTIVITIES REGULATED BY THE RAILROAD COMMISSION OF TEXAS

1. RAILROAD COMMISSION OF TEXAS JURISDICTION

Generally, under Texas Natural Resources Code, Title 3, and Texas Water Code, Chapters 26 and 27, the Railroad Commission of Texas (Commission) has jurisdiction activities associated with the exploration, development, or production of oil or gas or geothermal resources, including transportation of crude oil or natural gas by pipeline. The Commission also has jurisdiction over surface mining for coal, uranium, and iron ore gravel.

2. USE OF FRESH WATER IN ASSOCIATION WITH OIL AND GAS ACTIVITIES

Water is used in association with many oil and gas activities, including use (in general order of relative volume) as a supplemental fluid in enhanced recovery of petroleum resources; during drilling and completion of an oil or gas well; during workover of an oil or gas well; during solution of underground salt in brine mining or hydrocarbon storage cavern creation; as gas plant cooling and boiler water; as hydrostatic test water for pipelines and tanks; as rig wash water; as coolant for internal combustion engines for rigs, compressors, and other equipment; for sanitary purposes; and for laboratory purposes.

The largest volume of water is used in enhanced recovery. The following table indicates injected volumes of total fluids (produced water, fresh makeup water, and other fluids) relative to estimates of total injected volumes of fresh water. Note that the trend for using fresh injection makeup water is declining. Most fresh water is injected for enhanced recovery in Commission Districts 8 and 8A in West Texas. The 1996 estimate for fresh water injected for those two districts was 252 million barrels.

Year	Estimate of fresh/brackish water (in million barrels)	Estimate of produced water (in million barrels)	TOTAL Estimated Volume of Fluids injected (in million barrels
CY 1998	316	6,000	6,316
CY 1999	276	5,600	5,876
CY 2000	254	5,900	6,154
CY 2001	212	5,900	6,112

The next largest volume of water is used during the drilling and completion of oil and gas wells. Water is used during drilling for drilling fluid preparation and make-up water, for completion fluids, including cementing, in well stimulation, as rig wash water, as coolant for internal combustion engines; and for sanitary purposes.

Fresh water is used in oil and gas well stimulation. Stimulation methods include acidizing and/or fracturing. In order to be able to produce gas at volumes and rates that are economical, reservoirs with low permeability must be treated. One method of treatment to increase permeability is fracture treatment or "fracing." Conventional fracture technology increases permeability as a result of pumping frac fluid, which generally consists of a viscous gelled fluid, and which creates an increase in the available surface area by creating fractures that are "propped up" or held open by the propping agents in the frac fluid.

Hydraulic fracturing consists of pumping into the formation large volumes of fresh water that generally has been treated with a friction reducer, surfactant and clay stabilizer, and that contains sand. Hydraulic fracturing maximizes the horizontal length of the fracture while minimizing the vertical fracture height. The fractures, which are held open by the sand, result in increased surface area, which further results in increases in the desorption of the gas from the shale and increases in the mobility of the gas. The result is lower completion costs and faster recovery of a larger volume of the

gas-in-place. The volumes injected during hydraulic fracturing treatment can range from 70,000 barrels in a vertical well to over 90,000 barrels in a horizontal well. Fracing, where necessary, generally takes place immediately after drilling and periodically during the life of the well.

3. REGULATION OF SURFACE WATER IN TEXAS

The industries regulated by the Commission use both surface water and ground water for their activities. In Texas, water flowing in Texas creeks, rivers, and bays is owned and managed by the State. Anyone who diverts such surface water must have authorization – or a water right -- from the State of Texas through the Texas Commission on Environmental Quality (TCEQ) (Texas Water Code, Chapter 11, relating to Water Rights). Therefore, a person who withdraws surface waters for mining, construction, and oil or gas activities must obtain a water rights permit from TCEQ.

An applicant may apply for a Temporary Water Right permit for short-term use of surface water. Temporary Water Rights permits authorizing use of 10 acre feet or less and for one year or less may be issued by a TCEQ Regional Office. In times of drought, the TCEQ may suspend all temporary water rights permits.

Applicants who seek to use more than 10 acre-feet of water or who seek a term of more than one year (up to a maximum of three years) must apply through the TCEQ Water Rights Permitting Team in Austin. TECQ forms, fees, contacts, and other water rights information may be found on the TCEQ website (<u>www.tceq.state.tx.us</u>).

4. REGULATION OF GROUND WATER IN TEXAS

A. Regulations of the Railroad Commission of Texas.

Much of the water used in association with oil and gas activities, particularly the water used in enhanced recovery, is saline or brackish water. With regards to enhanced recovery more than 90 percent of the water used is actually highly saline to brackish water produced from the same formations where the oil fields are located. A very small percentage of the water used for enhanced recovery is fresh water or slightly saline water produced from outside sources as needed to replace the volume of oil removed. Saline or brackish water is drawn from underground reservoirs that are below the base of usable quality water. The Railroad Commission requires a permit for wells associated with oil and gas activities that draw such water from formations below the base of usable quality water.

The Commission's Statewide Rule 5 (16 TAC §3.5) requires a Commission drilling permit to drill an injection water supply well that penetrates the base of usable quality water. Statewide Rule 13 (16 TAC §3.13) requires that an injection supply water well that penetrates the base of usable quality water be completed in accordance with the criteria in the rule, and the injection supply water well must be plugged in accordance with Statewide Rule 14 (16 TAC §3.14).

When a fresh water well, whether the well is a rig supply well or an injection water supply well, is drilled above the base of usable quality water and fresh water is used, regulations other than those of the Commission apply.

B. Regulations of the Texas Department of Licensing and Regulation.

Effective September 1, 2003, the Texas Department of Licensing and Regulation (TDLR) regulates Water Well Drillers under the Texas Occupations Code, Chapter 1901. Rig supply wells must be drilled by a licensed Water Well Driller; however, Chapter 1901 excludes from the definition of "water well" "an injection water source well regulated under §91.101 of the Natural Resources Code." The Water Well Driller must submit drilling logs and other required information to the TDLR and the Texas Water Development Board. The completion and plugging of such wells must comply with TDLR regulations. The GWCDs have the authority to enforce the plugging regulations for abandoned or deteriorated water wells within their boundaries.

C. Regulations of Groundwater Conservation Districts.

In Texas, groundwater ownership rights are subject to regulation and control by the courts and the State Legislature. Groundwater may be managed individually by landowners under the rule of capture, or collectively by landowners and groundwater conservation districts (GCDs). Under the "Rule of Capture," landowners may pump as much water as they choose, without liability to surrounding landowners who might claim that the pumping is depleting their wells. There are very few restrictions to the rule of capture.

The Texas Legislature authorized the creation of GCDs as the State's preferred method of groundwater management (Texas Water Code, Chapter 36). These districts are empowered and charged to conserve, preserve, protect, recharge, and prevent waste of groundwater resources within their boundaries. GCDs may be created through a special legislative act, a landowner petition process to the Texas Commission on Environmental Quality (TCEQ), a landowner petition process to join an existing GCD, or TCEQ initiative in a priority groundwater management area (PGMA). Additional information regarding groundwater management can be located at the following: http://www.tgpc.state.tx.us/GWManagement.htm

Chapter 36 specifically does not apply to production or injection wells drilled for oil, gas, sulphur, uranium, or brine, or for core tests, or for injection of gas, saltwater, or other fluids, under permits issued by the Railroad Commission. However, it does apply to water wells, including injection water source wells ("water wells used to supply water for activities related to the exploration or production of hydrocarbons or minerals" (§36.117(I)).

Under Texas Water Code §36.117, there are certain exemptions, exceptions, and limitations to Chapter 36. In addition to exemptions for small volume livestock and poultry and domestic water wells, there are certain exceptions for temporary rig supply wells and limitations on injection water supply wells used in association with oil and gas activity, as well as water wells associated with surface mining activity.

Section 36.117 includes a permit exception for temporary rig supply wells. A GCD may not require a permit for the drilling of a temporary rig supply well ("drilling of a water well used solely to supply water for a rig that is actively engaged in drilling or exploration operations for an oil or gas well permitted by the Railroad Commission of Texas provided that the person holding the permit is responsible for drilling and operating the water well and the well is located on the same lease or field associated with the drilling rig" (§36.117(b)(1)). However, a rig supply water well must be registered in accordance with GCD rules and must be equipped and maintained to conform to the GCD's rules requiring installation of casing, pipe, and fittings to prevent the escape of ground water from a groundwater reservoir to any reservoir not containing ground water and to prevent the pollution or harmful alteration of the character of the water in any groundwater reservoir (§36.117(h)). The driller of a rig supply well must file the drilling log with the GCD (§36.117(i)). In addition, the GCD may require a water well originally drilled for the purpose of rig supply to be permitted by the GCD and to comply with all GCD rules if the purpose of the well no longer is solely to supply water for a rig that is actively engaged in drilling or exploration operations for an oil or gas well permitted by the Railroad Commission (§36.117(d)). And finally, the well must be plugged in accordance with GCD regulations.

Section 36.117 also includes a limitation on injection water supply wells. Although Chapter 36 applies to injection water source wells, Section 36.117 prohibits a GCD from denying an application for a permit to drill and produce water for hydrocarbon production activities (an injection supply water well) if the application meets all applicable rules as promulgated by the GCD (§36.117(g)).

The following tables outline the regulations relating to water wells drilled for water to be used in oil and gas activities in Texas.

Section 36.117 also includes a permit exemption for water wells drilled in association with surface mining. A GCD may not require a permit issued by the GCD for the drilling of a water well authorized under a permit issued by the Railroad Commission under Chapter 134, Natural Resources Code, or for production from such a well to the extent the withdrawals are required for mining activities regardless of any subsequent use of the water. However, such a well must be registered in accordance with GCD rules and must be equipped and maintained so as to conform to the GCD's rules requiring installation of casing, pipe, and fittings to prevent the escape of groundwater from a groundwater reservoir to any reservoir not containing groundwater and to prevent the pollution or harmful alteration of the character of the water in any groundwater reservoir, and the driller of such a well must file with the GCD a copy of the drilling log. Furthermore, a GCD may require such a well to be permitted by the GCD and to comply with all GCD rules if the withdrawals from such a well are no longer necessary for mining activities or are greater than the amount necessary for mining activities specified in the permit issued by the Railroad Commission.

REQUIREMENTS FOR WATER WELLS ASSOCIATED WITH OIL AND GAS ACTIVITIES IN TEXAS

TCEQ = Texas Commission on Environmental Quality

RRC = Railroad Commission of Texas

GCD = Groundwater Conservation District

TDLR = Texas Department of Licensing and Regulation

Rig Supply Wells that DO Not Penetrate the Base of Usable Quality Water

Agency	Requirement	Cite
TDLR	Rig supply water well must be drilled by Licensed Water Well Driller.	§1901.151 Texas Occupations Code
	Driller must make and keep a well log in accordance with TDLR rules and forms and must send a copy of the log to TDLR and TCEQ.	§1901.251, Texas Occupations Code
	Log must include:	
	1. the depth, thickness, and character of strata penetrated;	

2. the location of water-bearing strata;

	3. the depth, size, and character of casing; and	
	4. any other information required by TDLR.	
	Driller must complete the rig supply water well in accordance with TDLR standards and procedures.	§1901.253, Texas Occupations Code
	Landowner or operator of abandoned or deteriorated water well must plug or cap the well within 180 days. (NOTE: A GCD has the authority to enforce this section.)	§§1901.254, 1901.255, and 1901.256, Texas Occupations Code
	Driller, pump installer, or owner who plugs a rig supply water well must submit plugging report to GCD and TDLR.	
GCD	Rig supply water wells are exempt from GCD permitting requirements provided:	§36.117(b)(2), Texas Water Code
	 the rig supply water well is to be used solely to supply water for a rig that is actively engaged in drilling or exploration operations for an oil or gas well permitted by the RRC*; and 	
	 the person holding the permit is responsible for drilling and operating the water well and the well is located on the same lease or field associated with the drilling rig. 	
	Rig supply well must be:	§36.117(h), Texas Water Code
	 registered in accordance with GCD rules and 	
	• be equipped and maintained so as to conform to the GCD's rules requiring installation of casing, pipe, and fittings to prevent the escape of groundwater from a groundwater reservoir to any reservoir not containing groundwater and to prevent the pollution or harmful alteration of the character of the water in any groundwater reservoir.	
	Driller must submit the drilling log for the rig supply water well to the GCD.	§36.117(i), Texas Water Code
	The GCD may require a permit and compliance with all GCD rules if the exempted rig supply well no longer supplies water solely to a rig that is actively engaged in drilling or exploration operations for an oil or gas well permitted by the RRC.	§36.117(d)(1), Texas Water Code
	Groundwater withdrawn from an exempt rig supply water well that is subsequently transported outside the boundaries of the GCD is subject to any applicable production and export fees.	§§36.117(k), 36.122 and 36.205, Texas Water Code
* The RRC interp permitted by the well completion a	rets the phrase "a rig that is actively engaged in drilling or exploration oper commission" to mean a drilling rig or a workover rig and interprets "explorat and workover, including hydraulic fracturing operations.	ations for an oil or gas well tion operations" to include

Rig Supply Wells that Penetrate the Base of Usable Quality Water

Agency	Regulation	Cite
TDLR	A driller must notify TDLR and the landowner or person having a well drilled on	Chapter 28
	encountering water injurious to vegetation, land, or other water and determining that	Texas Water
	the well must be plugged, repaired, or properly completed in order to avoid injury or	Code
	pollution. The driller must ensure that the well is plugged, repaired, or properly	
	completed under standards and procedures adopted by TDLR.	§1901.254

Injection Water Supply Wells that Do Not Penetrate the Base of Usable Quality Water

Agency	Requirement	Cite
TDLR	Injection water supply well must be drilled by licensed water well driller.	§1901.151 Texas Occupations Code

	Drille and	er must make and keep a well log in accordance with TCEQ rule forms and must send a copy to the well owner, TDLR and TCEC	es §1901.251, Texas Q. Occupations Code
	The	well log must include:	
	1.	the depth, thickness, and character of strata penetrated;	
	2.	the location of water-bearing strata;	
	3.	the depth, size, and character of casing; and	
	4.	any other information required by TDLR.	
	Drille	er must complete the well under TDLR standards and procedure	es. §1901.253, Texas Occupations Code
	Land plug enfo	downer or operator of abandoned or deteriorated water well mus or cap the well within 180 days. (NOTE: GCD has authority to rce this section.)	at §§1901.254, 1901.255, and 1901.256, Texas Occupations Code
	Drille mus	er, pump installer, or owner who plugs injection water supply well t submit plugging report to GCD and TDLR.	
GCD	Juris supp hydr injec gas,	diction of GCD applies to water wells, including water wells used by water for activities related to the exploration or production of ocarbons or minerals. Jurisdiction does not extend to production tion wells drilled for oil and gas, or for core tests, or for injection saltwater, or other fluids, under permits issued by the RRC.	d to §36.117(I), Texas Water Code o or of
	GCE hydr Sept) permit required for injection water supply wells drilled for ocarbon activities associated with an oil or gas well drilled after tember 1, 1985.	§36.117, Texas Water Code, enacted effective 09- 01-1985.
	A G(for h appl	CD cannot deny an application for a permit to drill and produce w ydrocarbon production activities (injection water supply well) if th ication meets all applicable GCD rules.	vater §36.117(g), Texas he Water Code
	A G	CD permit may regulate:	§§36.1131 and 36 116
	1.	Spacing of wells from property lines or adjoining wells	00.110
	2.	Density	§§36.120, §36.205 and 36 206. Texas
	3.	Production	Water Code
	4.	Completion; and	
	5.	Plugging	
	A G(asse	CD permit may also require submission of certain information an ess production fees.	d
	Wate rules	er well must be completed and plugged in accordance with TDLF 5.	R §§1901.253, 1901.254, and 1901.255, Texas Occupations Code
	Rep	ort of well plugging must be submitted to the GCD and TDLR.	§1901.255, Texas Occupations Code
Injection W	/ater \$	Supply Wells that Penetrate the Base of Usable Quality Water	
Agency		Regulation	Cite
RRC	A RF well	RC drilling permit is required to drill an injection water source that penetrates the base of usable quality water.	§91.101, Texas Natural Resources Code
			16 TAC §3.5
	Well	must cased and plugged in accordance with RRC regulations.	16 TAC §§3.13 and 3.14.

NOTICE TO OPERATORS IN AREA OF THE EAST TEXAS FIELD

SPECIAL PERMIT CONDITIONS APPLIED TO COMMERCIAL DISPOSAL WELLS INJECTING INTO FORMATIONS UNDERLYING THE WOODBINE WITHIN THE AREA OF THE EAST TEXAS FIELD

Permits for commercial disposal wells injecting into formations underlying the Woodbine formation within the area of the East Texas Field will be subject to special conditions designed to insure fluids cannot migrate into the Woodbine.

In order to verify that future commercial disposal wells injecting into formations deeper than the Woodbine are completed and operated in a manner that protects the East Texas Field, staff will advise applicants that a commercial disposal well permit for injection below the Woodbine will include the following conditions:

- 1. An open-hole log must be provided for any existing well or performed on any proposed new well which shows the depth of the top and bottom of the Woodbine formation and the entire proposed disposal interval.
- 2. The top of the proposed injection interval must be sufficiently separated from the base of the Woodbine formation such that the packer required to be set no more than 100 feet above the top of the injection interval will be at least 100 feet below the base of the Woodbine formation.
- 3. A cement bond log of the "Production Casing" must be provided that demonstrates compliance with Statewide Rule 13(4)(A) which requires cement from the casing shoe to a point at least 600 feet above the shallowest productive horizon.
- 4. A radioactive tracer survey, oxygen activation log, or other approved technique must be performed after the first year of injection operations and every two years thereafter to ensure all injected fluid is entering the permitted injection interval and not migrating up hole into the Woodbine.

Operators who disagree with staff action outlined in this notice may request a hearing to show cause why continued reliance on the AOR variance is justified for future commercial disposal well permit applications. Similarly, current operators who oppose any directive to conduct bottom hole pressure tests or measurements may request a hearing to show cause why it should not be required to do so.

Austin, Texas

July 11, 2011

ANNOUNCEMENT

(Released jointly by the Texas Commission on Environmental Quality and the Railroad Commission of Texas, July 1, 2011)

Transfer of the Texas Commission on Environmental Quality's (TCEQ's) Surface Casing Program to Railroad Commission of Texas (RRC)

Article 2 of House Bill 2694, passed by the 82nd Texas Legislature and signed by the Governor, transferred from the TCEQ to the RRC duties relating to the protection of groundwater resources from oil and gas associated activities.

Specifically, the law transfers from the TCEQ to the RRC, effective September 1, 2011, duties pertaining to the responsibility of preparing groundwater protection advisory/recommendation letters. After the transfer, the RRC will be responsible for providing surface casing and/or groundwater protection recommendations for the following activities:

- Exploration, development, or production of oil & gas resources new drilling, other drilling activities including, but not limited to, enhanced recovery injection wells, injection wells for brine mining, injection wells for underground storage of hydrocarbons, seismic exploration and cathodic protection wells, well integrity tests, plugging of abandoned wells, core holes, and micro-seismic boreholes;
- Subsurface disposal and injection of oil & gas waste saltwater disposal wells; and
- Anthropogenic carbon dioxide injection wells and geologic storage facilities under the RRC's jurisdiction.

The TCEQ and RRC staff are working cooperatively to facilitate the transfer, including transfer of staff to the RRC, no later than September 1, 2011.

TCEQ and RRC staff will make every effort to minimize disruptions to Surface Casing program customers and groundwater protection advisory letter applicants during the transition.

By the week of August 29th, the agencies expect to move the TCEQ's surface casing staff to the RRC office, located in the William B. Travis Building, 1701 North Congress. Details on specific office location, as well as phone numbers, will be provided as those details are finalized. This notification will be updated periodically as necessary to provide updated information and guidance on changes that impact groundwater protection advisory letter applicants.

Please continue to submit applications for groundwater protection advisory letters to the TCEQ until further notice. If you have any questions pertaining to this notification, please contact the TCEQ's Surface Casing Program at (512) 239-0515 or by electronic email at SC@tceq.texas.gov.

NOTICE TO OPERATORS IN THE EAST TEXAS FIELD

AREA OF REVIEW (AOR) VARIANCE NO LONGER APPLICABLE TO COMMERCIAL DISPOSAL WELLS

Commission staff will no longer allow applicants for commercial disposal well permits to rely on the AOR variance granted for the East Texas Field.

In 1995, the Commission granted a request by the East Texas Saltwater Disposal Company (ETSWDC) for a variance pursuant to Statewide Rule 46(e)(2) to eliminate the AOR requirement for applications for new injection well permits in the East Texas Field. The variance allows persons to complete an application for an injection permit in the East Texas Field without the normal requirement that the applicant "review the data of public record for wells that penetrate the proposed disposal zone within a 1/4 mile radius of the proposed disposal well to determine if all abandoned wells have been plugged in a manner that will prevent the movement of fluids from the disposal zone into freshwater strata. The applicant shall identify in the application any wells which appear from such review of public records to be unplugged or improperly plugged and any other unplugged or improperly plugged wells of which the applicant has actual knowledge."

Until now, there have been no limitations on how the AOR variance has been applied and a number of commercial disposal wells have been permitted in reliance on the variance. These commercial disposal wells can, and do, accept fluids produced from formations other than the Woodbine formation within the East Texas Field. Commission staff has concluded that injection of fluids produced from formations other than the Woodbine form within the East Texas Field is inconsistent with the premises upon which the AOR variance was originally granted. Therefore, Commission staff will no longer allow an AOR variance for applications for commercial disposal well permits in the East Texas Field.

In addition, the report of the study that was conducted to support the AOR variance was published in 1995 and concluded that "[T]he study has shown that the Woodbine reservoir is currently underpressured relative to the Carrizo-Wilcox and will remain so over the next 20 years." As there is now fluid from sources other than the Woodbine formation entering the Woodbine and there are now less than four years remaining in the reports original timeline, Commission staff will be pursuing information on the current average reservoir pressure in the East Texas Field as a means of validating continued reliance on the AOR variance. Methods to determine the current average pressure will include directives to current commercial disposal well operators and the ETSWDC to perform appropriate tests and/or measurements sufficient for this purpose.

Operators who disagree with staff action outlined in this notice may request a hearing to show cause why continued reliance on the AOR variance is justified for future commercial disposal well permit applications. Similarly, current operators who oppose any directive to conduct bottom hole pressure tests or measurements may request a hearing to show cause why it should not be required to do so.

Austin, Texas

May 2011

NOTICE TO OIL AND GAS WELL OPERATORS

SURFACE CASING REQUIREMENT FOR ANY NEW COMMERCIAL DISPOSAL WELL PERMIT

Commission staff will not grant an application for a commercial disposal well permit if the proposed disposal well is an existing well that was originally completed based on an alternative surface casing exception pursuant to Statewide 13(b)(2)(G) where less surface casing was installed in the well than recommended to reach the base of the useable quality groundwater as determined by the Texas Commission on Environmental Quality.

Proposed injection wells that were to be drilled for that purpose have always been required to have at least as much surface casing set as needed to reach the base of useable quality groundwater. Previously, proposed wells that were to be converted from production to injection that were originally completed with less surface casing than otherwise required to reach the base of useable quality groundwater were considered on a case-by-case basis and, if approved, were subject to more frequent mechanical integrity testing and monitoring requirements. Any existing permits of this kind will remain in effect until the wells are plugged or the permit is cancelled.

In order to ensure the utmost degree of groundwater protection, Commission staff has resolved not to approve any application for a commercial disposal well permit, for either an existing well or a well to be drilled for that purpose, if the well is not equipped with sufficient surface casing that is set and cemented to cover the entire interval deemed to contain useable quality groundwater. Any operator may choose to pursue an application that has been administratively denied by requesting a public hearing once staff has reviewed the application, determined it to be administratively complete, but has declined to grant it administratively because the well lacks a sufficient amount of surface casing or any other reason.

Commission staff will continue to consider, on a case-by-case basis, the conversion of existing wells which may have less surface casing than necessary to reach the base of useable quality groundwater if the well is to be used for enhanced recovery operations or disposal of produced water from other wells on the same lease.

Austin, Texas

April 2011

NOTICE OF AVAILABILITY OF DISPOSAL WELL PERMIT FILES ON-LINE

PERMITS TO DISPOSE OF OIL AND GAS WASTE BY INJECTION INTO FORMATIONS NOT PRODUCTIVE OF OIL AND GAS ARE NOW AVAILABLE VIA AN ON-LINE, SEARCHABLE, DATABASE

The Technical Permitting Section of the Railroad Commission has released digital records pertaining to the Permits to Dispose of Oil and Gas Waste by Injection Into Formations Not Productive of Oil and Gas (Form W-14, Statewide Rule 9) effective February 1, 2011. This series of records are no longer available in paper format. These records can be accessed through the Railroad Commission's website; Online Research Queries; Oil & Gas Well Records; Injection/Disposal Permits (W-14). The document images can be retrieved by key words and associated Railroad Commission assigned numbers. This searchable data base may be found at:

http://rrcsearch.neubus.com/esd-rrc/ - results

Permitting records for wells injecting fluid into reservoirs productive of oil and gas are not currently available on-line, they remain available in the Central Records department of the Commission's headquarters building in Austin.

For comments or questions please contact: Injection_Permit_Images@rrc.state.tx.us

February 2011

NOTICE TO OPERATORS

Application to Operate Commercial Oil and Gas Waste Separation Facility

An oil and gas waste separation facility is a facility where oil and gas waste is separated into its solid and liquid components prior to its disposal at off-site facilities. Typically, the liquids are disposed of via deep-well injection and the solids are disposed of at a landfill. If an operator of a separation facility receives compensation from others for the separation of the oil and gas waste and the primary business purpose of the facility is to provide these services for compensation, the facility is considered a commercial oil and gas waste separation facility.

These types of operations, whether oil and gas waste is contained in a pit(s) and/or above ground tank(s), is considered to be disposal under Rule 8. The management practices are undertaken for the explicit purpose of facilitating disposal. Permits are required under Rule 8 and financial security is required under Rule 78.

An application to operate a Commercial Oil and Gas Waste Separation Facility must be filed in the Austin Office with a copy to the appropriate District Office.

Information for filing a Commercial Oil and Gas Waste Separation Facility Application is now available on the Commission website at http://www.rrc.state.tx.us/forms/publications/SurfaceWasteManagementManual/index.php.

Austin, Texas

December 2010

Please Forward to the Appropriate Section of Your Company

NOTICE TO OPERATORS

Clarification for Filing Application to Maintain and Use a Pit (Form H-11)

Due to new technology much larger pits are now needed for the storage and mixing of fresh water and fracture flow-back water. Many of these pits are constructed to store wastewater above ground level. The design of these large pits where waste is stored above ground level is considered the practice of engineering and must be prepared under seal of a registered engineer as required by the Occupations Code Chapter 1001.

Many pits used for the storage of fresh water are converted for the use of mixing fresh water and fracture flow-back water. While the use of a pit to store fresh water does not require a permit, an application for a permit to maintain and use a pit (Form H-11) must be submitted for the converted use. A proposal to store waste above ground level within dikes must be prepared under seal of an engineer registered in Texas.

It is recommended that if it is known that a fresh water pit will be eventually converted for use as a fracture flow-back pit, an engineer be involved in the design and construction of the pit.

Austin, Texas

November 2010

Please Forward to the Appropriate Section of Your Company

NOTICE TO OIL AND GAS WELL OPERATORS

MODIFICATION OF FORM H-10 ANNUAL DISPOSAL/INJECTION WELL MONITORING REPORT (updated to include sample Form H-10)

The 81st Texas Legislature enacted Senate Bill 1387 (Regular Session, 2009) relating to implementation of projects involving the capture, injection, sequestration, or geological storage of anthropogenic carbon dioxide. Senate Bill (SB) 1387 provides a more clearly defined statutory basis for regulation of geologic storage of anthropogenic carbon dioxide within the existing framework of the Texas Injection Well Act (Chapter 27, Texas Water Code). SB 1387 delegates to the Railroad Commission jurisdiction over the injection of anthropogenic carbon dioxide into a reservoir that is initially or may be productive and saline formations directly above and below the productive formations for the purpose of geological storage. SB 1387 also requires the Railroad Commission to adopt rules for geologic storage of carbon dioxide in a productive reservoir.

Implementation of SB 1387 will require the Commission to adopt new procedures and rules, including modification of Form H-10 Annual Disposal/Injection Well Monitoring Report. The Commission plans to modify Form H-10 to require injected fluids to be reported as a percentage of total liquid/gas injected during the cycle year. The percentage reported must be rounded off to whole numbers and all fluid injected must total to a combined 100%. The percentage of anthropogenic carbon dioxide will be a subset of the overall carbon dioxide volume. In addition, the Commission will be changing the Electronic Data Interchange (EDI) format. The Commission anticipates changes to Form H-10 in early 2011.

More information will be posted on the Railroad Commission's web site <u>http://www.rrc.state.tx.us/onlinefilings/H10online/index.php</u>

To Facilitate planning and programming functions, the revised Form H-10 may be reviewed at: <u>http://www.rrc.state.tx.us/forms/reports/notices/formH10-11032010.pdf</u>

November 2010

NOTICE TO OIL AND GAS WELL OPERATORS

USE OF DIESEL FUEL IN CERTAIN WELL COMPLETION ACTIVITIES

REQUIRES AUTHORIZATION

Most operators do not use diesel fuel in hydraulic fracturing fluids. However, in light of reports that diesel fuel has been used in a few instances across the nation in the past few years, the Railroad Commission believes it prudent to issue this notice.

Section 322 of the Energy Policy Act of 2005 amended the Underground Injection Control (UIC) portion of the federal Safe Drinking Water Act (42 USC 300h(d)) to define "underground Injection" to EXCLUDE "...the underground injection of fluids or propping agents (<u>other than diesel fuels</u>) pursuant to hydraulic fracturing operations related to oil, gas, or geothermal production activities." (italics and underlining added.)

SEC. 322. HYDRAULIC FRACTURING.

Paragraph (1) of section 1421(d) of the Safe Drinking Water Act (42 U.S.C. 300h(d)) is amended to read as follows:

`(1) UNDERGROUND INJECTION- The term `underground injection'--

(A) means the subsurface emplacement of fluids by well injection; and

- (B) excludes--
 - (i) the underground injection of natural gas for purposes of storage; and

(ii) the underground injection of fluids or propping agents (other than diesel fuels) pursuant to hydraulic fracturing operations related to oil, gas, or geothermal production activities.'

Therefore, hydraulic fracturing may be subject to regulation under the federal UIC regulations *if diesel fuel is injected or used as a propping agent*, and an operator must submit a written request to the Railroad Commission's Technical Permitting Section of the Oil and Gas Division prior to such use.

If you have any questions concerning this issue, please contact Gil Bujano within the Technical Permitting Section by email at <u>Gil.Bujano@rrc.state.tx.us</u> or Leslie Savage at <u>Leslie.Savage@rrc.state.tx.us</u>.

Austin, Texas

Please Forward to the Appropriate Section of Your Company

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Jim Bradbury is an attorney in private practice with offices in Fort Worth and Austin, Texas who advises clients on business disputes, eminent domain, land, water and environmental issues. Mr. Bradbury received his B.S. degree from Texas A&M University and his J.D. degree from the University of Idaho. He served on the City of Fort Worth Urban Gas Drilling Task Force that negotiated and developed the Fort Worth Shale Drilling and Pipeline Ordinance. Currently he is serving on the Fort Worth Air Quality Committee, which is guiding a unique comprehensive evaluation of the contributions of shale gas production to air quality. Mr Bradbury is familiar with the developments in regulatory approaches to shale production taking place in the Barnett Shale and other plays, including best management practices, environmental concerns, pipeline placement and the municipal regulation of production activities.

2011 TEXAS ENVIRONMENTAL SUPERCONFERENCE

Austin, Texas

Oil and Gas Regulation, Enforcement and Litigation,

a Devil's Advocate Perspective

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The Theory, Promise and Reality of Roping the Shale Wind

I. Scope of the Issues Facing Texas.

Given the historic contribution to the State, oil and gas production has been regulated with a light hand. An oil soaked Jett Rink standing under a gushing well of hydrocarbons is an icon of our independence. And for more than a hundred years we have existed in a simmering balance between demands for more regulation and the needs for greater exploration and production. That all changed when George Mitchell perfected the hydraulic fracture in North Texas.

The Barnett Shale became the cradle proving ground for extracting natural gas from shale using a unique method of high pressure water fracture and sand. Combined with technological enhancements in horizontal drilling, the counties in the Barnett Shale went from 6,200 wells in 2005 to more than 15,000 today. (Exhibit 1) Many more wells will be drilled in years to come in every region of the state. Out of a necessity created by the blinding speed of production, industry operators have continually refined practices and techniques to consolidate production sites, handle voluminous waste products, reduce fracture times and move the natural gas to market. All of this having to be performed in urban environments neither familiar with nor accustomed to oil and gas production sites less than 3-400 feet from parks, homes and churches. While activity was at an all time high in the Barnett, the Haynesville shale came on line. Thereafter, the Marcellus and various other shale plays developed. Most recently, the Eagle Ford Shale in South Texas is proving to be a key focus of production activities due to the presence of oil in addition to natural gas. Repeating the early history of the Barnett, undeveloped farm and ranch country is now seeing the location of pad sites and production infrastructure at a rapid pace.

Industry has been able to unlock vast reserves in numerous parts of Texas in a very short period of time. But the speed, velocity and density of this production have proven to be the greatest challenges in finding an effective but proper balance of regulation of shale drilling activities. (See Exhibit 2 for depiction of production density) Regulatory interests range from the Texas Railroad Commission to TCEQ, EPA, TxDot, municipalities and counties. All of these governmental entities are feeling the weight of keeping up with an industry that moves rapidly across vast areas. Regulations and enforcement are slow to evolve in any sector. Awareness and familiarity with the good and bad typically takes years to develop, but government has not had that luxury with shale gas production. It's like sailing with your boat on fire.

The following is an overview of production issues and phases that do or may implicate environmental concerns. Also included is a description of the various aspects of shale gas regulation, where we are getting it done and where we are not.

II. The Infrastructure of Shale Gas Production.

The common image of an oil and gas production site is a single pumpjack working away alongside a handful of separator tanks. The well is vertical and the oil or gas is pulled or pushed from a reservoir. Shale production technology encompasses far more. The typical Barnett Shale well is drilled approximately 8000 feet vertical and curves to create more than 5000 feet of horizontal reach. The well is cased in various lengths of steel and concrete. It's common to see "pad sites" having more than 10 wells drilled from a 4-5 acre site. Once drilled, the shale must be fractured by a mixture of high pressure fresh water, sand and chemicals to enhance and control various aspects of the fracture. To fracture a well, a large assemblage of equipment and staged water must be placed on site. Massive pumps working in a series push the water down-hole with such force that targeted areas of the shale rock are fractured, releasing the gas. Barnett Shale wells use 4-5 million gallons of fresh water per well and Eagle Ford wells use close to 13 million gallons each. Before the gas begins to flow, large volumes of the injected water mixture as well as produced water from the formation must be captured at the surface to be transported for disposal. The large volumes of fluid contain heavy concentrations of salt, chemicals and hydrocarbons. These volumes of water products are either hauled away in tankers to disposal facilities or in a growing trend are transported by pipeline for disposal. The common method for disposing of the liquid waste is injection wells drilled to the Ellenberger saltwater formation. Trucks hauling waste from the pad sites visit these disposal sites 24 hours a day.

Once the well begins to flow, the pad site may include tanks for capturing additional liquids or condensates flowing to the surface and/or lift compressors or dehydrators. The gas is transported through a dense network of gathering lines to larger transmission lines. These transmission lines require very large compressor facilities to add push or pull to the flow of the line.

III. Aspects of Production that Warrant Additional Focus.

The light hand of regulation has ineffectively worked for historical production on small disparate fields. But production at the scale and complexity that Texas is undergoing currently renders the light hand of regulation woefully inadequate. We are drilling first and asking few questions.

A. Water Usage.

Water usage has become an increased focus of shale production, particularly in the Eagle Ford shale currently experiencing extreme drought conditions. Barnett wells take 3-5 Million gallons per well and are sourced from both surface and groundwater

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facilities. Eagle Ford wells take almost three times as much water, nearly 13 Million gallons per well. Much of that supply is coming from groundwater. While the overall industry usage compared to other uses of fresh water is not uncommonly high, several issues make water a key focus for the future. Due to contamination of the fresh water with salts, chemicals and hydrocarbons, these volumes of water are being removed from the cycle entirely. Its 13 million gallons lost, not just 13 Million gallons used. Second, where groundwater is concerned, the total volume extracted is not as important as the rate and location of withdrawal. Finally, a significant concern is that the usage of water, a chief element in this production technique is entirely unregulated and therefore beyond control or predictability. That is a risk given our recognized limitations on water supplies and chosen method of managing those supplies for the future. The oil and gas industry's usage of water becomes an outlier, posing an unknown and unplanned threat to future water management. See Exhibit 3, (even the Permian Basin and GCDs are expressing concern).

Recycling technology is being used by Devon Energy and others but is not being used at sufficient scale. Necessity of continued supply and public pressure may change that.

B. Disposal of Waste.

One difficult aspect of production that has received very little attention is disposal of the millions of gallons of flowback and process water. The standard practice is transport by truck to a RRC permitted disposal facility where it is disposed of in a deep ground well. Many of these wells have been permitted and located throughout the Barnett. A question exists over whether there is an ultimate volume limit or threshold for each disposal well or area, possibly inducing earthquake activity. Since 2007 Johnson County, Texas has received 316 Million barrels of waste fluid through approximately 32 disposal wells. Other counties have seen similar volumes. With production being far from complete, this issue warrants study and analysis.

COUNTY	<u>WELLS</u>	VOLUME 2007 – PRESENT (bbls)
Tarrant	10	64,260,839
Wise	81	79,609,406
Parker	32	97,112,056
Barnett Total	113	604,847,313

Volume statistics were retrieved from the Railroad Commission of Texas.

C. Disclosure of Fracture Fluids and Chemicals.

Over the last several years, the call for greater disclosure of the type and content of added chemicals to fracture fluids has increased. Some industry players have heeded this call and have begun disclosing the type and nature of the fluids. This past session, the Texas Legislature passed HB 3328, commonly known as the Fracture Disclosure bill. It was supported but not unanimously by industry. It calls for a hydraulic fracture operator to disclose on the "Fracfocus" website:

- The total volume of water used for each operation;
- Chemical ingredients for each operation.

The operator must also disclose to the Railroad Commission:

 All chemical ingredients not listed on "Fracfocus" that were intentionally included for hydraulic fracture.

Exceptions to disclosure include chemicals not intentionally added, chemicals not disclosed to operator, and trade secrets. How this statute will be carried out remains murky but the Railroad Commission is poised to issue new rules governing the disclosure.

Recently, pursuant to a Congressional inquiry on fracture fluids and disclosure, the House Committee or Energy and Commerce published a thorough report on the subject summarizing the chemicals at issue and various issues related to disclosure. U.S. House of Representatives, Committee on Energy and Commerce, Minority Staff "Chemicals used in Hydraulic Fracturing." A complete list of fracture chemicals is attached as Exhibit 4.

Upon testimony and submissions from fourteen service companies, the report revealed that more than 2,500 different products containing 750 different chemicals were used between 2005 and 2009. These fluids constituted more than 780 million gallons of chemicals over that period. (US House Report at p.1) The most used chemicals were methanol, 2-butoxyethanol and ethylene glycol. Id. The report recognizes that this process and these chemicals are currently exempt from the Safe Drinking Water Act (US House Report at p3 and fn6). Various tables from the report follow:

Chemicals used in Hydraulic Fracturing

Table 1. Chemical Components Appearing Most Often in
Hydraulic Fracturing Products Used Between 2005 and 2009
No. of
Products
Chemical ComponentChemical ComponentContaining
Chemical
AdaMethanol (Methyl alcohol)342

	542
Isopropanol (Isopropyl alcohol, Propan-2-ol)	274
Crystalline silica – quarts (SiO2)	207
Ethylene glycol monobutyl ether (2-butoxyethanol)	126
Ethylene glycol (1,2-ethanediol)	119
Hydrotreated light petroleum distillates	89
Sodium hydroxide (Caustic soda)	80

Table 2. States with the Highest Volume of Hydraulic Fracturing Fluids Containing 2-Butoxyethanol (2005-2009)

	Fluid Volume
State	(gailons)
Texas	12,031,734
Oklahoma	2,186,613
New Mexico	1,871,501
Colorado	1,147,614
Louisiana	890,068
Pennsylvania	747,416
West Virginia	464,231
Utah	382,874
Montana	362,497
Arkansas	348,959

		No. of
Chemical Component	Chemical Category	Products
Methanol (Methyl alcohol)	НАР	342
Ethylene glycol (1,2-ethanediol)	НАР	119
Diesel ¹⁹	Carcinogen, SDWA, HAP	51
Naphthalene	Carcinogen, HAP	44
Xylene	SDWA, HAP	44
Hydrogen chloride (Hydrochloric acid)	НАР	42
Toluene	SDWA, HAP	29
Ethylbenzene	SDWA, HAP	28
Diethanolamine (2,2-iminodiethanol)	HAP	14
Formaldehyde	Carcinogen, HAP	12
Sulfuric acid	Carcinogen	9
Thiourea	Carcinogen	9
Benzyl chloride	Carcinogen, HAP	8
Cumene	НАР	6
Nitrilotriacetic acid	Carcinogen	6
Dimethyl formamide	HAP	5
Phenol	НАР	5
Benzene	Carcinogen, SDWA, HAP	3
Di (2-ethylhexyl) phthalate	Carcinogen, SDWA, HAP	3
Acrylamide	Carcinogen, SDWA, HAP	2
Hydrogen fluoride (Hydrofluoric acid)	НАР	2
Phthalic anhydride	НАР	2
Acetaldehyde	Carcinogen, HAP	1
Acetophenone	НАР	1
Copper	SDWA	1
Ethylene oxide	Carcinogen, HAP	1
Lead	Carcinogen, SDWA, HAP	1
Propylene oxide	Carcinogen, HAP	1
p-Xylene	НАР	1
Number of Products Containing a Compone	ent of Concern	652

Table 3. Chemicals Components of Concern: Carcinogens, SDWA-Regulated Chemicals, and Hazardous Air Pollutants

	Table 4. States with at Least 100,00 Gallons of Hydraulic Fracturing Fluid Containing a Carcinogen (2005-2009	D Is I)
	F	uid Volume
State		(gallons)
Texas		3,877,273
Colorado		1,544,388
Oklahoma		1,098,746
Louisiana		777,945
Wyoming		759,898
North Dakota		557,519
New Mexico		511,186
Montana		394,873
Utah		382,338

Table 5. States with at Least 100,000 Gallons of Hydraulic Fracturing Fluids Containing a SDWA-Regulated Chemical (2005-2009)

	Fluid Volume
State	(gallons)
Texas	9,474,631
New Mexico	1,157,721
Colorado	375,817
Oklahoma	202,562
Mississippi	108,809
North Dakota	100,479

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Texas is a clear leader in the utilization and disposal of these chemical fluids. A list of chemicals identified at Fracfocus.org is attached as Exhibit 5.

D. Air Emissions.

Possibly the single largest issue that has emerged from shale production is the presence of emissions of volatile organic compounds (VOCs) from production equipment, including condensate tanks, gas treatment plants and compressor stations. Infra red testing of emissions several years ago by TCEQ revealed uncontrolled emissions across the Barnett Shale. TCEQ enacted a significant program of dedicated resources to address the emissions and address citizen complaints on an expedited basis. Currently, the Barnett Shale has numerous Auto GC monitors taking 24/7 samples and reporting those samples real time on line to the public. The City of Fort Worth initiated its own air quality study, which has conducted sampling and evaluation of nearly every oil and gas site within the City boundaries. The results of the study are due in early July, but interim reports revealed that more than 68% of all sites in Fort Worth are releasing emissions. TCEQ also engaged in a rulemaking to modify its permit by rule and standard permit in the Barnett Shale to address shale gas emission issues. Similarly, TCEQ has collected emissions inventory data on a large percentage of the emissions sources in the Barnett Shale. Enforcement actions have been taken and fines assessed on noncomplaint facilities. Texas has led all shale producing fields across the U.S. in focusing on emissions from shale production activities and infrastructure.

IV. State of Enforcement and Regulation.

The primary responsibility for regulation and enforcement of oil and gas production in Texas rests with the Texas Railroad Commission. TCEQ has authority over air emissions and municipalities have police power to regulate certain aspects of production but the bulk of the responsibility rests with the Railroad Commission. By and large the Railroad Commission has struggled to meets its responsibilities. The Sunset Commission review of the RRC demonstrated problems with the agency and its attempt to regulate and enforce the shale production process. From 2003 to 2008, more than 60,000 wells have been drilled, representing an increase in production of 75%. (Pro-Publica Analysis based on Texas Railroad Commission Statistics.) For the same time period, inspectors and inspections have risen only 6%. *Id.* It's either a belief that there are no problems where you do not look or that a handful of overtaxed employees can somehow do more, exponentially more. It's a prayer at best. The sunset Commission report on the Agency revealed that in 2009 there were 80,000 reports of violations, but only 4% were enforcement actions. TCEQ's ratio is 20%. And in 2009 more than

18,000 water related violations and 1% enforcement actions. (Sunset Advisory Commission Report p.p. 33-34.) (Exhibit 6) We are on the wrong course here. As production grows at blinding speed, regulation and enforcement should follow.

Some of the most sophisticated and effective regulations of the shale drilling phases of production were put in place by local jurisdictions. Each municipality has taken its own course but regulations tend to address setbacks, well locations, green completions, closed loop systems, compressor locations, pipelines, waste disposal, truck traffic and noise regulation. The City of Fort Worth engaged a stakeholder task force for approximately one year to study and devise a model ordinance. That ordinance has been utilized by many cities in the Barnett. Excerpts are attached as Exhibit 7. *See also* <u>Texas Midstream Gas Services v. City of Grand Prairie et al.</u>, 608 F.3d 200 (5th Cir. 2010) (affirming District Court ruling on location of compressor site construing eminent domain, preemption and local land use). Regrettably, rural areas where a great deal of production is taking place, particularly in the Eagle Ford do not have such authority to regulate. So, much of that production is largely unregulated and citizens and landowners are left with few options to avoid the significant impacts to their land or homes.

V. Conclusion.

Years of trial, error and grit by a handful of producers resulted in technical innovations unlocking a trapped reserve and giving rise to national and international production that is unprecedented. Shale gas and oil have opened serious conversations about future fuel choices and the increased use of natural gas over coal. While the rush of innovations and production are no less than mesmerizing, the scale of this production is outrunning existing regulatory frameworks. We cannot lead if we cannot plan. Further, significant environmental issues are being presented by the production techniques that must be addressed to ensure both environmental quality and long term public and investor support. The answers to these issues lie in the same source where George Mitchell found it all – technical innovation.

EXHIBIT 1

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EXHIBIT 2



gis2.rrc.state.tx.us/public/startit.htm

EXHIBIT 3

Gas fracturing trades one scarce resource for another

Associated Press

Midland Reporter-Telegram | Posted: Sunday, July 3, 2011 12:00 am

By Kiah Collier

San Angelo Standard Times

CROCKETT COUNTY -- Plastic-lined pits holding millions of gallons of blue-green water are tucked away in fields chock-full of withering mesquite trees.

On the banks of one of the larger man-made lakes, a lone green plant stands in stark contrast to the arid terrain that surrounds its artificial habitat. After the driest eight-month period in the state's recorded history, this barren ranch land has become inhospitable to even the most drought-resistant vegetation.

So where, amid the severe dry spell, did all this pristine water come from?

The query probably would not have been raised in non-drought times in this oil-friendly community.

As West Texas' reservoirs run dry, cities scour the region for their next water supply and farmers become more desperate for rainfall, oil companies here and elsewhere are pumping millions of gallons of freshwater from underground aquifers.

One pit in northern Crockett County contains enough to sustain a city of 100,000 for a day.

The water is stored there temporarily and eventually mixed with toxic chemicals and sand and pumped into wells at high pressure to fracture rock that traps large quantities of oil. A fraction of the millions of gallons of fluid it can take to fracture a single well is recovered -- 20 to 25 percent on average -- but most of it disappears underground, never to be seen again.

"We're using scarce resources to get scarce resources," said John Christmann, Permian Region vice president for Apache Corp., a Houston-based oil and gas company that operates in almost every West Texas county.

Ben Shepperd, president of the Permian Basin Petroleum Association, an advocacy group for oil and gas producers, said the well stimulation technique known as hydraulic fracturing has led to a second oil boom in West Texas by opening up "previously unrecoverable" oil reserves.

The technology has brought more and more operators back to the Permian Basin over the past decade to revisit mature oil fields that everyone thought had been tapped out.

"You just wouldn't be able to get the same volume out of oil out of the ground with a traditional drilling process," Shepperd said. "Fracturing allows you to get massive amounts more oil out."

Shepperd estimates fracturing is performed on at least 75 percent of the wells drilled in the Permian Basin these days -- probably more.

He also said the well stimulation technique requires at least two to three times more water than conventional extraction methods.

Most estimates show the amount of water required to fracture a well is 50,000 gallons to 4 million gallons, depending on the nature of the rock being penetrated. But some show per well use can be as high as 13 million gallons -- roughly the same amount of water San Angelo would use in one day in the winter.

WHY FRESH WATER?

By most accounts, almost all the water being used for fracturing in Texas is fresh water, as opposed to the non-potable brackish water that often is found deeper underground.

Some operators purchase water from landowners or even cities and truck it in. But most forgo the added expense and drill water wells on site, store the water in pits temporarily and then haul it in trucks to oil well sites, where it is stored in 20,000-gallon tanks before it is turned into "frac fluid" and shot back into the ground.

Industry officials say use of fresh water, at least in Texas, is less a matter of easy access or cost than effectiveness.

"For some purposes, brackish water is just fine, but for fracturing and given the specific sort of engineering and pressure they're using, it's better to have fewer impurities in the water, so fresh water works better," Shepperd said.

He said he doesn't know of any company in West Texas that uses brackish water, which he notes is "very, very plentiful."

Houston-based EOG Resources Inc., one of a few oil and gas companies operating in Crockett County, said in a written statement that "most operators do utilize freshwater for the fluid used in well drilling and completion operations, including fracture stimulations" in Crockett County.

"However, EOG also currently recycles water used in drilling activities when it makes sense to do so and is aggressively pursuing new options for additional recycling opportunities," the statement reads. "When possible, the company also uses brackish water in its operations."

Patrick Cassidy, a spokesman for Apache, said the company is "looking at ways to use saline aquifers in West Texas" because they are doing so in Canada. But for now, the company uses only fresh water because "it's a different type of rock."

"We don't know if we can use brackish water in West Texas at this point. We are looking into it," Cassidy said.

However, in Alberta, where most of Canada's oil production takes place, the industry is subject to similar regulations as other users, which is not the case in Texas. According to the Canadian Association of Petroleum Producers, water use for oil and gas exploration is capped at 8 percent of total allocation.

OBJECTIONS ARISE

Several years ago, fracturing was used primarily to extract natural gas, but oil companies eventually found it was just as effective for making oil flow.

As the price of crude has increased and the University of Texas System has begun selling more oil and mineral leases on the 2.1 million acres it owns in the region, some operators have drifted farther south outside established shale plays, which contain mostly natural gas, into oil-rich Concho Valley counties such as Crockett, Schleicher, Sutton, Sterling, Glasscock and Irion.

Amid the brutal drought, competing users and local groundwater conservation districts in this part of the state see the industry's unregulated, gluttonous use of fresh water as a huge problem.

"I want them to quit using fresh water for fracturing," said Slate Williams, general manager of the Crockett Groundwater Conservation District.

The state's conservation districts, which are charged with managing local groundwater supplies, are legally required to set "desired future conditions," which is how much water they estimate their aquifers should contain in 50 years -- a difficult task when they don't know how much water is being used.

The issue also has gotten the attention of the Legislature and Gov. Rick Perry, who recently signed a bill that will require companies to disclose how much water they use in fracking treatments on each well.

Districts say the law will help them estimate use more accurately but gives them no power to control it.

As oil production has picked up in the past two years, Williams said he has heard from a growing number of ranchers and landowners who never had experienced drawdown on their private wells but now are having problems with diminished flows.

Williams said the only visible change, other than the severity of this particular dry spell, is the increasing amount of water being pumped out of the Edwards-Trinity Plateau Aquifer, a massive, 34,000-square-mile water-bearing formation that is the sole water supply for Crockett and other rural Concho Valley counties.

In Crockett County, where there is not as much farming because of the lack of water for irrigation and poor soil quality, Williams said water use for fracturing could soon make up more than 25 percent of

the county's annual water use.

"It adds up, and it's a lot more usage than we've ever had," he said.

Williams said the level of the aquifer has declined steadily over the past decades and that it recharges locally only when the county has received at least 80 percent of its 15-inch average annual rainfall.

Since October, the county has received less than 2 inches of rain.

"It is declining year after year, so fracturing or any little thing makes it speed up that much more," said Williams, who began requesting water use reports from local operators a few months ago. They have been willing to provide them, he said.

A report from EOG Resources shows that it used 6.2 million gallons of water to drill six wells in the county in May.

Williams isn't anti-oil but says there is a limited amount of fresh water available to sustain the area's ranching and "quality of life" and that companies have other options available to them, including the use of brackish water.

"We don't want to stop them from drilling, but water is a scarce resource that we can't do without," he said.

Dr. Marcus Sims, who owns a small ranch north of Ozona, said the volume of water coming from the well he uses to water his livestock is the weakest it has been since he bought the land in 2001.

Sims said he is not sure what to attribute it to -- the drought or the increased pumping for oil production -- and he doesn't have a problem with landowners selling water or companies making a profit by using it. However, he said he thinks eventually "the oil and gas companies are going to have to figure out a way to use something besides fresh water."

"Until it becomes economically in their best interest, they're going to stay with what they're doing," Sims said. "I'm a capitalist person, and you do what's most economically feasible for your business to make a profit, and I don't have a problem with anybody making a profit. But if it depletes the underground water tables, then we're all going to have a problem."

'EXEMPT USE'

Under Chapter 36 of the state water code, use of potable groundwater for oil and natural gas exploration is exempt from the permit and regulatory requirements of conservation districts. That means operators are free to drill as many water wells as they want and use as much fresh groundwater as they need with few restrictions or guidelines.

Operators are required to obtain a permit from the Texas Railroad Commission to drill a water well, as well as report their monthly use to a local conservation district -- but only if they are using brackish water. The commission, the industry's governmental overseer, issued only 33 such permits to operators in the last two years.

The conservation districts eye the exemption with resentment as they prepare to calculate the desired future conditions of their aquifers with no real legal authority to demand information on use or to regulate it.

Many ranchers and farmers, who are subject to the authority of the districts, make a profit selling water to operators. But as their own wells falter, some are viewing the company's unrestricted use with concern or even envy.

During a water conference in Sonora in May, one upset rancher asked whether the Railroad Commission can restrict water use for fracturing during droughts.

Jim Polonis, general manager of the Sutton County Underground Water Conservation District, told him oil companies can pump as much fresh groundwater as they want without acquiring a permit.

"They can do it because it's under the auspices of the Railroad Commission," Polonis said.

'I'm taking issue with it," he said.

Although the districts don't think the companies should be able to pump all the water they want, Polonis said "our main push is to get the information we have to have in order to present a balanced picture of the aquifer and the way we need to have it in 50 years."

Austin-based water attorney Rick Lowerre, who has represented conservation districts and farmers and ranchers, said most conservation districts have more authority to require information from operators than they realize, even without the passage of the new disclosure law.

But he said they have little power to control how much water is used.

"Districts can certainly ask for and demand information on exempt wells," Lowerre said. "But generally, they're not going to be able to require a permit and limit production."

The state's conservation districts have varying degrees of authority because they were created individually under different laws. Although they may have the right to request water use reports, many say they are virtually powerless to compel companies to provide it.

"We don't have much recourse if they don't," said Polonis, who has organized an educational conference on fracturing in San Angelo in July.

Polonis said he has requested water use data from some companies but has had no luck.

"I've asked," Polonis said. 'They say, 'We'll get back to you.""

The next state water plan will be the first to account for water use for fracturing, said Robert Mace, a deputy executive administrator with the Texas Water Development Board, the state agency charged with long-term water planning.

Mace said it hasn't been a part of the plan before "because it's a relatively recent phenomena" and that the state's last five-year water planning cycle ended only last summer.

"Early in the planning process, they get the demand numbers, so fracturing really wasn't an issue back in 2006," Mace said.

San Angelo Water Utilities Director Will Wilde, a member of the Texas Water Development Board's Region F Water Planning Group, said water use for fracturing is something the members will be learning about over the next few months.

"We're definitely going to have to take a look at it," Wilde said.

A SIMILAR PREDICAMENT

Lowerre recalls a similar conflict over water use in the Texas Panhandle in the 1980s when oil and gas companies were using large amounts of water from the Ogallala Aquifer to stimulate declining production in older wells in a process known as "secondary recovery."

Lowerre lobbied for a law that now requires operators to tell the Railroad Commission that brackish water is not available before they can use fresh water for secondary recovery.

But there is not yet an equivalent law for fracking, and Lowerre said companies will continue to use fresh groundwater until they are forced to look at alternatives.

"It took people pointing out the problems, how much water is being used and that there are alternatives, and that's really what needs to happen is these districts," Lowerre said. "There is no easy solution right now, but the companies are going to use groundwater until there's some political pressure or a law."

The disclosure bill passed by the Legislature requires companies to report "the total volume of water used in the hydraulic fracturing treatment," as well as the chemicals they use in their frac fluid.

Conservation districts say the law is "a good start" in terms of transparency but note it doesn't promote conservation of a precious resource because it doesn't subject companies to the same limits as everyone else.

"It's not good enough for me because we'd still like to see them have to permit them and meet the district rules just like the farmers do," said Rick Harston, general manager of the Glasscock Groundwater Conservation District. 'The problem we're having is they're exempt from our rules and they can basically drill water wells anywhere they want to."

For this year's legislative session, Harston said he asked several state lawmakers to file a bill that would have made oil and gas companies subject to district permitting and regulation requirements.

"I tried to change it this session and I couldn't get anyone to file a bill," Harston said.

He declined to identify the lawmakers he approached because he plans to try again next session and doesn't want to jeopardize his efforts.

"We weren't trying to stop them from using the water, but we just think they ought to be on the same playing field as irrigated farmers," Harston said.

Harston said he has been receiving three or four phone calls a day from farmers and ranchers who are experiencing drawdown on their wells. He said the district limits farmers and ranchers to 16 water wells per section, which is 640 acres.

NOWHERE TO GO BUT UP

Projections show water use for fracturing is expected to increase exponentially over the next decade.

The Texas Water Development Board estimates the total amount of water used for fracking statewide in 2010 was 13.5 billion gallons -- roughly 2-1/2 times what San Angelo uses in an average year. That's likely to more than double by 2020 and decline gradually each decade after that until dropping back down to current levels between 2050 and 2060.

The Environmental Protection Agency estimates water use for fracking nationwide was 70 billion to 140 billion gallons in 2010.

Water use for oil and gas drilling still makes up less than 2 percent of overall water use in Texas, but fracturing is just beginning to gather steam in places such as the Eagle Ford Shale in South Texas.

A few companies are recycling and reusing the small amount of the so-called "flowback" from each fracturing job. Some, including Apache, say they are looking into it.

But most opt to dispose of the contaminated fluid by injecting it thousands of feet below the ground. That practice has raised widespread concern because it has been linked to cases of groundwater contamination.

Operators say the practice injects fluid too far below the base of usable water for it to be hazardous.

Estimating the water consumption of a fledgling but exploding technology is precarious, said Jean-Philippe Nicot, a research scientist in the Bureau of Economic Geology at the University of Texas.

"It's likely to keep climbing, just like a gold rush," said Nicot, who calculated the future use estimates for the Texas Water Development Board. "You get many more companies coming in and trying to get access to the play, but then the play is exhausted after some time, so the water use and the gas production goes down."

Nicot said one of the unpredictable variables is "re-fracturing."

"The big question is: Should you come back after, say, five years and refracture the well again, do the same thing to try to get more gas? And it seems like some companies do it, but most don't -- but that

may change," Nicot said. "And obviously, that's a big unknown in terms of water use."

LOCALIZED IMPACT

The negative effect of using fresh groundwater on local wells is not as issue in most places as it has been in Crockett County.

Ken Rainwater, a hydrology professor at Texas Tech University, said water use for oil and gas exploration pales in comparison to municipal and agricultural use.

But although the overall use is "minuscule" and doesn't have an effect on an aquifer's overall level, Rainwater said it can have a noticeable and serious effect on levels in certain areas.

"Water use for irrigation is a lot bigger than anything else we do," Rainwater said. "But still, locally, if you're the guy next to where they're pumping water for this process, you're concerned."

Nicot agrees. "From a regional standpoint, it's not a problem," he said. "All these large water bodies, all the large aquifers can take it, but locally you may run into issues because there are too many users."

'A LONGER-TERM SOLUTION'

Most oil companies are not dismissive of concerns about the growing use of a scarce resource.

"Water is an issue and fresh water is an issue, and it's something we've all got to be conscious of and look for a longer-term solution as we continue to get more active in certain areas," said Christmann of Apache.

"It's something we're aware of, it's something we're conscious of, and it's something that we do feel like we have to take good steps to protect and preserve."

Christmann said oil-bearing formations in many cases "respond better to fresh water" and finding freshwater to use is mostly about what's closest and cheapest. The company fractures 60 to 75 percent of its wells.

"You're going to look at a job and where we're securing our water sources from, and like anything else, you want to watch your costs, but you also have to get the products that you need and be mindful of what you're using," he said.

Oklahoma City-based Devon Energy, which operates mostly in the Barnett Shale in Texas, has been recycling and reusing some of the flowback from its fracking jobs since 2004.

Chip Minty, a company spokesman, said it is a voluntary endeavor that the company wanted to do to reduce the effects on local water supplies.

"It would be less expensive for us to carry that water to a disposal well and dispose of it that way, but we chose a way to recycle that water so we could reclaim it and reuse it and reduce our demand for fresh water from local water resources like wells or surface water," Minty said.

Christmann said they are hopeful about finding a "balance" where all water users can have a peaceful co-existence.

That doesn't change the fact that hydraulic fracturing is the new cornerstone of the oil and gas business, in Texas and elsewhere.

"You would not be drilling these wells and producing these wells otherwise," Christmann said. "Fracturing is a critical part of our business out here; and there's no doubt that without the technology, you're not going to have the activity out here that you have today."

What: Hydraulic Fracturing Conference

When: 9 a.m. to 1:30 p.m. July 14

Where: Texas AgriLife Research and Extension Center, 7887 U.S. 87 N.

Speakers: Stephen Ingram, technology manager at Halliburton; Leslie Savage, chief geologist at the Texas Railroad Commission; Cary Betz, chairman of the Texas Commission on Environmental Quality's Texas Groundwater Protection Committee; Allen Morris, structural geologist with the Southwest Research Institute; Ron Green, hydrologist with the Southwest Research Institute; Mark McPherson, attorney at McPherson LawFirm, PC.

WATER USE FOR HYDRAULIC FRACTURING TOTAL PROJECTED DEMAND (ACRE FEET)* REGION/SHALE 2010 2020 2030 2040 2050 2060 Barnett 27,900 40,300 17,400 1,900 0 0 Haynesville 0 400 1,400 1,200 600 100 Bossier 800 7,300 4,900 3,300 1,700 200 Eagle Ford 600 17,600 31,900 27,200 20,900 14,600 Woodford 0 300 9,300 7,300 5,700 4,100 Pearsall 0 2,500 7,600 6,00 4,700 3,400 Wolfberry 1,700 9,500 9,000 5,500 2,300 0 East Texas tight-gas plays 3,500 5,200 4,600 3,100 1,500 100 Anadarko 1,900 3,100 300 0 0 South Gulf Coast

Basin 900 1,800 2,300 1,700 1,100 500

Permian Basin 4,300 7,200 4,200 1,200 0 0

ANNUAL TOTALS 41,600 97,900 92,900 58,400 68,500 23,000

*1 ACRE FOOT = 325,851 GALLONS

EXHIBIT 4



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Drought Threatens Texas Oil Boom

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The worst Texas drought since record-keeping began 116 years ago may crimp an oil and natural- gas drilling boom as government officials ration water supplies crucial to energy exploration.

In the hardest-hit areas, water-management districts are warning residents and businesses to curtail usage from rivers, lakes and aquifers. The shortage is forcing oil companies to go farther affeid to buy water from farmers, irrigation districts and municipalities, said Erasmo Yarrito Jr., the state's overseer of water supplies from the Rio Grande River.

Concern over water usage is especially acute in southern Texas's Eagle Ford Shale area because drilling there is more water-intensive than other regions, said Robert Mace, a deputy executive administrator of the Texas Water Development Board.

"It's pretty dry down here and a lot of oil companies are looking for water," Mace said.

The water crisis in Texas, the biggest oil- and gas- producing state in the U.S., highlights a continuing debate in North America and Europe

over the impact on water supplies of an oil and gas production technique called hydraulic fracturing. Environmental groups are concerned the so-called fracking method may pose a contamination threat, while farmers in arid regions like south Texas face growing competition for scarce water.

Fracking-Led Boom

In fracking, drillers shoot high-pressure jets of sand- and chemical-infused water into the ground to crack rock and release trapped deposits of crude oil and gas. The technique has spurred a new onshore drilling boom from British Columbia to Poland as prospectors revisit geologic formations previously passed over, said Robert Ineson, senior director of global gas at IHS Inc. (IHS)'s Cambridge Energy Research Associates.

Along the Rio Grande River, where border towns such as Laredo supply workers and equipment for the drilling boom, most areas have received less than 2 inches (5 centimeters) of rain since Oct. 1, the National Weather Service said,

To compensate, Exxon Mobil Corp. (XOM) is recycling fracking fluids to reduce the amount of water needed for future drilling. Anadarko Petroleum Corp. (APC) is replacing dirt roads leading

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to its wells with limestone to preserve water that otherwise would be used to keep down the dust.

Farmers, landowners, environmental activists and state oil industry regulators gathered on June 10 at the University of Texas Health Center in Laredo to discuss the potential impact of fracking on water, air and public health, one of several such meetings that have been held across the state this year.

13 Million Gallons

The Eagle Ford's peculiar geology means it takes three to four times as much water to fracture as the Barnett Shale near Fort Worth, said Mace, of the state water board. Fracking a single Eagle Ford well requires as much as 13 million gallons of water, enough to supply the cooking, washing and drinking needs of 40 adults for an entire year, he said.

"This is not the drilling your grandparents knew in west Texas," said Sharon Wilson, an organizer for Earthworks' Oil and Gas Accountability Project, which lobbies for tougher government regulation of oil drillers. "It's a heavy industrial activity with massive amounts of water and chemicals."

About 94 percent of Texas was in a state of severe, extreme or exceptional drought as of June 7, according to the U.S. Drought Monitor compiled by the U.S. Agriculture Department and the National Drought Mitigation Center. The October-through-May period was the state's driest since record-keeping began in 1895, said Texas State Climatologist John Nielsen-Gammon.

Waiting For Rain

Municipal water departments, farmers, ranchers and oil drillers near Laredo are relying on water from two reservoirs and underground aquifers filled by last summer's tropical storm season, said Yarrito, whose job title is Rio Grande Watermaster.

Unless storms bring more rain soon, "we'll be in trouble," said Sonny Hinojosa, general manager of Hidalgo Irrigation District No. 2 In San Juan, Texas. The drought has decimated crops, with about 79 percent of the state's winter wheat, 72 percent of its oats and 36 percent of its corn classified as poor or very poor as of June 6, according to the Agriculture Department in Washington.

The Edwards Aquifer Authority, which oversees underground water supplies around San Antonio and along the northern edge of the Eagle Ford Shale, on June 2 declared a Stage 2 emergency requiring a 30 percent cut in water usage. Other water districts have imposed similar restrictions.

Water Demand Gusher

Water consumption by Eagle Ford Shale drillers is forecast to explode during the next 25 years, Mace said. A study to be released later this summer by the Texas Water Development Board and the University of Texas's Bureau of Economic Geology estimates fracking-water demand in the area will jump 10-fold by 2020, and double again by 2030, he said.

Since Petrohawk Energy Corp. (HK) drilled the first discovery in the Eagle Ford Shale in 2008, oil explorers have sought to gain footholds in the 20,000 square-mile (51,800 square-kilometer) formation. Exxon spent \$34.9 billion last year to buy XTO Energy Inc. to capture fracking expertise and U.S. assets including Eagle Ford leases. Marathon Oil Corp. (MRO) agreed on June 1 to pay KKR & Co.-based Hilcorp Resources Holding LP \$3.5 billion for assets in the area. AskChesapeake.com Barnett Shale North Texas Natural Gas Leasing & Drilling info www.dkChesaparke.com

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Anadarko Petroleum Corp. and Houston-based Swift Energy Co. (SFY) are among the companies buying water for fracking from Hidalgo Irrigation District No. 2, which also supplies water to 400,000 acres of sugar cane, cotton, peppers and cantaloupe, Hinojosa said. If rain doesn't arrive in the next four months to replenish the reservoirs, Hinojosa said he'll have to reconsider whether to continue selling to the oil companies.

Anadarko Rigs

Anadarko, based in The Woodlands, Texas, near Houston, sald it's also buying water from the Wintergarden Groundwater Conservation District, which regulates the aquifer beneath three counties in the heart of the Eagle Ford Shale. The company has 10 rigs operating in the Eagle Ford and plans to drill 200 wells this year, R. Douglas Lawler, vice president of operations, said at a UBS Securities LLC energy conference on May 26.

Anadarko's Eagle Ford wells were producing the equivalent of 40,000 barrels of crude a day last month, Lawler said. The company is installing meters to monitor and help manage water usage on its wells, Brian Cain, an Anadarko spokesman, said.

Bruce Frasier, a farmer and rancher in Carrizo Springs, Texas, about 40 miles northeast of the Rio Grande, has lost more than half his cotton crop this year and reduced his cattle herd to 300 from 1,000 because it's too dry for grass to grow.

Frasier, whose family has been farming and ranching in south Texas for 98 years, has refused to sell water to oil companies that are offering 40 cents to 70 cents a barrel, equivalent to 42 gallons. In 2008 before the first Eagle Ford well was drilled, there was no market for a farmer's water in the area.

"I've got to have that water for my farming operation," said Frasier, whose Dixondale Farms is the largest cantaloupe grower in Texas.

To contact the reporter on this story: Joe Carroll in Chicago at jcarroll8@bloomberg.net

To contact the editor responsible for this story; Susan Warren at susanwarren@bloomberg.net.

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EXHIBIT 5

	Ghemical Abstract	No. of Broducts
Chamical Companyin	Number	Chemical
1-(1-naphthylmethyl)auinolinium chloride	65322-65-8	I I I I I I I I I I I I I I I I I I I
1.2.3-propanetricarboxylic acid. 2-hydroxy-, trisodium salt, dihydrate	6132-04-3	1
1.2.3-trimethylbenzenc	526-73-8	1
1.2.4-trimethylbenzene	95-63-6	21
1,2-benzisothiazol-3	2634-33-5	1
1,2-dibromo-2,4-dicyanobutanc	35691-65-7	1
1,2-ethanediaminium, N, N'-bis[2-[bis(2-hydroxyethyl)methylammonio]ethyl]-N,N'-		
bis(2-hydroxyothyl)-N,N'-dimethyl-,tetrachloride	138879-94-4	2
1,3,5-trimethylbenzene	108-67-8	3
1,6-hexanediamine dihydrochloride	6055-52-3	1
1,8-diamino-3,6-dioxaootane	929-59-9	1
I-hexanol	111-27-3	11
1-methoxy-2-propanol	107-98-2	3
2,2'-azobis (2-amidopropane) dihydrochloride	2997-92-4	1
2,2-dibromo-3-nitrilopropionamide	10222-01-2	27
2-acrylamido-2-methylpropanesulphonic acid sodium salt polymer	*	1
2-bromo-2-nitropropane-1,3-diol	52-51-7	4
2-butanone oxime	96-29-7	1
2-hydroxypropionic acid	79-33-4	2
2-mercaptoethanol (Thioglycol)	60-24-2	13
2-methyl-4-isothiazolin-3-one	2682-20-4	4
2-monobromo-3-nitrilopropionamide	1113-55-9	1
2-phosphonobutane-1,2,4-tricarboxylic acid	37971-36-1	2
2-phosphonobutanc-1,2,4-tricarboxylic acid, potassium salt	93858-78-7	1
2-substituted aromatic amine salt	*	1
4,4'-diaminodiphenyl sulfone	80-08-0	3
5-chloro-2-methyl-4-isothiazolin-3-one	26172-55-4	5
Acetaldehyde	75-07-0	1
Acetic acid	64-19-7	56
Acetic anhydride	108-24-7	7
Acetone	67-64-1	3
Acetophenone	98-86-2	1
Acetylenic alcohol	*	1
Acetyltriethyl citrato	77-89-4	1
Acrylamide	79-06-1	2
Acrylamide copolymer	*	1
Acrylamide copolymer	38193-60-1	1

Appendix A. Chemical Components of Hydraulic Fracturing Products, 2005-2009³⁵

³⁵ To compile this list of chemicals, Committee staff reviewed each Material Safety Data Sheet provided to the Committee for hydraulic fracturing products used between 2005 and 2009. Committee staff transcribed the names and CAS numbers as written in the MSDSs; as such, any inaccuracies on this list reflect inaccuracies on the MSDSs themselves.

	Chomical	No. off Rioducts
	Service	Containing.
Acritete conchumer	*	in Chennes
Acrylic soid 2-bydevyvetbyl ester	818-61-1	1
Acrylic acid/2-acrylamido-methylpropylsulfonic acid conclymer	37350-42-8	
Acrylic conclymer	403730-32-5	1
Acrylic polymers	*	1
Acrylic polymers	26006-22-4	2
Acyclic hydrocarbon blend	*	1
Adipic acid	124-04-9	6
Alcohol alkoxylate	*	5
Alcohol ethoxylates		2
Alcohols	*	
Alcohols, C11-15-secondary, ethoxylated	68131-40-8	1
Alcohols, C12-14-secondary	126950-60-5	4
Alcohols, C12-14-secondary, ethoxylated	84133-50-6	19
Alcohols, C12-15, ethoxylated	68131-39-5	2
Alcohols C12-16, ethoxylated	103331-86-8	
Alcohols, C12-16, ethoxylateri	68551-12-2	3
Alcohols CI4-15 ethoxylated	68951-67-7	5
Alcohols C9-11-iso- C10-rich ethoxylated	78330-20-8	4
Alcohols C9-C22	*	1
Aldehvde	*	4
Aldol	107-89-1	1
Alfa-Alumina	*	5
Aliphatic acid	*	1
Aliphatic alcohol polyglycol ether	68015-67-8	
Aliphatic amine derivative	120086-58-0	2
Alkaline bromide salts	*	2
Alkanes. C10-14	93924-07-3	2
Alkanes, C13-16-iso	68551-20-2	2
Alkanolamine	150-25-4	3
Alkanolamine chelate of zirconium alkoxide (Zirconium complex)	197980-53-3	4
Alkanolamine/aldehyde condensate	*	1
Alkones	*	1
Alkenes, C>10 alpha-	64743-02-8	3
Alkenes, C>8	68411-00-7	2
Alkoxylated alcohols	*	1
Alkoxylated amines	*	6
Alkoxylated phenol formaldehyde resin	63428-92-2	1
Alkyaryl sulfonate	*	1
Alkyl (C12-16) dimethyl benzyl ammonium chloride	68424-85-1	7
Alkyl (C6-C12) alcohol, ethoxylated	68439-45-2	2
Alkyl (C9-11) alcohol, ethoxylated	68439-46-3	1
Alkyl alkoxylate	*	9
Alkyl amine	*	2

	Chemical	Nosof
	Service	Containing
Chemical Component	Number	Chemical
Alkyl amine blend in a metal salt solution	*	1
Alkyl aryl amine sulfonate	255043-08-04	1
Alkyl benzenesulfonic acid	68584-22-5	2
Alkyl esters	*	2
Alkyi hexanol	*	1
Alkyl ortho phosphate ester	*	1
Alkyl phosphate ester	*	3
Alkyl quaternary ammonium chlorides	*	4
Alkylaryl sulfonate	*	1
Alkylaryl sulphonic acid	27176-93-9	1
Alkylated quaternary chloride	*	5
Alkylbenzenesulfonic acid	*	1
Alkylethoammonium sulfates	*	<u> </u>
Alkylphenol ethoxylates	*	1
Almandite and pyrope garnet	1302-62-1	1
Aluminium isopropoxide	555-31-7	1
Aluminum	7429-90-5	2
Aluminum chloride	*	3
Aluminum chloride	1327-41-9	2
Aluminum oxide (alpha-Alumina)	1344-28-1	24
Aluminum oxide silicate	12068-56-3	1
Aluminum silicate (mullite)	1302-76-7	38
Aluminum sulfate hydrate	10043-01-3	1
Amides, tallow, n-[3-(dimethylamino)propyl],n-oxides	68647-77-8	4
Amidoamine	*	1
Amine	*	7
Amine bisulfite	13427-63-9	1
Amine oxides	*	1
Amine phosphonate	*	3
Amine salt	*	2
Amines, C14-18; C16-18-unsaturated, alkyl, ethoxylated	68155-39-5	1
Amines, coco alkyl, acetate	61790-57-6	3
Amines, polyethylenepoly-, ethoxylated, phosphonomethylated	68966-36-9	11
Amines, tallow alkyl, ethoxylated	61791-26-2	2
Amino compounds	*	1
Amino methylene phosphonic acid salt	*	1
Amino trimethylene phosphonic acid	6419-19-8	2
Ammonia	7664-41-7	7
Ammonium acetate	631-61-8	4
Ammonium alcohol ether sulfate	68037-05-8	1
Ammonium bicarbonate	1066-33-7	1
Ammonium bifluoride (Ammonium hydrogen difluoride)	1341-49-7	10
Anunonium bisulfate	7783-20-2	3
Ammonium bisulfite	10192-30-0	15

I

	Cliemical Abstract Service	No. of Products Containing
Ghemical: Component	Number	Chemical
Ammonium C6-C10 alcohol ethoxysulfate	68187-17-7	4
Ammonium C8-C10 alkyl ether sulfate	68891-29-2	4
Ammonium chloride	12125-02-9	29
Ammonium fluoride	12125-01-8	9
Ammonium hydroxide	1336-21-6	4
	6484-52-2	2
Ammonium persuitate (Dianimonium peroxidistilitato)	1127-54-0	3/
Ammonium salt of otherwise a short sufficient		<u> </u>
Annonhum sait of emoxylated alcohol surface	100420 00 0	
Ambiptious shigh	99439-28-8	
Aniphoteric arkyl annue	01/89-39-7	1
Anionie coporymer	*	<u> </u>
Anionic polyacrylamide	05005.00.2	<u>l</u>
Anionic polyacrylamide	25085-02-3	0
Anionic polyacrylamice copolymer	*	3
Autonic polymer	*	2
Anionic polymer in solution	0002 04 7	1
Anionic polymer, sommi san	9003-04-7	
Antifonlent	*	
	*	1
Antimoniane San	1214 60 0	
Antimony perioditie	1314-00-9	
Antimony polassinii Oxige	29038-09-3	
Anumony incluorate	61700 20 8	1
A constitue electrical estimate	01/90-29-8	
Aromatic aldebude	*	<u>_</u>
Aromatic aldenyde	224625 62 6	2
A romatic volvely and other	224035-03-0	
Barium sulfate	7707 42 7	
Benvita	1318.16.7	
Bentonita	1202 78 0	2
Benzena	71 43 2	
Benzene CIA-16 alkyl derivativay	68648-87-3	
Benzenegenhonerovoja acid 1 1 dimethylethyl actor	614.45.0	1
Benzenemethanaminium	3844.45-0	1
Benzenesulfanie gold C10-16-alkul derive notassium salts	68584.27.0	1
Benzoic acid	65-85-0	11
Benavl chloride	100-44-7	
Biocide component	*	3
Bis(1-methylethyl)nanhthalenesulfonic acid, cyclohorylamine salt	68425-61-6	
Bishexamethylenetriamine ponta methylene phosphonic acid	35657_77_1	
Bishenol A/Epichlorohydrin resin	25068-18-6	
Bisphenol A/Novolac epoxy resin	28006-06-0	1
	44704-74-7	· · · · · · · · · · · · · · · · · · ·

Decrete EVALUATION Collection Borate 12280-03-4 2 Borate salts 1 5 Borate salts 10043-35-3 18 Borate acid, potassium salt 1333-73-9 2 Boric acid, potassium salt 1303-86-2 1 Dutanodicia acid 2373-38.8 4 Butnol 715-87-4 1 Butnadicia acid 68002-97-1 4 C10-C16 ethoxylated alcohol 68002-97-1 4 C12-C14 isoloh, ethoxylated 6433-50-9 3 Calcium choride 1317-65-3 9 Calcium choride 10035-04-8 1 Cal		Chemical Abstract Service	No. of Products Containing
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Derive acid 10041-35-3 18 Boric acid, potassium salt 20786-60-1 1 Boric acid, potassium salt 1333-73-9 2 Boric acid, acium salt 1333-73-9 2 Boric acid, acium salt 1333-73-9 2 Boric acid 1303-86-2 1 b-tricalcium phosphate 7758-87-4 1 Butanodicic acid 2373-38-4 4 Butanod 71-36-3 3 Butyl phycidyl ether 2426-08-6 5 Butyl Inctate 138-22-7 4 C10-C16 ethoxylated alcohol 68002-97-1 4 C11-C16 ethoxylated 68439-50-9 3 Calcium carbonate 471-34-1 1 Calcium choride 10035-24 17 Calcium choride 10035-04-8 1 Calcium choride 1305-78-8 6 Calcium hypochlorite 7778-75-5 2 Calcium hypochlorite 1305-78-8 6 Calcium hypochlorite 1305-78-8 6 <t< td=""><td>Borate salts</td><td>12280-03-4</td><td>2</td></t<>	Borate salts	12280-03-4	2
Drivesta 10 Borie acid, potassium salt 20786-60-1 1 Borie acid, potassium salt 1333-73-9 2 Borie acid, sodium salt 1333-73-9 2 Borie acid, sodium salt 1333-73-9 2 Borie acid, sodium salt 1333-73-9 2 Butto glycidyl ether 2373-38-8 4 Butanol 71-36-3 3 Butyl glycidyl ether 2426-08-6 5 Butyl glycidyl ether 2426-08-6 5 Butyl glycidyl ether 2426-08-6 5 Butyl flycidyl ether 2426-08-6 5 Butyl glycidyl ether 182-27 4 C1-10 Cc 16 ethoxylated alcohol 68439-50-9 3 Calcium chorabe (Limestone) 1317-65-3 9 Calcium choride 10035-04-8 1 Calcium choride 10035-04-8 1 Calcium nydroxide 1305-62-0 9 Calcium nydroxide 1305-62-0 9 Calcium nydroxide 1305-62-0 9	Borie acid	10042 25 2	10
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Baric oxide 1133-8-2 1 Boric oxide 1333-8-2 1 Butanolicic acid 2373-38-8 4 Butanolicic acid 2175-5 3 Buty glycidyl ether 2426-08-6 5 Eutyl hetate 138-22.7 4 C10-C16 ethoxylated alcohol 68002-97.1 4 C-11 to C-14 n-alkanes, mixed * 1 C21-C16 ethoxylated 68439-50-9 3 Calcium carbonate (Limestone) 1317-65-3 9 Calcium carbonate (Limestone) 1317-65-3 9 Calcium chloride 10043-52.4 17 Calcium hydroxide 1305-62-0 9 Calcium hydroxide 1305-62-0 9 Calcium hydroxide 1305-78-8 6 Calcium peroxide 1305-78-9 5 Calcium peroxide 1305-78-9 5 Carbon dioxide 1305-78-9 5 Carbon dioxide 1305-78-9 5 Carbon dioxide 124-38-9 4 Carbon dioxid	Boric acid, polissian and	1322-72-0	2
b-tricalcium phosphate 1000-002 1 Buttanodioic acid 7758-87-4 1 Buttanodioic acid 2373-38-8 4 Buttanodioic acid 2373-38-8 4 Buttanodioic acid 2373-38-8 4 Buttyl kycidyl ether 2426-08-6 5 Butyl katate 138-22-7 4 C10-C16 ethoxylated alcohol 68002-97-1 4 C-11 to C-14 n-alkanos, mixed * 1 C212-C14 alcohol, ethoxylated 68439-50-9 3 Calcium carbonate 471-34-1 1 Calcium chonate (Linestone) 10035-04-8 1 Calcium chloride, dihydrate 10035-04-8 1 Calcium hydroxide 1305-62-0 9 Calcium norde 1305-78-8 6 Calcium proxide 1305-78-8 6 Calcium proxide 1305-78-8 6 Carboxymethyl hydroxypropyl guar 68130-15-4 11 Carboxymethyl hydroxypropyl guar 68130-15-4 11 Callulase enzyme *	Boric oxide	1303-86-2	2
Butanodioic acid 1000 c1 Butanol 2173-38-8 4 Butnol 71-36-3 3 Butyl keider 2426-08-6 5 Butyl keidare 138-22-7 4 C10-C16 ethoxylated alcohol 68002-97-1 4 C-11 to C-14 n-alkanas, nixed • 1 C12-C14 alcohol, ethoxylated 68439-50-9 3 Calcium carbonate (Limestone) 1317-65-3 9 Calcium carbonate (Limestone) 1317-65-3 9 Calcium horide 10003-04-8 1 Calcium horide 10035-04-8 1 Calcium hydroxide 1305-62-0 9 Calcium hydroxide 1305-78-9 5 Calcium proxide 1305-78-8 6 Calcium proxide 1305-78-9 5 Carboxymethyl guar gum, sodhum salt 39346-76-4 7 Carboxymethyl guar gum, sodhum salt 39346-76-4 7 Carboxymethyl guar gum, sodhum salt 124-38-9 4 Calluase 9002-58-16 2	b-tricalcium phosphate	7758-87-4	1
Butunol 71-36-3 3 Butyl glycidyl ether 2426-08-6 5 Butyl factate 138-22-7 4 C10-C16 ethoxylated alcohol 68002-97-1 4 C-11 to C-14 n-alkanes, mixed * 1 C12-C14 alcohol, ethoxylated 68439-50-9 3 Calcium carbonate (Limestone) 1317-65-3 9 Calcium carbonate (Limestone) 1317-65-3 9 Calcium ethoride, dilydrate 10043-52-4 17 Calcium chloride, dilydrate 1005-04-8 1 Calcium hydroxide 1305-62-0 9 Calcium hydroxide 1305-78-8 6 Calcium proxide 1305-78-8 6 Calcium proxide 1305-78-8 6 Carboxymethyl guar gum, sodhun salt 3946-76-4 7 Carboxymethyl guar gum, sodhun salt 3946-76-4 7 Carboxymethyl guar gum, sodhun salt 29005-81-6 2 Collubase derivative * 1 1 Cellophane 9005-81-6 2 1	Butancdioic acid	2373-38-8	4
Butyl glycidyl ether 2426-08-6 5 Butyl lactate 138-22-7 4 C10-C16 ethoxylated alcohol 68002-97-1 4 C-11 to C-14 - anlkanos, mixed * 1 C12-C14 alcohol, ethoxylated 68439-50-9 3 Calcium carbonato 471-34-1 1 Calcium ethorate 10043-52-4 17 Calcium ethorate 10035-04-8 1 Calcium holoride 10035-04-8 1 Calcium holoride 1035-62-0 9 Calcium hydroxide 1305-78-8 6 Calcium hydroxide 1305-78-8 6 Calcium proxide 1305-78-8 6 Carbon dioxide 1305-78-8 6 Carbon dioxide 1305-78-8 7 Carbon dioxide 124-38-9 4 Carbon dioxide	Butanol	71-36-3	3
Butyl lactate 138-22-7 4 C10-C16 ethoxylated alcohol 68002-97-1 4 C-11 to C-14 n-alkanos, mixed * 1 C12-C14 alcohol, ethoxylated 68433-50-9 3 Calcium carbonate (Linestone) 1317-65-3 9 Calcium chloride 10043-52-4 17 Calcium chloride 10043-52-4 17 Calcium chloride 1003-50-48 1 Calcium chloride 1789-75-5 2 Calcium hydroxide 1305-62-0 9 Calcium hydroxide 1305-62-0 9 Calcium poroxide 1305-78-8 6 Calcium oxide 1305-78-9 5 Carbonydiates * 3 Carbonydiates * 3 Carbonymethyl hydroxypropyl guar 68130-15-4 11 Cellulase 9005-81-6 2 Cellulase 9002-81-6 2 Cellulase 9002-81-6 2 Cellulase 9002-81-6 2 Cellulase 9004-	Butyl glycidyl ether	2426-08-6	5
C10-C16 ethoxylated alcohol 68002-97-1 4 C-11 to C-14 n-alkanos, nuxed * 1 C12-C14 alcohol, ethoxylated 68439-50-9 3 Calcium carbonate 471-34-1 1 Calcium carbonate (Linestone) 1317-65-3 9 Calcium carbonate (Linestone) 1303-52-4 17 Calcium chloride, dithydrate 10035-04-8 1 Calcium fluoride 10035-62-0 9 Calcium hydroxide 1305-62-0 9 Calcium hydroxide 1305-78-8 6 Calcium pypochlorite 7778-54-3 1 Calcium pypochlorite 1305-78-8 6 Carbonydrates * 3 Carbonydrates * 3 Carbonydrates * 3 Carbonydrates * 3 Carboxymethyl hydroxypropyl guar 68130-15-4 11 Callulase 9005-81-6 2 Collulase 9005-81-6 2 Cellulase 9004-34-6 1 Cellulase	Butyl lactate	138-22-7	4
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C12-C14 alcohol, ethoxylated 68439-50-9 3 Calcium carbonate (Limestone) 1317-65-3 9 Calcium chloride, dihydrate 10043-52-4 17 Calcium chloride, dihydrate 10035-04-8 1 Calcium chloride, dihydrate 10035-04-8 1 Calcium chloride, dihydrate 1305-62-0 9 Calcium hydroxide 1305-62-0 9 Calcium proxide 1305-78-8 6 Calcium proxide 1305-78-9 5 Carbonymetryl part 7778-97-9 5 Carbonymetryl guar gum, sodium salt 124-38-9 4 Carboxymethyl hydroxypropyl guar 68130-15-4 11 Cellulase 14 7 7 Carboxymethyl hydroxypropyl guar 68130-15-4 11 Cellulase enzyme * 1 2 Collulase enzyme * 1 2 Chloromethylnaphthalenc quinoline quatornary amine 15619-48-4 3 3 Chloromethylnaphthalenc quinoline quatornary amine 15619-48-4 3 2 <td>C-11 to C-14 n-alkanos, mixed</td> <td>*</td> <td>1</td>	C-11 to C-14 n-alkanos, mixed	*	1
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Calcium carbonate (Limestone) 1317-65-3 9 Calcium chloride 10043-52-4 17 Calcium chloride, dihydrate 10035-04-8 1 Calcium fuoride 7789-75-5 2 Calcium hydroxide 7789-75-5 2 Calcium hydroxide 1305-78-8 6 Calcium peroxide 1305-79-9 5 Carboxymethyl guar gum, sodium salt 39346-76-4 7 Carboxymethyl hydroxypropyl guar 68130-15-4 11 Cellulase 9005-81-6 2 Collulase 9004-34-6 1 Collulase 9004-34-6 1 Cellulase enzyme * 2 Chorom	Calcium carbonate	471-34-1	1
Calcium chloride 10043-52-4 17 Calcium chloride, dihydrate 10035-04-8 1 Calcium fluoride 7789-75-5 2 Calcium hydroxide 1305-62-0 9 Calcium hydroxide 1305-78-8 6 Calcium peroxide 1305-78-8 6 Calcium peroxide 1305-78-8 6 Calcium peroxide 1305-78-9 5 Carbohydrates * 3 Carbon dioxide 124-38-9 4 Carboxymethyl hydroxypropyl guar 68130-15-4 11 Carboxymethyl hydroxypropyl guar 68130-15-4 1 Cellulase 9012-54-8 7 Collulase enzyme * 1 Cellulase 9004-34-6 1 Cellulose derivative * 2 Chloromethylaphthalcone quinoline quaternary amine 15619-48-4 3 Chloromethylaphthalcone quinoline quaternary amine 16619-48-1 3 Chloromethylaphthalcone quinoline quaternary amine 16619-48-1 3 Choromethylaphthalcone qui	Calcium carbonate (Limestone)	1317-65-3	9
Calcium chloride, dihydrate 10035-04-8 1 Calcium fluoride 7789-75-5 2 Calcium hydroxide 1305-62-0 9 Calcium hydroxide 1305-62-0 9 Calcium hydroxide 1305-78-8 6 Calcium peroxide 1305-79-9 5 Carbon dioxide 1305-79-9 5 Carbon dioxide 124-38-9 4 Carboxymethyl guar gum, sodium salt 39346-76-4 7 Carboxymethyl hydroxypropyl guar 68130-15-4 11 Celluhase 9005-81-6 2 Cellulase enzyme * 1 Cellulase enzyme * 1 Cellulase derivative * 2 Chloromethylnaphthalene quaternary amine 15619-48-4 3	Calcium chloride	10043-52-4	17
Calcium fluoride 7789-75-5 2 Calcium hydroxide 1305-62-0 9 Calcium hydroxide 1305-62-0 9 Calcium hydroxide 7778-54-3 1 Calcium peroxide 1305-78-8 6 Carbonydrates * 3 Carbon dioxide 124-38-9 4 Carboxymethyl guar gum, sodhum salt 39346-76-4 7 Carboxymethyl hydroxypropyl guar 68130-15-4 11 Cellulase 9005-81-6 2 Collulase 9005-81-6 2 Collulase 9004-34-6 1 Collulase derivative * 1 Collulase derivative * 2 Chloromethylnaphthalene quaternary amine 15619-48-4 3 Choromates	Calcium chloride, dihydrate	10035-04-8	1
Calcium hydroxide 1 305-62-0 9 Calcium hypochlorite 7778-54-3 1 Calcium oxide 1305-78-8 6 Calcium peroxide 1305-78-8 6 Calcium peroxide 1305-78-8 6 Carbohydrates * 3 Carbohydrates * 3 Carbohydrates * 3 Carbohydrates 124-38-9 4 Carboxymethyl guar gum, sodhum salt 39346-76-4 7 Carboxymethyl hydroxypropyl guar 68130-15-4 11 Cellulase 9005-81-6 2 Collulase 9005-81-6 2 Collulase 9004-34-6 1 Collulase 9004-34-6 1 Collulose 9004-34-6 1 Collulose 9004-34-6 1 Collulose 9004-34-6 1 Collulose 9004-34-6 1 Choromethylnaphthalone quinoline quaternary amine 15619-48-4 3 Choromethylnaphthalone quinoline quaternary amine	Calcium fluoride	7789-75-5	2
Calcium hypochlorite 7778-54-3 1 Calcium oxide 1305-78-8 6 Cakcium peroxide 1305-78-8 6 Carbohydrates 1305-78-8 6 Carbohydrates 1305-79-9 5 Carbohydrates * 3 Carbon dioxide 124-38-9 4 Carboxymethyl guar gum, sodhum salt 39346-76-4 7 Carboxymethyl hydroxypropyl guar 68130-15-4 11 Cellulase 9005-81-6 2 Collulase 9005-81-6 2 Collulase 9002-54-8 7 Cellulase enzyme * 1 Collulose 9004-34-6 1 Cellulose derivative * 2 Chloromethylnaphthalonc quinoline quaternary amine 15619-48-4 3 Choromates * 2 2 Choromates * 1 2 Choromates * 1 2 Chromium (iii) acetate 1066-30-4 1 2	Calcium hydroxide	1305-62-0	9
Calcium oxide 1305-78-8 6 Calcium peroxide 1305-78-8 6 Carbohydrates 1305-79-9 5 Carbon dioxide 124-38-9 4 Carboxymethyl guar gum, sodium salt 39346-76-4 7 Carboxymethyl hydroxypropyl guar 68130-15-4 11 Cellophane 9005-81-6 2 Collulase 9012-54-8 7 Callulase enzyme * 1 Collulase enzyme * 1 Collulose derivative 9004-34-6 1 Cellulose derivative * 2 Chloromethylnaphthalonc quinoline quaternary amine 15619-48-4 3 Chloromethylnaphthalonc quinoline quaternary amine 15619-48-4 3 Choromates * 1 1 Choromates 94266-47-4	Calcium hypochlorite	7778-54-3	l
Calcium peroxide 1305-79-9 5 Carbohydrates * 3 Carbon dioxide 124-38-9 4 Carboxymethyl guar gum, sodium salt 39346-76-4 7 Carboxymethyl hydroxypropyl guar 68130-15-4 11 Cellophane 9005-81-6 2 Collulase 9005-81-6 2 Collulase 9012-54-8 7 Callulase enzyme * 1 Collulase enzyme * 1 Collulase derivative * 2 Chloromethylnaphthalene quinoline quaternary amine 15619-48-4 3 Chlorous ion solution * 2 Choronates * 1 Choronates * 1 Chromium (iii) acetate 1046-30-4 1 Cinnamaldehyde (3-phenyl-2-propenal) 104-55-2 5 Citric acid (2-hydroxy-1,2,3 propanetricarboxylic acid) 77-92-9 29 Citrus terpenes 94266-47-4 11 Coal, granular 50815-10-6 1	Calcium oxide	1305-78-8	6
Carbohydrates*3Carbon dioxide124-38-94Carboxymethyl goar gum, sodium salt39346-76-47Carboxymethyl hydroxypropyl guar68130-15-411Cellophane9005-81-62Collulase9012-54-87Collulase enzyme*1Collulose9004-34-61Celhoromethyl naphthalenc quinoline quaternary amine15619-48-4Chloromethylnaphthalenc quinoline quaternary amine15619-48-4Chloromethylnaphthalenc quinoline quaternary amine67-48-1Chloromethylnaphthalenc quinoline quaternary amine1066-30-4Choromates*1Chromium (ii) acetate1046-53-2Cinnamaldehyde (3-phenyl-2-propenal)104-55-2Citric acid (2-hydroxy-1,2,3 propanetricarboxylic acid)77-92-9Collar steppenes94266-47-411Coal, granular50815-10-61Cobalt acetate71-48-71Cocaldopropyl betaine61789-40-02Cocalopropyl betaine671789-40-02	Calcium peroxide	1305-79-9	5
Carbon dioxide 124-38-9 4 Carboxymethyl guar gun, sodium salt 39346-76-4 7 Carboxymethyl hydroxypropyl guar 68130-15-4 11 Cellophane 9005-81-6 2 Collulase 9012-54-8 7 Collulase enzyme * 1 Collulase enzyme * 1 Collulose derivative * 2 Chloromethylnaphthalene quinoline quaternary amine 15619-48-4 3 Chloromethylnaphthalene quinoline quaternary amine 15619-48-4 3 Chloromethylnaphthalene quinoline quaternary amine 15619-48-4 3 Choromates * 2 2 Choromates * 1 2 Choromates * 1 3 Chromium (iii) acetate 1066-30-4 1 1 Cinnamaldehyde (3-phenyl-2-propenal) 104-55-2 5 5 Citric acid (2-hydroxy-1,2,3 propanetricarboxylic acid) 77-92-9 29 29 Citrus terpenes 94266-47-4 11 11	Carbohydrates	*	3
Carboxymethyl guar gum, sodium salt 39346-76-4 7 Carboxymethyl hydroxypropyl guar 68130-15-4 11 Cellophane 9005-81-6 2 Cellulase 9012-54-8 7 Cellulase enzyme * 1 Collulose 9004-34-6 1 Cellulose derivative * 2 Chloromethylnaphthalene quinoline quaternary annine 15619-48-4 3 Chlorous ion solution * 2 Choline chloride 67-48-1 3 Chromates * 1 Chromium (iii) acetate 1066-30-4 1 Cinnamaldehyde (3-phenyl-2-propenal) 104-55-2 5 Citrus terpenes 94266-47-4 11 Coal, granular 50815-10-6 1 Cobalt acetate 71-48-7 1 Coalidopropyl betaine 61748-7 1	Carbon dioxide	124-38-9	4
Carboxymethyl hydroxypropyl guar 68130-15-4 11 Cellophane 9005-81-6 2 Cellulase 9012-54-8 7 Cellulase enzyme * 1 Cellulase enzyme * 1 Cellulase enzyme * 1 Cellulose derivative * 2 Chloromethylnaphthalenc quinoline quaternary annine 15619-48-4 3 Chlorous ion solution * 2 Chotine chloride 67-48-1 3 Chromates * 1 Chromium (iii) acetate 1066-30-4 1 Cinnamaldehyde (3-phenyl-2-propenal) 104-55-2 5 Citric acid (2-hydroxy-1,2,3 propanetricarboxylic acid) 77-92-9 29 Citrus terpenes 94266-47-4 11 Coal, granular 50815-10-6 1 Cobalt acetate 71-48-7 1 Cocaidopropyl betaine 61789-40-0 2	Carboxymethyl guar gum, sodium salt	39346-76-4	7
Cellophane9005-81-62Cellulase9012-54-87Cellulase enzyme*1Collulase enzyme*1Cellulose derivative9004-34-61Cellulose derivative*2Chloromethylnaphthalene quinoline quaternary amine15619-48-43Chlorous ion solution*2Choline chloride67-48-13Chromates*1Chromates*1Chromatele (3-phenyl-2-propenal)104-55-25Citric acid (2-hydroxy-1,2,3 propanetricarboxylic acid)77-92-929Citrus terpenes94266-47-411Coal, granular50815-10-61Cobalt acetate71-48-71Cocaidopropyl betaine61789-40-02Coreamidemene envide71-48-71	Carboxymethyl hydroxypropyl guar	68130-15-4	11
Cellulase9012-54-87Cellulase enzyme*1Collulose9004-34-61Cellulose derivative*2Chloromethylnaphthalone quinoline quaternary amine15619-48-43Chloromsthylnaphthalone quinoline quaternary amine15619-48-43Chlorous ion solution*2Choline chloride67-48-13Chromates*1Chromates*1Chromauldehyde (3-phenyl-2-propenal)104-55-25Citric acid (2-hydroxy-1,2,3 propanetricarboxylic acid)77-92-929Citrus terpenes94266-47-411Coal, granular50815-10-61Cobalt acetate71-48-71Cocaidopropyl betaine61789-40-02	Cellophane	9005-81-6	2
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Cellulose derivative*2Chloromethylnaphthalonc quinoline quaternary amine15619-48-43Chlorous ion solution*2Choline chloride67-48-13Chromates*1Chromium (iii) acetate1066-30-41Chromandlehyde (3-phenyl-2-propenal)104-55-25Citric acid (2-hydroxy-1,2,3 propanetricarboxylic acid)77-92-929Citrus terpenes94266-47-411Coal, granular50815-10-61Cobalt acetate71-48-71Cocaidopropyl betaine61789-40-02	Collulose	9004-34-6	1
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Chlorous ion solution * 2 Choline chloride 67-48-1 3 Chromates * 1 Chromium (iii) acetate 1066-30-4 1 Cinnamaldehyde (3-phenyl-2-propenal) 104-55-2 5 Citric acid (2-hydroxy-1,2,3 propanetricarboxylic acid) 77-92-9 29 Citrus terpenes 94266-47-4 11 Coal, granular 50815-10-6 1 Cobalt acetate 71-48-7 1 Cocaidopropyl betaine 61789-40-0 2	Chloromethylnaphthalone quinoline quaternary amine	15619-48-4	3
Choime chloride 67-48-1 3 Chromates * 1 Chromium (iii) acetate 1066-30-4 1 Chromates 104-55-2 5 Citric acid (2-hydroxy-1,2,3 propanetricarboxylic acid) 77-92-9 29 Citrus terpenes 94266-47-4 11 Coal, granular 50815-10-6 1 Cobit acetate 71-48-7 1 Cocaidopropyl betaine 61789-40-0 2	Chlorous ion solution	*	2
Chromates * 1 Chromium (iii) acetate 1066-30-4 1 Cinnamaldehyde (3-phenyl-2-propenal) 104-55-2 5 Citric acid (2-hydroxy-1,2,3 propanetricarboxylic acid) 77-92-9 29 Citrus terpenes 94266-47-4 11 Coal, granular 50815-10-6 1 Cobalt acetate 71-48-7 1 Cocaidopropyl betaine 61789-40-0 2	Choine chloride	67-48-1	3
Chromium (iii) acetate 1066-30-4 1 Cinnamaldehyde (3-phenyl-2-propenal) 104-55-2 5 Citric acid (2-hydroxy-1,2,3 propanetricarboxylic acid) 77-92-9 29 Citrus terpenes 94266-47-4 11 Coal, granular 50815-10-6 1 Cobalt acetate 71-48-7 1 Cocaidopropyl betaine 61789-40-0 2	Chromates	*	1
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Christerpenes 94266-47-4 11 Coal, granular 50815-10-6 1 Cobalt acetate 71-48-7 1 Cocaidopropyl betaine 61789-40-0 2	Citric acid (2-hydroxy-1,2,3 propanetricarboxylic acid)	77-92-9	29
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Cocenidopropyl betaine 71-48-7 1 Cocenidopropyl betaine 61789-40-0 2	Colai, granutar	50815-10-6	
Coordinopropyr ocidine 01789-40-0 2	Consident avoid to	/1-48-7	
	Cocamidomanianine ovide	01/89-40-0	

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	Chemical	No. DI
	Service	Containing
rChemical Component	Number	Chemical
Coco bis-(2-hydroxyethyl) amine oxide	61791-47-7	1
Cocoamidopropyl betaine	70851-07-9	<u> </u>
Cocomidopropyl dimethylamine	68140-01-2	1
Coconut fatty acid diethanolamide	68603-42-9	1
Collagen (Gelatin)	9000-70-8	6
Complex alkylaryl polyo-ester	*	<u> </u>
Complex aluminum salt	*	2
Complex organometallic salt	*	2
Complex substituted keto-amine	143106-84-7	<u>l</u>
Complex substituted keto-amine hydrochloride	*	1
Copolymer of acrylamide and sodium acrylate	25987-30-8	1
Copper	7440-50-8	1
Coppor iodide	7681-65-4	11
Copper sulfate	7758-98-7	3
Corundum (Aluminum oxide)	1302-74-5	48
Crotonaldehyde	123-73-9	1
Crystalline silica - cristobalite	14464-46-1	44
Crystalline silica - quartz (SiO2)	14808-60-7	207
Crystalline silica, tridymite	15468-32-3	2
Cumene	98-82-8	б
Cupric chloride	7447-39-4	10
Cupric chloride dihydrato	10125-13-0	7
Cuprous chloride	7758-89-6	1
Cured acrylic resin	*	7
Cured resin	*	4
Cured silicone rubber-polydimethylsiloxane	63148-62-9	1
Cured urethane resin	*	3
Cyclic alkanes		1
Cyclohexane	110-82-7	1
Cyclohexanone	108-94-1	1
Decanol	112-30-1	2
Decyl-dimethyl amine oxide	2605-79-0	4
Dextrose monohydrate	50-99-7	
D-Glucitol	50-70-4	1
Di (2-ethylhoxyl) phthalate	117-81-7	3
Di (ethylenc glycol) ethyl ether acctate	112-15-2	4
Diatomaceous earth	61790-53-2	3
Diatomaceous earth, calcined	91053-39-3	7
Dibromoacetonitrile	3252-43-5	1
Dibutylaminoethanol (2-dibutylaminoethanol)	102-81-8	4
Di-calcium silicate	10034-77-2	1
Dicarboxylic acid	*	1
Didecyl dimethyl ammonium chloride	7173-51-5	1
Diesel	*	1

	Chemical	No: of
	Abstract	-Products
Chemical Component	Number	Chemical
Diesel	68334-30-5	3
Diesel	68476-30-2	4
Dicsel	68476-34-6	43
Diethanolamine (2,2-iminodiethanol)	111-42-2	14
Diethylbenzene	25340-17-4	1
Diethylene glycol	111-46-6	8
Diethylene glycol monomethyl ether	111-77-3	4
Diethylene triaminepenta (methylene phosphonic acid)	15827-60-8	1
Diethylenetriamine	111-40-0	2
Diethylenetriamine, tall oil fatty acids reaction product	61790-69-0	1
Diisopropylnaphthalenesulfonic acid	28757-00-8	2
Dimethyl formamide	68-12-2	5
Dimethyl glutarate	1119-40-0	1
Dimethyl silicone	*	2
Dioctyl sodium sulfosuccinate	577-11-7	1
Dipropylene glycol	25265-71-8	1
Dipropylene glycol monomethyl ether (2-methoxymethylethoxy propanol)	34590-94-8	12
Di-secondary-butylphenol	53964-94-6	3
Disodium EDTA	139-33-3	1
Disodium ethylenediaminediacetate	38011-25-5	1
Disodium ethylenediaminetetraacetate dihydrate	6381-92-6	1
Disodium octaborate tetrahydrate	12008-41-2	1
Dispersing agent	*	1
d-Limonene	5989-27-5	11
Dodecyl alcohol ammonium sulfate	32612-48-9	2
Dodecylbenzene sulfonic acid	27176-87-0	14
Dodecylbonzone sulfonic acid salts	42615-29-2	2
Dodecylbenzene sulfonic acid salts	68648-81-7	7
Dodecylbenzene sulfonic acid salts	90218-35-2	1
Dodecylbenzenesulfonate isopropanolamine	42504-46-1	1
Dodecylbenzenesulfonic acid, monoethanolamine salt	26836-07-7	1
Dodecylbenzencsulphonic acid, morpholino salt	12068-08-5	1
EDTA/Copper chelate	*	2
EO-C7-9-iso-, C8-rich alcohols	78330-19-5	5
Epichlorohydrin	25085-99-8	5
Epoxy resin	*	5
Erucic amidopropyl dimethyl betaine	149879-98-1	3
Brythorbic acid	89-65-6	2
Bssential oils	*	6
Ethanaminium, n,n,n-trimethyl-2-[(1-oxo-2-propenyl)oxy]-,chloride, polymer with		
2-propenamide	69418-26-4	4
Ethanol (Ethyl alcohol)	64-17-5	36
Ethanol, 2-(hydroxymethylamino)-	34375-28-5	1
Ethanol, 2, 2'-(Octadecylamino) bis-	10213-78-2	1

	· Chemical	No. of
	Abstract	- Products
Chemical Component	Nümber	Chemical
Ethanoldigiycine disodium salt	135-37-5	1
Ether sait	25446-78-0	2
Ethoxylated 4-nonylphenol (Nonyl phenol ethoxylate)	26027-38-3	9
Ethoxylated alcohol	104780-82-7	1
Ethoxylated alcohol	78330-21-9	2
Ethoxylated alcohols	*	3
Ethoxylated alkyl amines	*	1
Ethoxylated amine	*	1
Ethoxylated amines	61791-44-4	1
Ethoxylated fatty acid ester	*	1
Ethoxylated nonionic surfactant	*	I
Ethoxylated nonyl phenol	*	8
Ethoxylated nonyl phenol	68412-54-4	10
Ethoxylated nonyl phenol	9016-45-9	38
Ethoxylated octyl phenol	68987-90-6	1
Ethoxylated octyl phenol	9002-93-1	1
Ethoxylated octyl phenol	9036-19-5	3
Ethoxylated olcyl amine	13127-82-7	2
Ethoxylated olcyl amine	26635-93-8	1
Ethoxylated sorbitol esters	*	1
Ethoxylated tridecyl alcohol phosphate	9046-01-9	2
Ethoxylated undecyl alcohol	127036-24-2	2
Ethyl acetate	141-78-6	4
Ethyl acetoacetate	141-97-9	1
Ethyl octynol (1-octyn-3-ol,4-ethyl-)	5877-42-9	5
Ethylbenzene	100-41-4	28
Ethylene glycol (1,2-ethancdiol)	107-21-1	119
Ethylene glycol monobutyl other (2-butoxyethanol)	111-76-2	126
Ethylene oxide	75-21-8	1
Ethylene oxide-nonylphenol polymer	*	1
Ethylenediaminetetraacctic acid	60-00-4	1
Ethylene-vinyl acetate copolymer	24937-78-8	1
Ethylhexanol (2-othylhexanol)	104-76-7	18
Fatty acid ester	*	1
Fatty acid, tall oil, hexa esters with sorbitol, ethoxylated	61790-90-7	1
Fatty acids	*	1
Fatty alcohol alkoxylate	*	1
Fatty alkyl amine salt	*	1
Fatty amine carboxylates	*	1
Fatty quaternary ammonium chloride	61789-68-2	11
Ferrie chloride	7705-08-0	3
Ferric sulfate	10028-22-5	77
Ferrous sulfate, heptahydrate	7782-63-0	4
Fluoroaliphatic polymeric esters	*	1

	Chemical	No. of
	Servivo	Contributor
Ghemical Component	Number	Chemical
Formaldehyde	50-00-0	12
Formaldehyde polymer	*	2
Formaldehyde, polymer with 4-(1,1-dimethyl)phenol, methyloxirane and oxirane	30704-64-4	3
Formaldehyde, polymer with 4-nonylphenol and oxirane	30846-35-6	1
Formaldehyde, polymer with ammonia and phenol	35297-54-2	2
Formamide	75-12-7	5
Formic acid	64-18-6	24
Fumaric acid	110-17-8	8
Furfural	98-01-1	1
Furfuryl alcohol	98-00-0	3
Glass fiber	65997-17-3	3
Gluconic acid	526-95-4	1
Glutaraidehyde	111-30-8	20
Glycerol (1,2,3-Propanetriol, Glycerine)	56-81-5	16
Glycol ethers	*	9
Glycol ethers	9004-77-7	4
Glyoxal	107-22-2	3
Glyoxylic acid	298-12-4	1
Guar gum	9000-30-0	41
Guar gum derivative	*	12
Haloalkyl heteropolycycle salt	*	6
Heavy aromatic distillate	68132-00-3	1
Heavy aromatic petroleum naphtha	64742-94-5	45
Heavy catalytic reformed petroleum naphtha	64741-68-0	10
Hematito	*	5
Hemicellulase	9025-56-3	2
Hoxahydro-1,3,5-tris(2-hydroxyethyl)-s-triazine (Triazine)	4719-04-4	4
Hexamethylenetetraminc	100-97-0	37
Hexancdiamine	124-09-4	<u> </u>
Hexaues	*	!
Hexylene glycol	107-41-5	5
Hydrated aluminum silicate	1332-58-7	4
Hydrocarbon mixtures	8002-05-9	<u>l</u>
Hydrocarbons	*	3
Hydrodesulfurized kerosine (petroleum)	64742-81-0	3
Hydrodesulfurized light catalytic cracked distillate (petroleum)	68333-25-5	1
Hydrodesulfurized middle distillate (petroleum)	64742-80-9	
Hydrogen chloride (Hydrochloric acid)	7647-01-0	42
Hydrogen fluoride (Hydrofluoric acid)	7664-39-3	2
Hydrogen peroxide	7722-84-1	4
Hydrogen sulfide	7783-06-4	1
Hydrotreated and hydrocracked base oil	*	2
Hydrotreated heavy naphthenic distillate	64742-52-5	3
Hydrotreated heavy paraffinic petroleum distillates	64742-54-7	<u> </u>

- Absuget - Survice	No.rof Products Containing,
Number	Circonical
Hydrotreated heavy petroleum naphtia 64/42-48	-9 /
Hydrotreated light petroleum distillates 64/42-47 Understand middle metroleum distillates 64/42-47	- <u>0 09</u> 7 2
Hydrometed middle petroleum distillates 04/42-40	-7 5
Hydroxyacetic acid (Glyconc acid) 79-14	-0 1
Hydroxyelly/cellulose 5004-02	0 1
Hydroxydenyionedianinichiacette acid, trisonium san	.1 1
Hydroxyanine fydroenol de 34/0-11	5 2
Hydroxyeultaiso	* 1
Inverselt of alkyl amines	* 2
	* 3
Inorganic particulate	* 1
Inorganic salt	* 1
Inorganic salt 533-96	0 1
Inorganic salt 7446-70-	0 1
Instant coffee purchased off the shelf	* 1
Inulin, carboxymethyl ether, sodium salt 430439-54-	6 1
Iron oxide 1332-37-	2 2
Iron oxide (Ferric oxide) 1309-37-	1 18
Iso anyl alcohol 123-51-	3 L
lso-alkanes/n-alkanos	* 10
Isobutanol (Isobutyl alcohol) 78-83-	1 4
Isomeric aromatic ammonium salt	* 1
Isooctanol 26952-21-	6 1
Isooctyl alcohol 68526-88-	0 1
Isooctyl alcohol bottoms 68526-88-	5 1
Isopropanol (Isopropyl alcohol, Propan-2-ol) 67-63-	0 274
Isopropylamine 75-31-	0 1
Isotridecanol, ethoxylated 9043-30-	5 1
Kerosene 8008-20-	6 13
Lactic ncid 10326-41-	7 1
Lactic acid 50-21-	5 1
L-Dilactide 4511-42-	6 1
Lead 7439-92-	
Light aromatic solvent naphtha 64742-95-	5 11
Light catalytic cracked petroleum distillates 64/41-59-	<u> </u>
Light naphtha distillate, hydrotreated 64742-53-	
Low toxicity base oils	
Magnemile 546.02	
Wagnesium carbonate 540-55-	
Nagrosium hudrovida //80-30	2 4
Magnasium isan diliaata 1217 71	
Magnesium titule 10377-60-	5

	Chemical	No. of
	Schulte	Containing
Chemical Component	Number	Chenital
Magnesium oxide	1309-48-4	18
Magnesium peroxide	1335-26-8	2
Magnesium poroxide	14452-57-4	4
Magnesium phosphicle	12057-74-8	1
Magnesium silicate	1343-88-0	3
Magnesium silicate hydrate (talc)	14807-96-6	2
Magnetite	*	3
Medium aliphatic solvent petroleum naphtha	64742-88-7	10
Metal salt	*	2
Metal salt solution	*	1
Methanol (Methyl alcohol)	67-56-1	342
Methyl isobutyl carbinol (Methyl amyl alcohol)	108-11-2	3
Methyl salicylate	119-36-8	66
Methyl vinyl ketone	78-94-4	2
Methyleyclohexane	108-87-2	1
Міса	12001-26-2	3
Microcrystalline silica	1317-95-9	1
Mineral	#	1
Mineral Filler	*	11
Mineral spirits (stoddard solvent)	8052-41-3	2
Mixed titanium ortho ester complexes	*	1
Modified alkane	*	1
Modified cycloaliphatic amine adduct	*	3
Modified lignosulfonate	*	1
Monoethanolamine (Ethanolamine)	141-43-5	17
Monoethanolamine borate	26038-87-9	1
Morpholine	110-91-8	2
Mullite	1302-93-8	55
n,n-dibutylthiourea	109-46-6	<u> </u>
N,N-dimethyl-1-octadecanamine-HCl	*	1
N,N-dimethyloctadecylamine	124-28-7	3
N,N-dimethyloctadecylamine hydrochloride	1613-17-8	2
n,n'-Methylenebisaerylamide	110-26-9	1
n-alkyl dimethyl benzyl ammonium chloride	139-08-2	1
Naphthalone	91-20-3	44
Naphthalone derivatives	*	1
Naphthalenesulphonic acid, bis (1-methylethyl)-methyl derivatives	99811-86-6	<u>l</u>
Natural asphalt	12002-43-6	1
n-cocoamidopropyl-n,n-dimethyl-n-2-hydroxypropylsulfobetaine	68139-30-0	1
n-dodecyl-2-pyrrolidone	2687-96-9	<u> </u>
N-heptane	142-82-5	<u> </u>
Nickel sulfate hexalightate	10101-97-0	2
Nitrilotriacetamide	4862-18-4	4
Nitrilotriacetic acid	139-13-9	6

	Chemical -	Norof
	Austract	Containing
Ghomical Component	Number	Chemical
Nitrilotrincetonitrile	7327-60-8	3
Nitrogon	7727-37-9	9
n-Methylpyrrolidone	872-50-4	1
Nonane, all isomers	*	1
Non-hazerdous salt	*	1
Nonionic surfactant	*	1
Nonyl phonol ethoxylate	*	2
Nonyl phenol ethoxylate	9016-45-6	2
Nonyl phenol ethoxylate	9018-45-9	1
Nonylphenol	25154-52-3	1
Nonylphenol, ethoxylated and sulfated	9081-17-8	1
N-propyl zirconate	*	1
N-tallowalkyltrimethylenediaminos	*	1
Nuisance particulates	*	2
Nylon fibers	25038-54-4	2
Octanol	111-87-5	2
Octyltrimethylammonium bromide	57-09-0	1
Olefinic sulfonate	Ŵ	1
Olefins	*	1
Organic acid salt	*	3
Organic acids	*	1
Organic phosphonate	*	1
Organic phosphonate salts	*	1
Organic phosphonic acid salts	*	6
Organic salt	*	1
Organic sulfur compound	*	2
Organic titanate	*	2
Organiophilic clay	*	2
Organo-metallic ammonium complex	*	1
Other inorganic compounds	*	1
Oxirane, methyl-, polymer with oxirane, mono-C10-16-alkyl ethers, phosphates	68649-29-6	1
Oxyalkylated alcohol	*	6
Oxyalkylated alcohols	228414-35-5	1
Oxyalkylated alkyl alcohol	*	1
Oxyalkylated alkylphenol	*	1
Oxyalkylated fatty acid	*	2
Oxyalkylated phenol	*	1
Oxyalkylated polyamine	*	1
Oxylateci alcohol	*	1
Paraffin wax	8002-74-2	1
Paraffinic naphthenic solvent	*	1
Paraffinic solvent	*	5
Paraffins	*	1
Perlito	93763-70-3	1

	Chemical	No. of
	Service	Containing
Chemical Component	Number	Chemical
Petroleum distillates	*	26
Petroleum distillatos	64742-65-0	1
Petroleum distillates	64742-97-5	1
Petroleum distillates	68477-31-6	3
Petroleum gas oils	de la companya	1
Petroleum gas oils	64741-43-1	i
Phenol	108-95-2	5
Phenol-formaldehyde resin	9003-35-4	32
Phosphate ester	*	6
Phosphate esters of alkyl phenyl ethoxylate	68412-53-3	1
Phosphine	**	1
Phosphonic acid	*	1
Phosphonic acid	129828-36-0	1
Phosphonic acid	13598-36-2	3
Phosphonic acid (dimethlamino(methylene))	29712-30-9	1
Phosphonic acid. [nitrilotris(methylene)]tris- pentasodium salt	2235-43-0	1
Phospheric acid	7664-38-2	7
Phosphoric acid ammonium salt	*	1
Phosphoric acid, mixed deevl, octyl and ethyl esters	68412-60-2	3
Phosphorous acid	10294-56-1	1
Phthalic anhydride	85-44-9	2
Pine oil	8002-09-3	5
Plasticizer	*	1
Poly(oxv-1.2-ethanediy)	24938-91-8	1
Poly(oxy-1,2-ethanediy), alpha-(4-nonylphenyl)-omega-hydroxy-, branched		
(Nonylphenol ethoxylate)	127087-87-0	3
Poly(oxy-1,2-ethanediyl), alpha-hydro-omega-hydroxy	65545-80-4	1
Poly(oxy-1,2-ethanediyl), alpha-sulfo-omega-(hoxyloxy)-, ammonium salt	63428-86-4	3
Poly(oxy-1,2-ethanediy1),a-(nonylphenyl)-w-hydroxy-, phosphate	51811-79-1	1
Poly-(oxy-1,2-ethanediyl)-alpha-undecyl-omega-hydroxy	34398-01-1	6
Poly(sodium-p-styrenesulfonate)	25704-18-1	1
Poly(vinyl alcohol)	25213-24-5	2
Polyacrylamides	9003-05-8	2
Polyacrylamides	*	L
Polyacrylate	*	1
Polyamine	*	2
Polyanionic cellulosc	14	2
Polyepichlorohydrin, trimethylamine quaternized	51838-31-4	1
Polyetheramine	9046-10-0	3
Polyether-modified trisiloxane	27306-78-1	1
Polyethylene glycol	25322-68-3	20
Polyethylene glycol ester with tall oil fatty acid	9005-02-1	1
Polyethylene polyammonium salt	68603-67-8	2
Polyethylene-polypropylene glycol	9003-11-6	5

	Chemical	Notof
	Service	Containing
Chemical Component	Number	Chemical
Polylactide resin	*	3
Polyoxyalkylenes	*	1
Polyoxyethylene castor oil	61791-12-6	1
Polyphosphoric acid, esters with triethanolamine, sodium salts	68131-72-6	1
Polypropylene glycol	25322-69-4	1
Polysaccharide	*	20
Polyvinyl alcohol	*	1
Polyvinyl alcohol	9002-89-5	2
Polyvinyl alcohol/polyvinylacetate copolymer	*	1
Potassium acetate	127-08-2	1
Potassium carbonate	584-08-7	12
Potassium chloride	7447-40-7	29
Potassium formate	590-29-4	3
Potassium hydroxide	1310-58-3	25
Potassium iodide	7681-11-0	6
Potassium metaborate	13709-94-9	3
Potassium metaborate	16481-66-6	3
Potassium oxide	12136-45-7	<u> </u>
Potassium pentaborate	*	1
Potassium persulfate	7727-2]-1	9
Propanol (Propyl alcohol)	71-23-8	18
Propanol, [2(2-methoxy-methylethoxy) methylethoxyl]	20324-33-8	1
Propargyl alcohol (2-propyn-1-ol)	107-19-7	46
Propylene carbonate (1,3-dioxolan-2-one, methyl-)	108-32-7	2
Propylene glycol (1,2-propanediol)	57-55-6	18
Propylene oxide	75-56-9	
Propylene pentamer	15220-87-8	1
p-Xylene	106-42-3	1
Pyridinium, 1-(phenyimethyl)-, ethyl methyl derivatives, chlorides	68909-18-2	9
Pyrogenic silica	112945-52-5	3
Quaternary amine compounds	*	3
Quaternary amine compounds	61789-18-2	1
Quaternary ammonium compounds	*	9
Quaternary ammonium compounds	19277-88-4	<u> </u>
Quaternary aminonium compounds	68989-00-4	1
Quaternary ammonium compounds	8030-78-2	
Quaternary ammonium compounds, dicoco alkyldimethyl, chlorides	61789-77-3	2
Quaternary ammonium salts	*	2
Quaternary compound	*	1
Quaternary salt	*	2
Quaternized alkyl nitrogenated compound	68391-11-7	2
Rafinnates (petroleum), sorption process	64741-85-1	2
Residues (petroleum), catalytic reformer fractionator	64741-67-9	10
Resin	8050-09-7	2

	APROVED ANY AMOUNT
Chemichl Component	nenucal
Kunie 1317-80-2	2
Salt of phosphare estivated diamine	<u></u>
Salt of phosphono-methylated diamine	1
Sans of oxyakylated faity annues (00551-55-7	7
Secondary alcondi	47
Silica (Silica amerikana *	3
Siling amorphous precipitated 67762-90-7	1
Silicon corboxulato	1
Silicon diavide (Eused ellico)	7
Silicons condition	
Sulcine elitision (CLA 10 plefin gulfongte 68430-57-6	4
Sodium (C14-10) olemi sunomate 06402-07-0	
Sodium zednymiczyj sunate	6
Sodium acid pyrophogenete 7758-16-9	5
Sodium alkul dishenul ovide sulfonate 28519-02-0	1
Sodium aluminate 2037-02-0	1
Socium aluminate 1302-42-7	1
Socium Antonionum prospirate (7/05-00-0	10
Sodium bicarbonate (Sodium hydrogen carbonate)	6
Sodium bisuine 7031-50-5	10
Sodium brownide 7/05-30-0	101
Sodium certeuste	14
Social 47/-12-0	<u>14</u> i
Sodium chiorate 7/13-03-9	19
Sodium chlorite 7/59, 10-2	8
Sodium commissionate 68608 68.4	2
Sodium cocaninopiopionate 126.06.5	2
Solitim indefine 6381.77.7	4
Sodium chymoroade 2836-32-0	7 2
Sodium hydrovida (Caustie anda)	80
Sodium hypoblorite 7681-52-9	14
Solium Invest at her sulfate 68801-38-3	3
Sodium metabinulfite 7681-57-4	- <u>-</u>
Sodium metaborate 7775.10_1	2
Sodium metaborate tetrahydrate 25595_59.1	6
Sodium metacilicate anhydrous 6824_02_0	, 一
Sodium nitrite 7632_00_0	1
Sodium ovide (Na2O) 1212-50-2	
Sodium perhoreto 1112.47.0	+
Sodium periorate 7/32_04_4	<u> </u>
Sodium perborate tetralsydrate 10/86-00-7	4
Sodium persulfate 7775_07_1	6
Sodium plosphate *	2

	Chemiteni Abstroct	No. of Products
(Phemical/Component)	Service	Containing
Sodium polyphosphate	68915-31-1	1
Sodium salicylate	54-21-7	1
Sodium silicate	1344-09-8	2
Sodium sulfate	7757-82-6	7
Sodium tetraborate	1330-43-4	7
Sodium tetraborate decahydrate	1303-96-4	10
Sodium thiosulfate	7772-98-7	10
Sodium thiosulfate pentahydrate	10102-17-7	3
Sodium trichloroacetate	650-51-1	1
Sodium tripolyphosphate	7758-29-4	2
Sodium xylene sulfonate	1300-72-7	3
Sodium zirconium lactate	174206-15-6	1
Solvent refined heavy naphthenic petroleum distillates	64741-96-4	1
Sorbitan monocleate	1338-43-8	1
Stabilized aqueous chlorine dioxide	10049-04-4	1
Stannous chloride	7772-99-8	1
Stannous chloride dihydrate	10025-69-1	6
Starch	9005-25-8	5
Steam cracked distillate, cyclodiene dimer, dicyclopentadiene polymer	68131-87-3	1
Steam-cracked petroleum distillates	64742-91-2	6
Straight run middle petroleum distillates	64741-44-2	5
Substituted alcohol	*	2
Substituted alkene	*	1
Substituted alkylamine	*	2
Sucrose	57-50-1	<u> </u>
Sulfamic acid	5329-14-6	6
Sulfate	*	<u> </u>
Sulfonate acids	**	
Sulfonate surfactants	*	1
Sulfonic acid salts	*	1
Sulfonic acids, petroleum	61789-85-3	1
Sulfur compound	*	1
Sulfuric acid	7664-93-9	9
Sulfuric acid, monodecyl ester, sodium salt	142-87-0	2
Sulfuric acid, monooctyl ester, sodium salt	142-31-4	2
Surfactants	*	13
Sweetened middle distillate	64741-86-2	1
Synthetic organic polymer	9051-89-2	2
Tall oil (Fatty acids)	61790-12-3	4
Tall oil, compound with diethanolamine	68092-28-4	
Tailow soap		2
Tar bases, quinoline derivatives, benzyl chloride-quaternized	72480-70-7	
Tergitol	68439-51-0	
Terpene hydrocarbon byproducts	68956-56-9	3

	Chemical -	No. of
	Service	Containing
Chemical Component	Nümber	Chemical
Terpenes	*	1
Terpenes and terpenoids, sweet orange-oil	68647-72-3	2
Terpineol	8000-41-7	1
Tert-butyl hydroperoxide	75-91-2	6
Tetra-calcium-alumino-ferrite	12068-35-8	1
Tetrnethylene glycol	112-60-7	1
Tetracthylenepentamine	112-57-2	2
Tetrahydro-3,5-dimethyl-2H-1,3,5-thiadiazine-2-thione (Dazomet)	533-74-4	13
Tetrakis (hydroxymethyl) phosphonium sulfate	55566-30-8	12
Tetramethyl ammonium chloride	75-57-0	14
Tetrasodium 1-hydroxyethylidene-1,1-diphosphonic acid	3794-83-0	11
Tetrasodium ethylenediaminetetraacetate	64-02-8	10
Thiocyanate sodium	540-72-7	1
Thioglycolic acid	68-11-1	66
Thiourca	62-56-6	9
Thiourea polymer	68527-49-1	3
Titanium complex	*	1
Titanium oxide	13463-67-7	19
Titanium, isopropoxy (triethanolaminate)	74665-17-1	2
Toluene	108-88-3	29
Treated ammonium chloride (with anti-caking agent a or b)	12125-02-9	1
Tributyl tetradecyl phosphonium chloride	81741-28-8	5
Tri-calcium silicate	12168-85-3	1
Tridecyl alcohol	112-70-9	1
Triethanolamine (2,2,2-nitrilotriethanol)	102-71-6	21
Triethanolamine polyphosphate ester	68131-71-5	3
Triethanolamine titanate	36673-16-2	1
Triethanolamine zirconate	101033-44-7	6
Triethanolamine zirconium chelate	*	1
Triethyl citrate	77-93-0	1
Triethyl phosphate	78-40-0	1
Triethylene glycol	112-27-6	3
Triisopropanolamine	122-20-3	5
Trimethylammonium chloride	593-81-7	11
Trimethylbenzone	25551-13-7	5
Trimethyloctadecylammonium (1-octadecanaminium, N,N,N-trimethyl-, chloride)	112-03-8	6
Tris(hydroxymethyl)aminomethane	77-86-1	1
Trisodium ethylenediaminetetraacetate	150-38-9	1
Trisodium ethylenediaminetriacetate	19019-43-3	1
Trisodium nitrilotriacetate	18662-53-8	8
Trisodium nitrilotriacetate (Nitrilotriacetic acid, trisodium salt monohydrate)	5064-31-3	9
Trisodium ortho phosphate	7601-54-9	<u> </u>
Trisodium phosphate dodecahydrate	10101-89-0	1
Ulexite	1319-33-1	1

	Chemical-	No. of Products
Chemics).Component	Service Number	Containing. Chemical
Urea	57-13-6	3
Wall material	*	1
Walnut hulls	*	2
White mineral oil	8042-47-5	8
Xanthan gum	11138-66-2	6
Xylene	1330-20-7	44
Zinc chloride	7646-85-7	1
Zine oxide	1314-13-2	2
Zirconium complex	*	10
Zirconium dichloride oxide	7699-43-6	1
Zirconium oxide sulfate	62010-10-0	2
Zirconium sodium hydroxy lactate complex (Sodium zirconium lactate)	113184-20-6	2

* Components marked with an asterisk appeared on at least one MSDS without an identifying CAS number. The MSDSs in these cases marked the CAS as proprietary, noted that the CAS was not available, or left the CAS field blank. Components marked with an asterisk may be duplicative of other components on this list, but Committee staff have no way of identifying such duplicates without the identifying CAS number.
EXHIBIT 6



What Chemicals Are Used

As previously noted, chemicals perform many functions in a hydraulic fracturing job. Although there are dozens to hundreds of chemicals which could be used as additives, there are a limited number which are routinely used in hydraulic fracturing. The following is a list of the chemicals used most often. This chart is sorted alphabetically by the Product Function to make it easier for you to compare to the fracturing records .

Chemical Name	CAS	Chemical Purpose Product Funct	
Hydrochloric Acid	007647-01-0	Helps dissolve minerals and initiate cracks in the Ack/ rock	
Glutarakleliyde	Q00111-3D-B	Eliminates bacteria in the water that produces Biockle corrosive by-products	
Quaternary Ammonium Chloride	012125-02-9	Eliminates bacteria in the water that produces corrosive by-products	Blockle
Quaternary Ammonium Chioride	061789-71-1	Eliminates bacteria in the water that produces corrosive by-products	Blockle
Tetrakis Hydroxymethyl- Phosphonium Sulfate	055566-30-8	Eliminates bacteria in the water that produces Blockle corrosive by-products	
Ammonium Persulfate	007727+54-0	Allows a delayed break down of the get	Breaker
Sodium Chloride	007647-14-5	Product Stabilizer	Breaker
Magnesium Peroxide	014452-57-4	Allows a delayed break down the gel	Breaker
Magnesium Oxide	001309-48-4	Allows a delayed break down the gel	Breaker
Calcium Citionde	010043-52-4	Product Stabilizer	Breaker
Choline Chloride	000067-48-1	Prevents clays from swelking or shifting Clay Sta	
Tetranethyl ammonium chioride	000075-57-0	0 Prevents clays from swelling or shifting Clay St	
Sodium Chloride	007647-14-5	Prevents clays from swelling or shifting	Clay Stablizer
Isopropanol	000067-63-0	Product stabilizer and / or winterizing agent	Corrosion Inhibitor
Methanoi	000067-56-1	Product stabilizer and / or winterizing agent Corrosion Inhib	
Formic Acid	000064-18-6	Prevents the corrosion of the pipe Corrosion Inhibit	
Acetaldehyde	000075-07-0	Prevents the corrosion of the pipe	Corrosion Inhibitor
Petroleum Distillate	064741-85-1	Carrier fluid for borate or zirconate crosslinker	Crosslinker
Hydrotreated Light Petroleum Distiliate	064742-47-8	Carrier flukt for borate or zirconate crosslinker	Crosslinker
Potassium Metaborate	013709-94-9	Maintains fluid viscosity as temperature increases Crosslinker	
Triethanolamine Zirconate	101033-44-7	Maintains fluid viscosity as temperature increases Crosslinker	
Sodium Tetraborate	001303-96-4	Maintains fluid viscosity as temperature increases Crosslinker	
Boric Acki	001333-73-9	Maintains fluid viscosity as temperature increases Crosslinker	
Zirconium Complex	113184-20-6	Maintains fluki viscosity as temperature increases Crosslinker	
Borate Salts	N/A	Maintains fluki viscosity as temperature increases Crosslinker	
Ethylene Glycol	000107-21-1	Product stabilizer and / or winterizing agent.	Crosslinker
Methanol	000067-56-1	Product stabilizer and / or winterizing agant.	Crosslinker
Polyacrylamide	009003-05-8	"Slicks" the water to minimize friction	Friction Reducer

fragspaussasa/.../whataphasaicalsinasanWarn polyacrylanide friction reducer

Friction Reducer

Chemical Use in Hydraulic Fracturing (/dhemical-use)

Introduction to Chemical Use (/water-protection/chilling-usage)

Why Chemicals Are Used (/chemical-use/why-chemicals-are-used)

What Chemicals Are Used (/chemical-use/what-chemicals-are-used)

Chemicals & Public Disclosure (/chemical-use/chemicals-public-disclosure)

Looking for information about a well site near you?



(https://www.hydraulic/racturingdisciosure.org/fracfocusfind/) Search for nearby well sites that have been hydraulically fractured to see what chemicals were used in the process.

6//7//20212d Light Petroleum Distillate	064742-47-8	Carrier fluke for poly Whate Chaunical Se Are	Used Ir Erre Focus
Methanol	000067-56-1	Product stabilizer and / or winterizing agent.	Friction Reducer
Ethylene Glycol	000107-21-1	Product stabilizer and / or winterizing agent.	Friction Reducer
Guar Gum	009000-30-0	Thickens the water in order to suspend the sand	Gelling Agent
Petroleum Distillate	064741-85-1	Carrier fluid for guar gum in liquid gels	Gelling Agent
Hydrotreated Light Petroleum Distiliate	064742-47-8	Carrier fluid for guar gum in liquid gels	Gelling Agent
Methanol	000067-56-1	Product stabilizer and / or winterizing agent.	Gelling Agent
Polysaccharide Blend	068130-15-4	Thickens the water in order to suspend the sand	Gelling Agent
Ethylene Glycol	000107-21-1	Product stabilizer and / or winterizing agent.	Gelling Agent
Ckric Acid	000077-92-9	Prevents precipitation of metal oxkles	Iron Control
Acetic Acid	000064-19-7	Prevents precipitation of metal oxkles	Iron Control
Thiaglycalic Acid	000068-11-1	Prevents precipitation of metal oxides	Iran Cantrol
Sodium Erythorbate	006381-77-7	Prevents precipitation of metal oxides	Iron Control
Lauryi Sulfate	000151-21-3	Used to prevent the formation of emulsions in the fracture fluid	Non-Emulsifier
Isopropanol	000067-63-0	Product stabilizer and / or winterizing agent.	Non-Emulsifier
Ethylene Glycol	000107-21-1	Product stabilizer and / or winterizing agent.	Non-Emulsifier
Sodium Hydroxide	001310-73-2	Adjusts the pH of fluid to maintains the effectiveness of other components, such as crosslinkers	pH Adjusting Agent
Potassium Hydroxide	001310-58-3	Adjusts the pH of fluid to maintains the effectiveness of other components, such as crosslinkers	pH Adjusting Agent
Acetic Acid	000064-19-7	Adjusts the pH of fluid to maintains the effectiveness of other components, such as crosslinkers	pH Adjusting Agent
Sodium Carbonate	000497-19-8	Adjusts the pH of fluki to maintains the effectiveness of other components, such as crosslinkers	pH Adjusting Agent
Potassium Carbonate	000584-08-7	Adjusts the pH of fluki to maintains the effectiveness of other components, such as crosslinkers	pH Adjusting Agent
Copolymer of Acrylamide and Sodium Acrylate	025987-30-8	Prevents scale deposits in the pipe	Scale Inhibitor
Sodium Polycarboxylate	N/A	Prevents scale deposits in the pipe	Scale Inhibitor
Phosphonic Ackl Salt	N/A	Prevents scale deposits in the pipe	Scale Inhibitor
Laury Sulfate	000151-21-3	Used to increase the viscosity of the fracture fluid	Surfactant
Ethanol	000064-17-5	Product stabilizer and / or winterizing agent.	Surfactant
Naphthalene	000091-20-3	Carrier fluid for the active surfactant ingredients	Surfactant
Methanol	000067-56-1	Product stabilizer and / or winterizing agent.	Surfactant
Isopropy! Alcohol	000067-63-0	Product stabilizer and / or winterizing agent.	Surfactant
2-Butoxyethanol	000111-76-2	Product stabilizer	Surfactant

One of the problems associated with Identifying chemicals is that some chemicals have multiple names. For example Ethylene Glycol (Antifreeze) is also known by the names Ethylene akohol; Glycol; Glycol akohol; Lutrol 9; Macrogol 400 BPC; Monoethylene glycol; Ramp; Tescol; 1,2-Dihydroxyethane; 2-Hydroxyethanol; HOCHZCH2OH; Dihydroxyethane; Ethanediol; Ethylene gycol; Glygen; Athylenglykol; Ethane-1,2-diol; Fridex; M.e.g.; 1,2-Ethandiol; Ucar 17; Dowtherm SR 1; Norkool; Zerex; Allphatic diol; Ilexan E; Ethane-1,2-diol; 1,2-Ethanedio.

This multiplicity of names can make a search for chemicals somewhat difficult and frustrating. However, if you search for a chemical by the CAS number it will return the correct chemical even if the name on the fracturing record does not match. For example if the fracturing record listed the chemical Hydrogen chloride and you searched for it by name using a chemical search site you may not get a result. But If you search for CAS # 007647-01-0 it might return Hydrochkork acid which is another name of Hydrogen chloride. Therefore, by using the CAS number you can avoid the issue of multiple names for the same chemical.

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6/3/20/bit search the National Institute of Standards and Technik/Institute Technik/Institute of Standards and Technik/Institute Technik/Institute of Standards and Technik/Institute Technik/Institute of Standards and Technik/I

OSHA/EPA Occupational Chemical Database (http://www.osha.gov/web/dep/chemicakiata/#target) *

The Chemical Database (http://uli.chemistry.uakron.edu/erd/) #

EPA Chemical Fact Sheets (http://www.epa.gov/chemfact/) #

* - When you click links marked with the + symbol, you will leave the FracFocus website and go to websites that are not controlled by or affiliated with this site.





(http://www.ioacc.state.ok.us/)

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fracfocus.org/.../what-chemicals-are-us...

Terms of Usa (/terms-of-usa)

EXHIBIT 7

Statewide Rule Number	Rule	Total Violations
3	Identification of Properties, Wells, and Tanks	23,969
8	Water Protection	18,035
14B2	Plugging Extension	17,124
91	Clean up of Soil Contaminated by a Crude Oil Spill	5,731
13	Casing, Cementing, Drilling, and Completion Requirements	2,808
46	Fluid Injection into Productive Reservoir	2,396
14	Plugging	1,514
9	Disposal Wells	1,174
36	Oil, Gas, or Geothermal Resource Operation in Hydrogen Sulfide Areas	1,048
22	Protection of Birds	1,044

Ten i	Rules	Most	Frequent	lv Vio	lated -	FY	2009
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• Poor Public Perception. A lack of consistent enforcement can contribute to a public perception that the Commission is not willing to take strong enforcement action. This is especially true for violations that arise from complaints. In fiscal year 2009, the Commission received 681 complaints related to oil and gas production and found 1,997 violations based on these complaints. However, these complaints ultimately resulted in enforcement action for only 91, or 4 percent, of these violations. When the public sees so few enforcement actions for violations found from its complaints, the public's confidence in the Commission's enforcement process is undermined. In addition, the Commission does not post its enforcement data in a manner that is easily accessible to the public, making it difficult for the public to find information on the Commission's enforcement efforts.

Other regulatory agencies have formalized processes for ranking violations to ensure that serious or repeat offenses of lower-level violations are referred for enforcement action. For example, the Texas Commission on Environmental Quality uses Enforcement Initiation Criteria to evaluate violations found during inspections. This system ensures that serious violations and certain repeat violations are automatically forwarded for enforcement action.

Limited enforcement action taken by the Commission is not a new concern. 'The 2001 Sunset review of the Commission found that the agency's enforcement efforts did not adequately address serious pollution violations and noted that even then, poor enforcement had been a long-standing problem for the Commission. If operators are rarely brought in for enforcement action, a pattern of non-compliance can develop leading to escalating violations, which can eventually result in costly Statemanaged well plugging or remediation, large environmental impacts, or public safety hazards.

Sunset Commission Decisions January 2011

The Commission's enforcement data is not easily accessible to the public on its website. **EXHIBIT 8**

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ORDINANCE NO. <u>18449-02-2009</u>

AN ORDINANCE AMENDING THE CODE OF ORDINANCES OF THE CITY OF FORT WORTH, BY AMENDING ARTICLE II OF CHAPTER 15, "GAS" ENTITLED, "GAS DRILLING AND PRODUCTION," REGULATING THE DRILLING AND PRODUCTION OF GAS WELLS WITHIN THE CITY TO PROVIDE REVISED REGULATIONS REGARDING DISTANCE, NOISE, GAS PIPELINES, AND TECHNICAL PROVISIONS; PROVIDING THAT THIS ORDINANCE SHALL BE CUMULATIVE OF ALL ORDINANCES; PROVIDING A SAVINGS CLAUSE; PROVIDING A SEVERABILITY CLAUSE; PROVIDING A PENALTY CLAUSE; PROVIDING FOR PUBLICATION; PROVIDING THAT ORDINANCE NUMBERS 18399-12-2008 AND 18412-12-2008 ARE REPEALED AND NAMING AN EFFECTIVE DATE

WHEREAS, on December 11, 2001, the City Council adopted Ordinance Number 14880 regulating gas drilling within the city limits of Fort Worth; and

WHEREAS, since 2001, over one thousand permits have been issued for drilling and production of gas within the city limits; and

WHEREAS, between 2001 and 2006, gas drilling and production moved from sparsely populated areas in the northern part of the City to more densely urbanized areas in the southern, western and eastern portions of the City; and

WHEREAS, in 2006, the City Council appointed a task force composed of gas industry, developers and neighborhood representatives to study revisions to the Gas Drilling Ordinance that would improve the quality of life for those citizens working and living near the drilling sites; and

WHEREAS, the 2006 task force recommended an increase to the permitted distance requirements for high impact permits, increased notification to the citizens of Fort Worth, additional noise abatement procedures, site security, signage, and other revisions to provide additional protections of surface property rights but continue to allow access to the minerals; and

WHEREAS, in June of 2006, the City Council amended the Gas Drilling Ordinance for the drilling, production and redrilling of gas so that these activities may be conducted in a manner that protects the public health and welfare of the citizens of Fort Worth, conforms with established codes and regulations while minimizing the potential impact to surface property and of mineral rights owners; and

WHEREAS, in 2008, the City Council appointed a third task force of gas industry, developer and neighborhood representatives to study revisions to the Gas Drilling Ordinance, including revisions to the current regulations for compressors, noise, public notice, Protected Use definitions, setbacks, roads, and other revisions that will improve the quality of life while allowing the continued access to the minerals; and

3. any wells in existence or on any wells on which drilling has commenced on land annexed into the City after the effective date of the 2001 Ordinance; or

4. any well that was planned for the land before the 90^{th} day before the effective date of its annexation and one or more licenses, certificates, permits, approvals, or other forms of authorization by a governmental entity were required by law for such well and the completed application for the initial authorization was filed before the date the annexation proceedings were instituted.

A person shall have forty-five (45) days after annexation into the City to designate a Gas operation as a pre-existing operation by filing a site plan drawn to scale that shows the proposed location of the well or pad site with respect to survey lines and the proposed associated production facilities, if any, or designate an existing pad site as a Multiple Well Site with the Gas Inspector.

An Operator or Property Owner shall have forty-five days after the effective date of this Ordinance to notify the City of well sites existing prior to January 1, 2009, that have a Protected Use (permitted or built), as defined in the 2006 Gas Drilling Ordinance (Ordinance Number 16986), or a residential lot that is located between three hundred (300) feet and two hundred (200) feet from an existing well site. Sites that meet the above notice and distance requirements will be grandfathered to the setback requirements existing prior to January 1, 2009. For residential lots only, if the above required notice is not received by the City within forty-five (45) days, the minimum setback distance may be reduced by the City Council to two hundred (200) feet.

- I. No Gas Well Permit shall be issued for any well to be drilled within any Public Park without the prior consent of the City Council. The City Council shall review the insurance and security requirements on an individual basis prior to issuing the permit.
- J. No Gas Well Permit shall be issued for any well to be drilled within any floodplain or floodway identified by FEMA on the most current FIRM without obtaining a floodplain development permit from the Transportation and Public Works Department.
- **K.** No Gas Well Permit shall be issued without an approved erosion control and grading plan as required by the City to prevent any off site migration of silt and sediment.
- L. No Gas Well Permit shall be issued for any well to be drilled on City owned property without the prior consent of the City Council. The City Council shall review the insurance and security requirements on an individual basis prior to issuing the permit.
- M. Multiple Gas Well Pad Site Permit. At the time the Operator submits an application for the issuance for a single well permit, the Operator, at his option, may also request the issuance of a Multiple Well Site Permit for drilling future wells. Applications for Gas wells drilled on a Multiple Well Site shall comply with the following:

1. For all purposes, the measurement shall be from the boundary line of the pad site.

2. If the pad site is located within six hundred (600) feet of a Protected Use at the time of the filing of a Multiple Well Site Permit application, the applicant must obtain a variance granted by the City Council or waivers from all Protected Uses within a six hundred (600) foot radius before the Multiple Well Site Permit may be issued.

3. Notice that a Multiple Well Site Permit application has been filed with the City must be included in any notice to Property Owners and in the published newspaper notice as required by Section 15-36 for the initial Gas Well permit.

4. All Multiple Well Site Permits must be filed of record by the Operator, at his expense in the applicable county deed records and indicated on all applicable plats filed in the deed records. Each filed Multiple Well Site Permit shall contain the address, lot and block, subdivision name and plat volume and page of each lot, tract or parcel located within one thousand (1000) feet of the Multiple Well Site Permit.

5. Prior to the issuance of a Multiple Well Site Permit by the City, the Operator must place at least one sign on the property located in a conspicuous place or places upon the property at a point or points visible from the nearest Right-of-way, street, roadway, public thoroughfare or Protected Use adjacent to such property. The Gas Inspector may require additional signage if the pad site fronts on more than one Right-of-way, street, roadway, or public thoroughfare. The sign shall indicate that a Multiple Well Site Permit to drill multiple wells for gas on this site has been applied for, and shall further set forth that additional information can be acquired by telephoning the applicant/Operator at the number indicated on the sign. A permanent sign approved by the Gas Inspector indicating that a Multiple Well Site Permit has been issued shall remain posted at the pad site location for the duration of the Multiple Well Site Permit.

6. Prior to the commencement of drilling of each additional Gas Well on a permitted Multiple Well Site Permit pad site, the Operator must submit an application for the issuance of a Gas Well permit, for each such future well, in accordance with this ordinance.

7. All subsequent Gas Wells drilled on a permitted Gas Well pad site permit shall comply with all regulations, including the notice and landscape provisions, and all other provisions of this ordinance, except for the distance setback requirements related to drilling a well from a Protected Use. No variance or waiver for a distance setback from a Protected Use shall be required for subsequent wells; however no well shall be drilled closer than three hundred (300) feet from any Protected Use or Public Building.

8. No Multiple Well Site Permit shall be issued for a Gas Well pad site greater than five (5) acres in surface area or the amount of surface area acreage included in the surface use agreement, whichever is larger.

9. All wells will be set back a minimum of seventy-five (75) feet from the outer pad site boundary.

10. The Multiple Well Site Permit shall automatically terminate if drilling of the initial well bore has not commenced within three hundred sixty-five (365) days from the date of the issuance of the Gas Well Permit unless the initial Gas Well Permit is extended by the Gas Inspector.

11. The issuance of a multiple well site permit is for the sole purpose of allowing future wells to be drilled on an existing pad site and within six hundred (600) feet of Protected Uses without obtaining waivers and/or variances as set forth in Section 15-36 of this Ordinance. All Gas Wells drilled upon a permitted Gas Well pad site must otherwise comply with any drilling distance regulations from a Protected Use or other structure as required by state law and applicable fire code regulations and all other provisions of this Ordinance.

N. By acceptance of any Gas Well Permit issued pursuant to this Ordinance, the Operator expressly stipulates and agrees to be bound by and comply with the provisions of this

Ordinance. The terms of this Ordinance shall be deemed to be incorporated in any Gas Well Permit issued pursuant to this Ordinance with the same force and effect as if this Ordinance was set forth verbatim in such Gas Well Permit.

O. Gas Drilling Review Committee (GDRC).

1. All applications where a City Council waiver is required, all applications that involve non commercial truck routes and all applications for gas Pipelines or gas Pipeline facilities located in a Private Residential Area shall be reviewed by the Gas Drilling Review Committee (GDRC) prior to the application being presented to the City Council or administratively issued by the City staff, where applicable.

2. The GDRC shall be composed of City staff representatives from the Transportation and Public Works, Gas Inspectors, Water, Planning and Development, Law, Community Relations and Parks and Community Services Departments. A representative from the City's Parks Advisory Board shall sit as a committee member when the application involves drilling within six hundred (600) feet of a Public Park, drilling on a Public Park or a Pipeline through a Public Park. The committee shall be chaired by the Assistant Director of Planning and Development - Gas Well Division.

3. Notice of GDRC meeting shall be mailed ten (10) days after receipt of the application to:

- a. All neighborhood associations within ½ mile of drill site;
- b. All Property Owners within one thousand (1,000) feet of the proposed well;
- c. All Property Owners fronting or along the non-commercial truck route; and
- d. All Property Owners along the proposed Private Residential Area Pipeline route.

Notices shall follow the same format used for adoption of zoning regulations and district boundary changes and shall include a description of the application, the proposed truck route, distance setbacks, a location map and the GDRC meeting date and time. Notices shall include the email and phone contact information for the Operator and the street address for the well location.

All notices and applications shall be placed on the City's webpage in an electronic format.

4. The GDRC meeting shall be conducted in the following manner:

a. The Operator (or Pipeline Operator, where applicable) shall present overview of the application.

b. Staff shall present the staff report including applicable ordinance regulations.

c. Following the presentations, a total of fifteen (15) minutes shall be allotted for citizen comments from the notified persons listed in number 3 above.

5. If the application involves a Public Park issue, the Parks Advisory Board representative shall report the recommendation of the GDRC to the Park Advisory Board at their next meeting.

6. No continuance shall be allowed unless requested by the Operator/applicant. If a continuance is requested, the Operator must submit new revisions within two weeks of the initial GDRC hearing date. Notices to neighborhood associations and Property Owners as outlined in Number 3 above will be resent with revised information.

7. The GDRC shall submit a written report with the Mayor and Council Communication permit request on all applications involving Gas Wells or Multiple Well Site Permit without waivers and Pipelines within the City's rights-of-way. The report shall include the staff and citizen concerns and any unresolved issues. The GDRC shall submit a recommendation to the Gas Well Division on all applications that involve noncommercial truck routes and all applications for Pipelines or Pipeline facilities located in a Private Residential Area.

8. The results and recommendations of the GDRC shall be sent to the Operator or Pipeline Operator and shall be posted on the City's webpage within two weeks following the GDRC meeting.

SEC. 15-35. Gas Well Permit application and filing fees.

- A. Every application for a Gas Well Permit issued pursuant to this Ordinance shall be in writing signed by the Operator, or some person duly authorized to sign on his behalf, and filed with the Gas Inspector.
- **B.** Every application shall be accompanied by a permit fee as set forth in the City Code of Ordinances for Gas Drilling and Production Fees.
- **C.** The application shall include the following information:
 - 1. The date of the application and type of Gas Well Permit requested.
 - 2. An accurate legal description of the lease property to be used for the gas operation, the parcel and the production unit and name of the geologic formation as used by the Commission. Property recorded by plat should reference subdivision, block and lot numbers.
 - 3. Map showing proposed transportation route and road for equipment, chemicals or waste products used or produced by the gas operation indicating commercial and non-commercial routes.
 - 4. Proposed well name.
 - 5. Surface owner name(s) and address(es) of the pad site property.
 - 6. Operator/applicant name and address and if the Operator is a corporation, the state of incorporation, and if the Operator is a partnership, the names and addresses of the general partners.
 - 7. Name and address of individual designated to receive notice.
 - 8. Name of representative with regulatory response and supervisory authority over all gas operation site activities and a phone number that is answered on a 24-hour basis.
 - 9. Location and description of all improvements and structures within six hundred (600) feet of the well.

- 10. Owner and address of each parcel of property within six hundred (600) feet of the proposed drill site.
- A surveyed site plan of the proposed operation site shall display a Registered 11. Professional Land Surveyor seal, a legend with scale for measurements and a complete legal description. The site plan shall include specific details to the projected location of the major components of the drilling site, the location of all improvements and equipment, including the location of the proposed well(s) and other facilities, including, but not limited to, tanks, City Regulated Pipelines, compressors, separators, lights, storage sheds, fencing, driveway approaches and any access roads. Surveyed site plan shall show the location of specific wells, pipelines, tanks and reservoir(s) in relationship to existing and proposed water and sanitary sewer lines and any other utility easements. The site plan shall also indicate floodway, floodplain or City recognized drainage ways and the elevation and slope of the pad site which indicates compliance with the then current Fill Ordinance, impacted vegetation, tree survey, creeks and other topographic features, compliance with the landscaping requirements as set out in Section 15-43 of this Ordinance, adjacent Buildings and other structures and the measured distance from the well site to these Buildings and structures, temporary and permanent fencing and landscaping.
- 12. The name, address and a phone number that is answered on a 24-hour basis of the person to be notified in case of an emergency.
- 13. The exact and correct acreage and number of wells, if applicable, included in the Gas Well Permit application.
- 14. Copies of all reports submitted to the Commission as required by the Gas Inspector.
- 15. An original executed City-wide Road Maintenance Agreement signed and approved by the City must be filed with the City Secretary that provides that the Operator shall repair, at his own expense, any damage to roads, streets, or highways caused by the use of heavy vehicles for any activity associated with the preparation, drilling, production, and operation of Gas Wells.
- 16. Copies of erosion control and grading plans.
- 17. A description of the water source to be used during drilling.
- 18. A copy of the Stormwater Pollution Prevention Plan as required by the Environmental Protection Agency. A copy of the notice of intent shall be submitted to the City of Fort Worth, Department of Environmental Management, Stormwater Division, three (3) days prior to the commencement of any onsite activity.
- 19. A copy of the determination by the Texas Commission on Environmental Quality (TCEQ) of the depth of useable quality ground water.
- 20. Evidence of insurance and security requirements under this Ordinance.
- 21. A statement, under oath, signed by the Operator, or designated representative, that the information submitted with the application is, to the best knowledge and belief of the Operator or designated representative, true and correct.
- 22. All applicable City departmental reviews and approvals.
- 23. Fracture pond permit/approval.
- 24. A Surface Reclamation Plan.

- 25. The proposed gathering Pipeline route from the well to the transmission Pipeline, including all existing and proposed City rights-of-way and public or private property crossed by the proposed gathering Pipeline.
- 26. Noise Management Plan as outlined in Section 15-42.B.
- 27. All required application and Gas Well Permit fees.
- 28. A copy of the approved Commission permit to drill together with attachments and survey plats which are applicable to the drill site.

No permit shall be issued until a copy of the approved Railroad Commission permit to drill together with all submitted attachments and survey plats which are applicable to the drill and operation sites are submitted to the Gas Inspector.

SEC. 15-36. GAS WELL PERMITTING PROCEDURE,

A. WELLS LOCATED WITHIN SIX HUNDRED (600) FEET OF A PROTECTED USE.

A Gas Well Permit shall not be issued for any well to be drilled within six hundred (600) feet of a Residence, Religious Institution, Hospital Building, School or Public Park without:

- 1. Waiver granted by the City Council; or
- 2. Written notarized waiver granted by all the Protected Use Property Owners within a six hundred (600) foot radius around the proposed well pursuant to this Section. All waivers must identify the property address, block and lot number, subdivision name (if applicable) and plat volume and page and be filed, at the expense of the Operator, in the applicable county records prior to the application of a Gas Well Permit.

This setback distance may be reduced, but never less than three hundred (300) feet, from any Residence, Religious Institution, Hospital Building, School or Public Park.

This provision applies to any existing Residence, Religious Institution, Hospital Building, School or Public Park or where a building permit has been issued for a Protected Use on the date the application for a permit is filed with the Gas Inspector.

The measurement of the six hundred (600) foot distance shall be made from the well bore, in a straight line, without regard to intervening structures or objects, to the closest exterior point of the building or boundary line of a Public Park or property line of a School.

B. Application Requirements.

In addition to the requirements of Section 15-35, an application for a Gas Well Permit to drill a well within six hundred (600) feet of a Protected Use shall include a letter to the Assistant Director of Planning and Development – Gas Well Division requesting a public hearing to obtain a Gas Well Permit from City Council or a copy of the written notarized waivers from the Protected Uses within six hundred (600) feet of the proposed well and evidence of filing of each waiver in the applicable county deed records.

C. Permitting Procedure for Request of a Waiver by the City Council.

1. Within forty-five (45) days of receipt of a complete application, a site plan and a request for a waiver to drill a Gas Well within six hundred (600) feet of a Protected Use, the Gas Inspector shall schedule the matter on a City Council night agenda for a public hearing and give notice by mail of the time, place and purpose thereof to the applicant and any other party who has requested in writing to be so notified. The forty-five (45) day period shall not begin to run until the applicant/Operator has provided the Gas Inspector with a complete application package.

2. At least twenty (20) days, and no more than thirty (30) days prior to the date of the public hearing before the City Council for a waiver and the issuance of a Gas Well Permit within six hundred (600) feet of a Protected Use, the City shall notify, at Operator's expense, each surface owner of property, as shown by the current City of Fort Worth Fire Department address system and the current tax rolls within one thousand (1000) feet of the proposed well or boundary of a Multiple Well Site not owned by or under lease to the Operator of the hearing date and time. The notice shall contain an internet link for information on gas drilling, the number of wells requested by the applicant, that drilling may commence within three hundred sixty-five (365) days from the date of issuance of the permit, and contact telephone numbers for City staff and the Operator/applicant. Such notice shall be deposited properly addressed and postage paid, in the United States mail. Notice shall be sent by the City to all registered neighborhood associations within one-half mile of the proposed drill site.

3. At least fifteen (15) days, and no more than twenty (20) days prior to the date of the public hearing before City Council for a Gas Well Permit within six hundred (600) feet of a Protected Use under this Ordinance, Operator shall publish a notice at Operator's expense, in one issue of the local section of a newspaper of general circulation in the City, for ten (10) consecutive days. An affidavit by the printer or publisher of the newspaper indicating publication of the notice shall be filed with the application and will be prima facie evidence of such publication. All notices shall follow a format required by the City.

4. At least twenty (20) days prior to the date of the public hearing before City Council for a Gas Well Permit within six hundred (600) feet of a Protected Use under this Ordinance the Operator shall, at Operator's expense, erect at least one sign, as approved by the Gas Inspector, no less than three (3) feet by three (3) feet, upon the premises upon which a Gas Well Permit within six hundred (600) feet of a Protected Use has been requested. Where possible, the sign or signs shall be located in a conspicuous place or places upon the property at a point or points nearest to any Right-of-way, street, roadway or public thoroughfare adjacent to such property. The Gas Inspector may require additional signage if the premise fronts on more than one Right-of-way, street, roadway, or public thoroughfare.

a. The sign(s) shall substantially indicate that a Gas Well Permit to drill for gas within six hundred (600) feet of a Protected Use has been requested and state the date, time and place of the public hearing, and shall further set forth that additional information can be acquired by telephoning the Operator/applicant at the number indicated on the sign.

b. The continued maintenance of any such sign(s) shall not be deemed a condition precedent to the holding of any public hearing or to any other official action concerning this Ordinance.

c. The sign shall remain posted at the pad site for the duration of the Gas Well Permit to drill within six hundred (600) feet of a Protected Use.

5. All notice provisions contained herein shall be deemed sufficient upon substantial compliance with this Section.

6. After a Permit application and site plan is submitted to drill within six hundred (600) feet of a Protected Use, the Gas Inspector shall evaluate the public impact of the proposed activity. The Gas Inspector shall consider the proposed site and the proposed operations or drilling program and shall draft recommended restrictions or conditions, including minimum separation distance for drilling or other operations, special equipment and procedures, recommended noise reduction levels, screening and any other requirements the Gas Inspector deems appropriate. The recommendation shall be submitted to the City Council for consideration prior to the public hearing along with evidence that timely actual notice of the hearing was given to all persons as required by this Ordinance

7. At the public hearing and before the City Council considers the merits of the application and the recommendations of the Gas Inspector, the Operator/applicant shall provide evidence of a certificate of publication establishing timely publication of the notice of the hearing, and that the Operator/applicant has otherwise complied with or satisfied all other requirements of this Ordinance, including full and complete compliance with the insurance and security requirements.

8. The burden of proof on all matters, except notice, considered in the hearing shall be upon the applicant/Operator.

9. The City Council shall review the application and any other related information. The City Council shall consider the following in deciding whether to grant a waiver and authorize the issuance of a Gas Well Permit to drill within six hundred (600) feet of a Protected Use:

a. Whether the operations proposed are reasonable under the circumstances and conditions prevailing in the area considering the particular location and the character of the improvements located thereon;

b. Whether the drilling of such wells would conflict with the orderly growth and development of the City;

c. Whether there are other alternative well site locations that would allow reasonable access to explore, develop and produce the mineral estate without creating mineral waste;

d. Whether the operations proposed are consistent with the health and welfare of the public when and if conducted in accordance with the Gas Well Permit conditions to be imposed;

e. Whether there is approved access for the City fire personnel and fire fighting equipment;

f. Whether there is reasonable access to the Gas Well site that minimizes the impact to residential properties if the use of non-designated commercial or truck routes are required;

g. Whether the impact upon the adjacent property and the general public by operations conducted in compliance with the Gas Well Permit conditions are reasonable and justified, balancing the following factors:

- (1) The right of the owners(s) of the mineral estate to explore, develop, and produce the minerals; and
- (2) The availability of alternative drill sites, both presently and at other times during the lease term; and
- h. The recommendations of the Gas Inspector,

10. The City Council may require an increase in the Operator/applicant's proposed distance that the well is to be set back from any Residence, Religious Institution, public Building, Hospital Building, School or Public Park or require any change in operation, plan, design, layout or any change in the on-site and technical regulations in Sections 15-42 and 15-43 of this Ordinance, including fencing, screening, lighting, delivery times, noise levels, tank height, or any other matters reasonably required by public interest.

11. The City Council may accept, reject or modify the application in the interest of securing compliance with this Ordinance, the City Code and/or to protect the health and welfare of the community.

D. Permitting Procedure for a Waiver from Protected Use Property Owners.

1. No application for a Gas Well permit within six hundred (600) feet of a Protected Use by Waiver of Protected Uses shall be accepted unless the written notarized waivers are obtained from all Protected Use Property Owners within six hundred (600) feet of the proposed well site. Written notarized waivers granted by the all the Protected Use Property Owners within a six hundred (600) foot radius around the proposed well or boundary of Multiple Well Site must be filed, at the expense of the Operator, in the applicable county records. All waivers must identify the property address, block and lot number, subdivision name and plat volume and page number. Copies of filed Protected Use Property Owner waivers must be submitted with the filing of a completed application for a Gas Well permit within six hundred (600) feet of a Protected Use.

If the Operator fails to obtain written waivers from all Property Owners within a six hundred (600) foot radius around the proposed well, or boundary of Multiple Well Site the Operator must submit a request for a waiver to drill a Gas Well within six hundred (600) feet of a Protected Use from City Council pursuant to the requirements of Subsection C of this Section or modify the well location to comply with the six hundred (600) foot setback from all Protected Uses. Waivers from new Protected Use Property Owners shall not be required for an approved or existing Multiple Well Site Permit.

2. Upon receipt of copies of all Protected Use waivers filed in the applicable county deed records and a completed application by the Operator, the City shall notify, at

Operator's expense, each surface owner of property as shown by the current City of Fort Worth Fire Department addresses within one thousand (1000) feet of the proposed well or boundary of Multiple Well Site not owned by or under lease to the Operator.

The notice shall contain the information as outlined below, an internet link for information on gas drilling, the number of wells requested by the applicant and contact telephone numbers for the City staff and Operator/applicant. Notice shall be sent by the City to all registered neighborhood associations within one-half mile of the proposed drill site.

3. At least ten (10) days prior to the date of filing of an application for a Gas Well permit within six hundred (600) feet of a Protected Use by Protected Use Waiver under this Ordinance with the Gas Inspector, Operator shall publish the notice at the expense of the Operator, in one issue of the local section of a newspaper of general circulation in the City for ten (10) consecutive days. An affidavit by the printer or publisher of the newspaper indicating publication of the notice shall be filed with the application and will be prima facie evidence of such publication. All notices shall follow a format required by the City.

4. At least ten (10) days prior to, but not more than thirty (30) days, the date of filing of an application for a Gas Well Permit within six hundred (600) feet of a Protected Use under this Section with the Gas Inspector, the Operator, at Operator's expense, shall erect at least one sign, as approved by the Gas Inspector, no less than three (3) feet by three (3) feet, upon the premises upon which a Gas Well permit within six hundred (600) feet of a Protected Use by Protected Use Waiver Permit has been requested. Where possible, the sign or signs shall be located in a conspicuous place or places upon the property at a point or points nearest Right-of-way, street, roadway or public thoroughfare adjacent to such property. The Gas Inspector may require additional signage if the premise fronts on more than one Right-of-way, street, roadway, or public thoroughfare.

- a. The sign(s) shall substantially indicate that a Gas Well Permit within six hundred (600) feet of a Protected Use by Protected Use Waiver to drill for gas has been requested and shall further set forth that additional information can be acquired by telephoning the Operator at the number indicated on the sign.
- b. The continued maintenance of any such sign(s) shall not be deemed a condition precedent to the holding of any public hearing or to any other official action concerning this Ordinance.
- c. Any sign(s) shall be removed subsequent to final action by the Gas Inspector or the City Council.

5. All notice provisions contained herein shall be deemed sufficient upon substantial compliance with this Section.

E. PERMITTING PROCEDURE FOR GAS WELLS LOCATED GREATER THAN SIX HUNDRED (600) FEET FROM A PROTECTED USE.

Notice for Gas Well Permit.

1. At least ten (10) days after the date of filing of an application for a Gas Well Permit with the Gas Inspector under this Ordinance, City shall notify, at the expense of the Operator, each surface owner of property, as shown by the current City of Fort Worth Fire Department address system and current tax roll within one thousand (1000) feet of the proposed well not owned by or under lease to the Operator. Such notice, as outlined below, shall be by depositing the same, properly addressed and postage paid, in the United States mail.

The notice shall contain the information as outlined below and shall also include the date and time of the next monthly informational meeting at City Hall, an internet link for information on gas drilling, the number of wells requested by the applicant, that drilling may commence within one hundred eighty (180) days from the issuance of the permit, and contact telephone numbers for City staff and Operator/applicant. Notice shall be sent to all registered neighborhood associations within one-half mile of the proposed drill site.

2. At least ten (10) days prior to the date of filing of an application for a Gas Well Permit under this Ordinance with the Gas Inspector, Operator shall publish a notice at the expense of the Operator, in one issue of the local section of a newspaper of general circulation in the City for ten (10) consecutive days. An affidavit by the printer or publisher of the newspaper indicating publication of the notice shall be filed with the application and will be prima facie evidence of such publication. All notices shall follow a format required by the City.

3. At least ten (10) days prior to, but not more than thirty (30) days, the date of filing of an application for a Gas Well Permit under this Ordinance with the Gas Inspector, the Operator, at Operator's expense, shall erect at least one sign, as approved by the Gas Inspector, no less than three (3) feet by three (3) feet, upon the premises upon which a Gas Well Permit has been requested. Where possible, the sign or signs shall be located in a conspicuous place or places upon the property at a point or points nearest Right-of-way, street, roadway or public thoroughfare adjacent to such property. The Gas Inspector may require additional signage if the premise fronts on more than one Right-of-way, street, roadway, or public thoroughfare.

- a. The sign(s) shall substantially indicate that a Gas Well Permit to drill for gas has been requested and shall further set forth that additional information can be acquired by telephoning the Operator at the number indicated on the sign.
- b. The continued maintenance of any such sign(s) shall not be deemed a condition precedent to the holding of any public hearing or to any other official action concerning this Ordinance.
- c. The sign shall remain posted at the pad site for the duration of the Gas Well Permit.

Risk Management. The Gas Inspector may request an annual review of the Operator's most recent audited financial statements to assure compliance with this Section.

DIVISION VII. ON SITE AND TECHNICAL REGULATIONS

SEC. 15-42. TECHNICAL REGULATIONS.

A. On Site Requirements.

1. **Abandoned Wells**. All wells shall be abandoned in accordance with the rules of the Railroad Commission and pursuant to Section 15-45 of this ordinance.

2. Blowout Prevention. In all cases, blowout prevention equipment shall be used on all wells being drilled, worked-over or in which tubing is being changed. Protection shall be provided to prevent blowout during gas operations as required by and in conformance with the requirements of the Commission and the recommendations of the American Petroleum Institute. The Operator must equip all drilling wells with adequate Blowout Preventers, flow lines and valves commensurate with the working pressures involved as required by the Commission.

3. Closed Loop Mud Systems. A Closed Loop Mud System shall be required for all drilling and reworking operations for all Gas Wells. Gas Wells located on an open space of not less than twenty-five acres with no operations to be conducted within one thousand (1,000) feet of a Protected Use may use a lined earthen pit instead of a closed loop mud system.

4. Compliance. Operator shall comply with all applicable federal, state and City requirements at all times.

5. Discharge. No person shall place, deposit, discharge, or cause or permit to be placed, deposited or discharged, any oil, naphtha, petroleum, asphalt, tar, hydrocarbon substances or any refuse including wastewater or brine from any gas operation or the contents of any container used in connection with any gas operation in or upon any body of water or any private property in the City or in or upon any public Right-of-way, alleys, streets, lots, storm drain, ditch or sewer, sanitary drain without permits from the appropriate City departments.

6. Drilling Notice. The Operator shall provide forty-eight (48) hour notice to the Gas Inspector before the start of Drilling Operations, fracture stimulation, work over or servicing operations.

7. **Drill Stem Testing.** All open hole formation or drill stem testing shall be done during daytime hours. Drill stem tests may be conducted only if the well effluent during the test is produced through an adequate gas separator to storage tanks and the effluent remaining in the drill pipe prior to the time the tool is closed is flushed to the surface by circulating drilling fluid down the annulus and up the drill pipe.

8. Dust, Vibration, Odors. All drilling and production operations shall be conducted in such a manner as to minimize, so far as practicable, dust, vibration, or noxious odors, and shall be in accordance with the best accepted practices incident to drilling for the production of gas and other hydrocarbon substances in urban areas. All equipment used shall be constructed and operated so that vibrations, dust, odor or other harmful or annoying substances or effects are minimized by the operations carried on at any drilling or production site or from anything incident thereto to avoid injury to or annoyance of persons living in the vicinity. The site or structures shall not be permitted to become dilapidated, unsightly or unsafe. Proven technological improvements in industry standards of drilling and production in this area shall be adopted as they become available if capable of reducing factors of dust, vibration and odor.

9. Electric Lines. All electric lines to production facilities shall be located in a manner compatible to those already installed in the surrounding area or subdivision.

10. Electric Motors. Only electric prime movers or motors shall be permitted for the purpose of pumping wells. No electric power shall be generated on location. All electrical installations and equipment shall conform to the City ordinances and the appropriate national codes.

11. Emergency Response Plan. Prior to the commencement of any gas or other hydrocarbons production activities, Operator shall submit to the Gas Inspector an emergency response plan establishing written procedures to minimize any hazard resulting from drilling, completion or producing of Gas Wells. Said plan shall use existing guidelines established by the Commission, Texas Natural Resource Conservation Commission, Department of Transportation and/or the Environmental Protection Agency and City Fire Code. A copy of the Emergency Response Plan shall be kept on site.

12. Equipment Painted. All production equipment on the site shall be painted and maintained at all times, including pumping units, storage tanks, Buildings and structures. No company logos or advertisement shall be allowed.

13. **Explosives.** Use of explosive charges within the City limits shall require a permit issued by the Bomb & Arson Section of the City of Fort Worth Fire Department.

14. Fire Notice. In the event of a fire or discovery of a fire, smoke, or unauthorized release of flammable or hazardous materials on any property, the Operator shall immediately report such condition to the fire department in accordance with the City of Fort Worth Fire Code. The reporting limits for hazardous materials release shall conform to the requirements of the Railroad Commission and not exceed any state or federal permitting limit. A copy of the hazardous materials release records required by Texas Commission on Environmental Quality (TCEQ) shall be forwarded to the Fire Marshal on an annual basis.

15. Fire Prevention; Sources of Ignition. Firefighting apparatus and supplies as approved by the Fire Department and required by any applicable federal, state, or local law shall be provided by the Operator, at the Operator's cost, and shall be maintained on

the drilling site at all times during drilling and production operations. The Operator shall be responsible for the maintenance and upkeep of such equipment. Each well shall be equipped with an automated valve that closes the well in the event of an abnormal change in operating pressure. All well heads shall contain an appropriately labeled emergency shut off valve to the well distribution line.

16. Fracturing Operations.

a. All formation fracture stimulation operations shall be conducted during daytime hours.

b. At least forty-eight (48) hours before operations are commenced, the Operator shall notify the Gas Inspector and post a sign at the entrance of the well site advising the public of the date the operations will commence.

c. "Flowback" operations to recover fluids used during fracture stimulation shall be exempt from work hour restrictions, subject to noise restrictions of Section 15-42.

d. A watchman shall be required at all times during such operations.

e. At no time shall the well be allowed to flow or vent directly to the atmosphere without first directing the flow through separation equipment or into a portable tank.

17. Fresh Water Fracture Ponds.

a. Permit Required. The construction of a Fresh Water Fracture Pit shall require a permit from the City after approval from the following City Departments:

- i. Fire Department in order to address the location of the Fresh Water Fracture Pit;
- ii. Water Department for sewer line and water line review;
- iii. Transportation and Public Works for master thorough fare and floodplain review;
- iv. Planning and Development for forestry review; and
- v. Any other applicable City Department as determined by the City.

b. No construction of the fracture pond shall commence until review and approval from all City Departments are received and a permit is issued by the Gas Inspector.

c. No Fresh Water Fracture Pit may be placed in any City recognized drainage way, FEMA floodplain or floodway, existing City Rights-of-way or City easements.

d. Construction and maintenance of the Fresh Water Fracture Pit must comply with all city, state and federal regulations.

e. All fracture ponds located on a tract of land not adjacent to a gas drilling pad site shall be located in "AG" Agricultural, "I" Light Industrial, "J" Medium Industrial and "K" Heavy Industrial zoning districts unless otherwise authorized by the Gas Inspector for the purpose of reducing total number of fracture ponds.

f. The permit or authorization issued by the City shall be maintained on the location at all times during construction of the Fresh Water Fracture Pit.

g. All pits shall meet the following requirements:

i. Fresh Water Fracture Pits shall not be lined with a synthetic impervious liner unless approved by the Gas Inspector. Existing liners shall be removed at the time any pit is reworked, enlarged, restored or altered unless otherwise authorized by the Gas Inspector;

ii. The Fresh Water Fracture Pit shall be enclosed with open design chain link black or dark green fencing on all four sides;

iii. Pits shall be maintained in a manner utilizing Best Management Practices to ensure the integrity of pit walls and liners. For purposes of this subsection, "Best Management Practices" shall mean structural, nonstructural and managerial techniques that are recognized to be the most effective and practical means to control water storage in open pits in an urban or rural setting;

iv. No oil and gas waste by-products or salt water shall be allowed in the Fresh Water Fracture Pit; and

v. A sign at a conspicuous place or places on the property near any right of way, street, road, or public thoroughfare. The sign shall provide the Operator's phone number for additional information.

h. The Operator shall enter into a specific surface use agreement with the surface owner that provides for the maintenance and operation of the fracture pond when the pond is no longer under the control or use of the Operator or that the Operator will restore the property to its condition prior to the construction of the fracture pond. The agreement shall be provided to the City.

i. Periodic tests may be required by the City's Gas Well Inspector. All costs for testing shall be borne by the Operator or permittee of the Fresh Water Fracture Pit. All samples collected for testing shall be witnessed by the Gas Inspector or other designated City personnel.

18. Fresh Water Wells. It shall be unlawful to drill any well the center of which, at the surface of the ground, is located within two hundred (200) feet of any existing Fresh Water well unless a waiver is obtained from the Property Owner. The measurement shall be in a direct line from the closest well bore to the Fresh Water well bore.

a. The Operator of a Gas Well shall provide the Gas Inspector with a "pre-drilling" and "post-drilling" water analysis and flow rate from any

existing Fresh Water well within five hundred (500) feet of the Gas Well.

b. An Operator may drill a Fresh Water well in compliance with state law within two hundred (200) feet of the wellbore to use for drilling and completion operations. A Fresh Water well that is used for drilling and production operations is excluded from the two hundred (200) foot setback for future Gas Wells drilled on the permitted pad site.

c. A copy of the Texas Water Development Board permit shall be provided to the Gas Inspector along with the geographic coordinates of every water well within five hundred (500) feet of the well bore.

d. A copy of all plugging and Abandonment reports filed with the state and/or transfer of ownership notice shall be provided to the Gas Inspector and the Water Department. Flaring may be allowed in some instances as an alternative to venting as allowed by the Gas Inspector. If burning of gases by open flame is authorized by the Gas Inspector then such open flame shall not be located closer than three hundred (300) feet from any Building not used in operations on the drilling site and such open flame shall be screened in such a way as to minimize detrimental effects to adjacent Property Owners.

29. Salt Water Wells. No commercial salt water disposal wells shall be located within the City.

A city permit for a non-commercial saltwater disposal wells for lease use may be issued for wells as identified on the Railroad Commission form W-14 if:

a. Well is located in an "I" Light Industrial, "J" Medium Industrial, or "K" Heavy Industrial Zoned Districts;

b. All permit and notification requirements to obtain a state permit are reviewed by the Gas inspector prior to obtaining the state permit;

c. A state permit is obtained from the Commission to dispose of nonhazardous oil and gas waste by injection into a porous formation not productive of oil and gas;

d. The saltwater disposal well waste is injected into the Ellenberger Formation;

e. The saltwater disposal well is cased and cemented to the surface;

f. The disposal well permit must be approved by the City Council if the well is located within one thousand (1,000) feet of a Protected Use;

g. The disposal well is in compliance with all conditions of the state permit; and

h. The disposal well is in compliance with any restrictions placed on the city permit.

The City shall have the right to terminate the saltwater disposal permit and required the well to be plugged and abandoned within thirty (30) days after notice of noncompliance.

30, Signs.

a. A sign shall be immediately and prominently displayed at the gate on the temporary and permanent site fencing crected pursuant to Section 15-43 of this Ordinance. Such sign shall made from be durable material, maintained in good condition and, unless otherwise required by the Commission, shall have a surface area of not less than two (2) square feet nor more than four (4) square feet and shall be lettered with the following:

- i. Well name and number;
- ii. Name of Operator;
- iii. The emergency 911 number; and
- iv. Telephone numbers of two (2) persons responsible for the well who may be contacted in case of emergency.

b. Permanent weatherproof signs reading "DANGER NO SMOKING OR OPEN FLAME ALLOWED IN THIS AREA" "PELIGRO NO FUMAR O a. Operator must use portable closed steel storage tanks for storing liquid hydrocarbons. Tanks must meet the American Petroleum Institute standards. All tanks must have a vent line, flame arrester and pressure relief valve. All tanks must be enclosed by a fence applicable to the issued permit classification.

b. Except as provided in Subsection 3. above, drilling mud, cuttings, liquid hydrocarbons and all other field waste derived or resulting from or connected with the drilling, Re-working or deepening of any well shall be discharged into a Closed Loop Mud System. All disposals must be in accordance with the rules of the Commission and any other appropriate local, state or federal agency.

c. Unless otherwise directed by the Commission, waste materials shall be removed from the site and transported to an off-site disposal facility not less often than every thirty (30) days. Water stored in on-site tanks shall be removed as necessary.

d. All waste shall be disposed of in such a manner as to comply with the air and water pollution control regulations of the State, this Ordinance and any other applicable Ordinance of the City.

39. Watchman. The Operator must keep a watchman or security personnel on site during the drilling or Re-working of a well when other workmen are not on the premises.

40. Wellhead Status Wellbores, Mouse Holes, Rat Holes, Cellars and Conduit Casings shall be:

a. Covered at all times when not in use by ½" steel plating, adequately covering the entire bore hole annulus to prevent accidental entrapment of persons or animals;

b. Completed through the production casing flange with a metal plate or blind flange bolted across the head; and

c. Surrounded with a six (6) feet tall chain link fence having a gate and lock.

The cellar shall be filled or closed. The Braden head shall be piped to the surface and open to the atmosphere or have an observable and adequate pressure gauge with operable test valve.

41. Work Hours. No construction activities involving excavation of, alteration to, or repair work on any access road or pad site shall occur during nighttime hours or at any time on Sunday. Truck deliveries of equipment and materials associated with drilling and/or production, well servicing, Site Preparation and other related work conducted on the well site shall be limited to daytime hours except in cases of fires, blowouts, explosions and any other emergencies or where the delivery of equipment is necessary to prevent the cessation of drilling or production. Other than mobilization and demobilization and advancing the bore hole, no other activities shall be allowed on the wells site on Sundays.

B. Noise - Gas Wells.

1. Prior to the issuance of a Gas Well permit and the commencement of operations, the Operator shall submit a noise management plan, approved by the gas inspector,

detailing how the equipment used in the drilling, completion, transportation, or production of a well complies with the maximum permissible noise levels of this Section. The noise management plan must:

- a. Identify operation noise impacts;
- b. Provide documentation establishing the Ambient Noise Level prior to construction of any wellhead, compressor or compression facility; and
- c. Detail how the impacts will be mitigated. In determining noise mitigation, specific site characteristics shall be considered, including but not limited to the following:

i. Nature and proximity of adjacent development, location, and type;

ii. Seasonal and prevailing weather patterns, including wind directions;

iii. Vegetative cover on or adjacent to the site; and

iv. Topography.

The Operator shall be responsible for verifying compliance with this Section and the noise management plan after the installation of the noise generation equipment

2. No well shall be drilled, re-drilled or any equipment operated at any location within the City in such a manner so as to create any noise which causes the exterior noise level when measured at the Protected Use receiver's/receptor's property line or from the closest exterior point of the Protected Use structure or inside the Protected Use structure if access to the property is granted by the receiver/receptor, that:

a. Exceeds the Ambient Noise Level by more than five (5) decibels during daytime hours and more than three (3) decibels during nighttime hours;

b. Exceeds the Ambient Noise Level by more than 10 decibels over the daytime average Ambient Noise Level during fracturing operations during daytime hours. No fracturing shall be allowed during nighttime hours except for Flowback operations related to fracturing as provided in c. below;

c. Exceeds the Ambient Noise Level by more than three (3) decibels during flowback operations during nighttime hours;

d. Creates pure tones where one-third octave band sound-pressure level in the band with the tone exceeds the arithmetic average of the sound-pressure levels of two contiguous one-third octave bands by five (5) dB for center frequencies of 500 Hertz and above, and by eight (8) dB for center frequencies between 160 and 400 Hertz, and by fifteen (15) dB for center frequencies less than or equal to 125 Hertz; or

e. Creates low-frequency outdoor noise levels that exceed the following dB levels:

16 Hz octave band: 65 dB 32 Hz octave band: 65 dB 64 Hz octave band: 65 dB

3. The Operator shall be responsible for establishing and reporting to the City a continuous seventy-two (72) hour pre-drilling Ambient Noise Level prior to the issuance of a Gas Well permit. The seventy-two hour time span shall include at least one twenty-

four (24) hour reading during either a Saturday or Sunday. The Operator shall use the prior established Ambient Noise Level for the installation of any new noise generation equipment unless the Operator can demonstrate that the increase in the Ambient Noise Level is not associated with drilling and production activities located either on or off-site.

4. Adjustments to the noise standards as set forth above in subsection 1. a, b and c of this section may be permitted intermittently in accordance with the following:

Permitted Increase	Duration of Increase
(dBA)	(minutes)*
10	
15	
20	less than 1

*Cumulative minutes during any one hour

5. All Workover Operations shall be restricted to daytime hours.

6. The exterior noise level generated by the drilling, redrilling or other operations of all Gas Wells located within six hundred (600) feet of a Protected Use shall be continuously monitored, to ensure compliance. The cost of such monitoring shall be borne by the Operator. If a complaint is received by either the Operator or the Gas Inspector from any Protected Use the Operator shall, within twenty-four (24) hours of notice of the complaint, continuously monitor for a seventy-two (72) hour period the exterior noise level generated by the drilling, redrilling or other operations to ensure compliance. At the request of the Gas Inspector, the Operator shall monitor the exterior noise level at the source of the complaint.

7. Acoustical blankets, sound walls, mufflers or other alternative methods as approved by the Gas Inspector may be used to ensure compliance. All soundproofing shall comply with accepted industry standards and be subject to approval by the City's Fire Department.

8. The sound level meter used in conducting noise evaluations shall meet the American National Standard Institute's Standard for sound meters or an instrument and the associated recording and analyzing equipment which will provide equivalent data.

9. A citation may be immediately issued for failure to comply with the provisions of this Section. However, if the Operator is in compliance with the approved noise management plan, and a violation still occurs, the Operator will be given twenty-four (24) hours from notice of non-compliance to correct the violation from an identified source before a citation is issued. Additional extensions of the twenty-four (24) hour period may be granted in the event that the source of the violation can not be identified after reasonable diligence by the Operator.

C. Setbacks.

1. It shall be unlawful to drill any well, the center of which, at the surface of the ground, is located:

- a. Within twenty-five (25) feet from any storage tank, or source of ignition;
- b. Within seventy-five (75) feet of any public street, road, highway, future street, Right-of-way, property line or the nearest rail of an operating railway;
- c. Within six hundred (600) feet from any Protected Use;
- d. Within three hundred (300) feet from any Public Building;
- e. Within two hundred (200) feet from any Habitable Structure;
- f. Within one hundred (100) feet of any Building accessory to, but not necessary to the operation of the well;
- g. Within two hundred (200) feet to any Fresh Water well not drilled by the Operator as a specific source of water used for drilling or completion operations without the express written permission of the owner of the water well; or
- h. Within three hundred (300) feet from an Outer Boundary Surface Property Line or a distance minus the required zoning setback of the adjacent property at the time of permitting the first Gas Well unless one of the following conditions exist:
 - i. the oil, gas and mineral lease precedes the formation of an outer boundary surface property line; or
 - ii. the adjacent property is owned or under lease by the operator.

The distance shall be calculated from the well bore, in a straight line, without regard to intervening structures or objects, to the closest exterior point of any object listed in a. through f. and h. above, except that the measurement from a well bore to a School not located within another Protected Use shall be from the property line of the School to the well bore, in a straight line, without regard to intervening structures or objects.

The measurement for g. above shall be in a direct line from the closest well bore to the Fresh Water well bore. The distance requirement for Fresh Water wells is subject to the Railroad Commission regulations and any other state or federal requirements.

2. Distance Reduction for Protected Uses

The distance set out in Subsection c. of this Section may be reduced to three hundred (300) feet from any Protected Use, with a:

- a. Waiver granted by the City Council; or
- b. Written notarized waivers granted by all the Protected Use Property Owners within a six hundred (600) foot radius around the proposed well pursuant to Section 15-36 of this Ordinance.

D. Compressor Stations - Natural Gas Facilities.

1. Compressor Noise Regulations.

For purposes of this Subsection, "Operator" shall refer to either the Pipeline Operator or the Gas Well Operator, as applicable.

a. Maximum permitted sound levels for all permanent Lift or Line Compressors shall be limited by the following zoning classifications:

Industrial: 75 dBA day / 65 dBA night Commercial: 65 dBA day / 55 dBA night Residential: 55 dBA day / 50 dBA night

If the measurement location is on a boundary between two (2) different land use classifications, the lower noise level standard applicable to the noise zone shall apply.

b. Operators shall be allowed to demonstrate that the current actual ambient is greater than allowed which will become the new ambient for that location (measured at the property line of the noise creator), except if located in residential zoning, a special exception granted by the Board of Adjustment shall be required.

c. Noise measurement will be taken at the property line of the compressor station to determine ambient. To determine compliance with the noise requirements all measurements will be taken at the property line of the receiver/receptor.

d. Compressors shall meet the low and high frequency requirements/standards as required for Gas Wells cited above.

2. Lift Compressors.

a. Lift Compressors shall be allowed in all zoning districts, but shall be restricted to the gas drilling pad site.

b. Except as outlined below, Lift Compressors shall be required to meet all the noise standards of subsection A, "On-Site Requirements."

i. Temporary Lift Compressor for each well shall be classified as temporary for six (6) months for noise regulations purposes and shall be allowed five (5) dBA over ambient during the day and three (3) dBA over ambient at night.

ii. No compressor shall be considered temporary if installed within six (6) months of removal of the initial compressor for that well.

iii. Permanent Lift Compressors shall be required to meet the zoning noise requirements for their zoning location as outlined in Subsection 1. above.

iv. Sound blankets shall be permitted for noise abatement on temporary Lift Compressors.

v. No sound blankets shall be permitted for permanent Lift Compressors. All acoustical structures for permanent compressors must be constructed of permanent material constructed of metal, masonry or other structurally sound material as approved by the Director of Planning and Development that significantly screens the equipment, is painted in a non-contrasting soft earth tone color to match the nearby surroundings as nearly as possible and meets all applicable building and fire codes.

c. All Lift Compressors shall be set back a minimum of three hundred (300) feet from any Protected Use, Public Building or Habitable Structure property line not necessary to the operation of the compressor. Equipment and Buildings not part of the operation of the compressor shall be set back a minimum of two hundred (200) feet from the Protected Use, Public Building or Habitable Structure or one hundred (100) feet from the property line, whichever is greater.

d. All compressor and associated equipment and Buildings shall be enclosed by a six-foot security fence constructed per Section 15-43 "Fences and Landscaping" of this Ordinance.

e. One three-inch caliper tree shall be planted every forty (40) linear feet along the property line abutting a public Right-of-way. No heavy equipment, including but not limited to trucks, tractors, trailers, bulldozers, bobcat tractors, trenchers, compressors and hoists shall be allow inside the critical root zone of any protected tree on any compressor site without the specific approval of the City Forester. This requirement shall supersede other landscaping requirements, except for the tree preservation and/or planting percentage requirements in Section 15-43.

f. All equipment or Buildings associated with the operation of the compressor located in or within six hundred (600) feet of residentially used property or from the public Right-of-way shall be screened from public view by appropriate landscaping, berning, structure or wall constructed of metal, masonry or other structurally sound material as approved by the Director of Planning and Development or his/her designee that significantly screens the equipment and is painted in a non-contrasting soft earth tone color to match the nearby surroundings as nearly as possible.

z. Secondary Containment

Secondary containment shall be required around all compressor stations. All secondary containment must meet the requirements of Subsection 32 of Section 15-42, "Technical Regulations."

h. Exhaust from any internal combustion engine or compressor, stationary or mounted on wheels, used in connection with the drilling of any well or for use on any production equipment shall not be discharged into the open air unless it is equipped with an exhaust muffler or mufflers or an exhaust muffler box constructed of non-combustible materials sufficient to suppress noise and disruptive vibrations and prevent the escape of noxious gases, fumes or ignited carbon or soot.

i. All facilities shall be inspected by the fire marshal for compliance with relative fire codes and the gas inspector prior to operation of the compressor.

3. Line Compressors.

a. Line Compressors shall be permitted only in "AG" Agricultural District, "I" Light Industrial, "J" Medium Industrial and "K" Heavy Industrial zoning districts.

b. All Line Compressors shall be set back a minimum of six hundred (600) feet from any Protected Use and three hundred (300) feet from all Public Buildings and Habitable Structures not necessary to the operation of the compressor. The setback from Protected Uses may be reduced to three hundred (300) feet provided the Line Compressor is fully enclosed. Equipment and Buildings not part of the operation of the compressor shall be set back a minimum of two hundred (200) feet from the Protected Use, Public Building or Habitable Structure or one hundred (100) feet from the property line, whichever is greater.

c. Line Compressors located in "AG" Agricultural, "J" Medium Industrial and "K" Heavy Industrial zoning districts shall be required to meet the following standards:

i. Line Compressor stations located in "AG" Agricultural, "J" Medium Industrial and "K" Heavy Industrial zoning districts shall meet the applicable noise standards for that zoning classification as set out in Subsection 1.a. above. Landscaping, buffering or acoustical structures shall be required as required by this Section and as required by the zoning regulations for the applicable zoning district.

ii. No sound blankets shall be allowed.

iii. All acoustical structures must be constructed of permanent material constructed of metal, masonry or other structurally sound material as approved by the Director of Planning and Development that significantly screens the equipment is a non-contrasting soft earth tone color to match the nearby surroundings as nearly as possible and meets all applicable building and fire codes.

iv. All facilities shall be inspected by the fire marshal for compliance with relative fire codes, and the gas inspector prior to operation of the compressor.

v. Exhaust from any internal combustion engine or compressor, stationary or mounted on wheels shall not be discharged into the open air unless it is equipped with an exhaust muffler, or mufflers or an exhaust muffler box constructed of noncombustible materials sufficient to suppress noise and disruptive vibrations and prevent the escape of noxious gases, fumes or ignited carbon or soot.

d. Line Compressors shall be permitted in all other zoning districts only by a special exception granted by the Zoning Board of Adjustment. In order for the Zoning Board of Adjustment to grant a special exception, the Line Compressor must meet the minimum standards of "I" Light Industrial District and a site plat must be submitted and approved by the Board. The Zoning Board of Adjustment shall grant the application only when the Board determines that the location of the compressor is clearly defined on the site plan by the applicant; and the exception will be compatible with the existing uses and the development of adjacent properties either as filed, or subject to such requirements as the Board finds necessary to protect and maintain the stability of adjacent properties.

e. All compressor and associated equipment and Buildings shall be enclosed by a six (6) foot security fence constructed per Section 15-43 "Fences and Landscaping" of this Ordinance.

f. One three-inch caliper tree shall be planted every forty (40) linear feet along the property line abutting a public Right-of-way. No heavy equipment, including but not limited to trucks, tractors, trailers, bulldozers, bobcat tractors, trenchers, compressors and hoists shall be allow inside the critical root zone of any protected tree on any compressor site without the specific approval of the City Forester. This requirement shall supersede other landscaping requirements, except for the tree preservation and/or planting percentage requirements in Section 15-43.

g. All equipment, that is located in or within six hundred (600) feet of residentially used property or from the public Right-of-way shall be screened from public view by appropriate landscaping, berming, structure or wall constructed of metal, masonry or other structurally sound material as approved by the Director of Planning and Development that significantly screens the equipment and is painted in a non-contrasting soft earth tone color to match the nearby surroundings as nearly as possible.

h. Secondary containment shall be required around all compressor stations. All secondary containment must meet the requirements of Subsection 32 of Section 15-42, Technical Regulations."

i. In addition to the regulations set out above, Line Compressors located in "I" Light Industrial zoning district adjacent to residential zoning shall be required to meet the following standards:

i. The six foot security fence constructed per Section 15-43 "Fences and Landscaping" shall be set back a minimum of ten (10) feet from the residential property line and a minimum of twenty (20) feet from the public right of way.

ii. A ten (10) foot landscaped bufferyard along the entire length of the boundary line between any compressor station site and the residential zoning shall be required and maintained. The bufferyard shall consist of an open space of grass and other landscaping that screens or blocks vision, noise pollutants and other negative by products. The bufferyard shall be required even when an alley is located between the compressor site and the residential district.

iii. A minimum twenty (20) foot landscaped bufferyard shall be required along all street frontages across the street from residential zoning to screen the view of the property from the public rights of way.

iv. A minimum of one three-inch caliper large canopy tree, as defined in Chapter 6 of the Zoning Ordinance, with a mature height of twenty-five (25) feet shall be required every forty (40) feet and screening shall be provided using hedges, berms or mass planting to a height of not less than twenty-four (24) inches with live groundcover.

v. The bufferyard is intended to serve as a buffer between the compressor station and the residential zoned property. Structures and equipment or any type of storage shall not be permitted in the bufferyard.

SEC. 15-43. FENCES AND LANDSCAPING.

- A. Fences. All pad sites and off-site fracture ponds shall be secured with a permanent fence with a secured gate and Knox box as follows:
 - 1. The fence shall be at least six (6) feet in height;
 - 2. Support posts shall be set in concrete and shall be imbedded into the ground to a depth sufficient to maintain the stability of the fence; provided, however, so long as stability of the fence is maintained, temporary fence posts shall not be required to be set in concrete;
 - 3. The site shall be completely enclosed by a permanent dark green or black steel chain link or wrought iron fence on at least two sides of the pad site, one of which will face the City's Right-of-way, if applicable. A solid masonry fence may be constructed on the remaining two sides of the pad site;
 - 4. The chain link fence shall have a minimum thickness of eleven (11) gauge;
 - 5. Posts and rails shall be standard black or dark green welded pipe;
 - 6. Tension rods shall be three-eighths-inch round steel bolt stock. Adjustable tighteners shall be turnbuckle or equivalent having a six-inch minimum take-up. Tension bars shall have a minimum thickness of one-fourth by three-fourths inch; and
 - 7. Fences shall not be required on drill sites during initial drilling, completion or reworking operations as long as twenty-four (24) hour on-site supervision is provided. A secured entrance gate on the access road containing a Knox box shall be required and all gates are to be kept locked when the Operator or his employees are not on the premises.
- **B.** Gate specifications. All chain link fences shall be equipped with at least one (1) gate. The gate shall meet the following specifications:
 - 1. Each gate shall be not less than twelve (12) feet wide and be composed of two (2) gates, each of which is not less than six (6) feet wide, or one (1) sliding gate not less than twelve (12) feet wide. If two (2) gates are used, gates shall latch and lock in the center of the span;

- 2. The gates shall be of black or dark green chain link construction that meets the applicable specifications, or of other approved material that are at least as secure as a chain link fence and shall be included in the chain link or wrought iron portion of the fence;
- 3. The gates shall be provided with a combination catch and locking attachment device for a padlock, and shall be kept locked except when being used for access to the site;
- 4. Gates shall be designed so that they do not interfere or obstruct the public rightsof-way; and
- 5. Operator must provide the Fire Chief with a "Knox Padlock" or "Knox Box with a key" to access the well site to be used only in case of an emergency.

C. Landscaping.

1. All Gas Well, Compressor and Fracture Pond Permits will require tree preservation and/or planting measures. A tree canopy requirement through preservation and/or planting will apply as follows:

- a. A 40% requirement in one- and two-family residential zoned areas;
- b. A 30% tree canopy requirement in multi-family, institutional and commercial zoned areas; and
- c. A 20% tree canopy requirement in industrial zoned areas.
- d. Payment to the tree fund of \$200.00 per diameter inch will be required for 25% of the removed trees greater than six (6) inches on pad sites located in Agricultural (AG) zoned areas. The Operator may chose to plant a 20% tree canopy in lieu of payment into the tree fund.

The following requirements shall apply to all wells, including wells located along City rights-of-way. Wells located in Agricultural (AG) zoned areas are exempted from the requirements:

- a. A minimum retention of 25% of the existing trees will be required as with other land uses unless removal necessary for location of equipment as determined by the Gas Inspector.
- b. No more than 25% of the same species may be planted at one site.
- c. A minimum of 25% of the planted trees must be an evergreen species.
- d. A minimum of 75% of the planted trees must be located between the Gas Well site and Protected Uses or public Right-of-way. An administrative waiver of the 75% placement can be approved by the City Forester with proof that the proposed planting will screen the views into the well site from the Protected Uses.
- e. The percent coverage is established by the actual canopy coverage area retained and tree plantings. For planted trees, 2000 square feet will be credited for large canopy trees, 700 square feet will be credited for medium canopy trees and 100 square feet will be credited for small canopy trees at normal grow out.
- f. The minimum size of tree planted will be three (3) inches in diameter measured one foot above ground level. If the tree is multi trunk, the main stem will be given full credit for its diameter and all other stems will receive ½ credit. The

total of all must be three (3) inches or greater. All planted trees will be credited its canopy coverage at normal grow out.

- g. All trees that die within two (2) years of the date of project completion will be replaced by another replacement tree. The replacement tree carries the same two (2) year replacement requirement. A replacement of any tree that dies within two (2) years of planting will be replaced by the Operator or agent and a new two (2) year guarantee will begin at the time of replacement.
- h. All other interpretations of the tree canopy coverage and regulations will be made by the City Forester and/or the designated City board or commission.
- i. Landscaping shall be installed no later than one hundred eighty (180) days after completion of the first well.

2. Except as allowed in Subsection 3 below, fracture ponds established for the intent of storing and supplying water for fracturing operations are required to comply with the City's Tree Preservation Ordinance. The document shall identify the delineated scope of work area of any surface disruption related to the "fracture pond" installation, operations and shall exhibit any existing tree canopy coverage based on the applicable zoning classification.

3. Upon approval of the Assistant Director of Planning and Development - Gas Well Division, payment may be made into the City's tree fund at an amount of \$600.00 per required tree in lieu of planting requirements for Gas Well sites and fracture ponds.

4. The following list of trees is considered desirable and adapted trees for the Fort Worth area. Planting of trees from this list is acceptable. Other trees will be considered by the City Forester and granted on a case-by-case basis. The approval of additional species will be judged on adaptability, long-term health and growing characteristic of the tree type.

DIVISION VIII. PIPELINES

Sec. 15-46. OIL AND GAS PIPELINES TECHNICAL AND PERMITTING REGULATIONS.

A. General Regulations.

1. As determined in the sole, but reasonable, discretion of the City, Pipelines may not interfere with or damage existing utilities, including but not limited to: water, sewer or gas lines, storm drains, electric lines or the facilities of any public utilities located in public rights-of-way, utility easements or other City-owned property or in Private Residential Areas.

2. The Pipeline Operator shall be required to comply with all regulations regarding noise in Section 15-42.B. of this Ordinance.

3. The Pipeline Operator shall be responsible to grade, level and restore the property affected by Pipeline Construction to the same surface condition, as nearly practicable, as existed before operations were first commenced within thirty (30) days after completion of the Pipeline.

4. The Pipeline Operator shall construct, repair and/or maintain all Pipelines so as to meet or exceed the applicable minimum criteria established by the statutory or regulatory requirements of the state and federal governments for such Pipeline.

5. At least ten (10) days prior to the commencement of any Pipeline Construction, the Pipeline Operator shall give written mailed notice to all residents, tenants and Property Owners that are located adjacent to the proposed Pipeline. The mailing shall include the Operator's publication on Pipeline safety.

6. At the time the required Pipeline records are submitted to the Railroad Commission, the Pipeline Operator shall provide the City the following information, including GPS information sufficient to locate the Pipelines in the future, including the beginning and end points of the Pipeline and sufficient points in between the Pipeline route and the depth of cover information. This information shall be submitted to the City in a format compatible with the City's own GIS system.

a. As-built or record drawings of the Pipelines. Accuracy of the record drawings shall meet a survey level of one foot (1') to fifty thousand feet (50,000'). The scale of the record drawings shall be a minimum of one inch (1") to forty feet (40'). The drawings shall also be supplied in a DFF digital file format with the location tied to at least one (1) nearby GPS (global positioning system) City monument. If the new Pipeline length exceeds one thousand feet (1,000') within the City, the Pipeline shall be tied to at least two (2) GPS City monuments;

- b. The origin point and the destination of the Pipeline;
- c. The substance to be transported;
- d. A copy of the substance material safety data sheet (MSDS);
- e. Engineering plans, drawings and/or maps with summarized specifications
showing the horizontal location, covering depths, and location of shutoff valves of the subject Pipeline. Drawings shall show the location of other Pipelines and utilities that are crossed or paralleled within fifteen (15') feet of the Pipeline Right-of-way;

f. Detailed cross-section drawings for all public rights-of-ways and easement crossings on City property as permitted by the City; and

g. A list of the names and mailing addresses of all the Property Owners, residents and tenants adjacent to the Pipeline Construction.

7. A Pipeline Operator that transports gas, oil, liquids or hydrocarbons through a Pipeline located in the City shall be a member in good standing with the One Call system or other approved excavation monitoring system as required by state law. The Pipeline Operator that transports gas, oil, liquids or hydrocarbons through a Pipeline shall contract for service with the selected underground utility coordinating system for a minimum of five (5) years unless there is an agreement to change to an alternate system between the City and the Pipeline Operator. Said Pipeline Operator shall maintain such services without interruption for the life of the Pipeline Permit and as required under this Section.

8. At the time of permitting and each year thereafter that the Pipeline remains active, each Pipeline Operator shall provide to the Gas Inspector, the Fire Marshal and the Chief of Police the names, mailing addresses and telephone numbers of at least two (2) primary persons, officers or contacts available on a twenty-four (24) hour basis and at least two (2) alternative persons, officers or contacts to be reached in the event that the primary contacts are unavailable who:

- a. Can initiate appropriate actions to respond to an emergency;
- b. Have access to information on the location of the closest shutoff valve to any specific point in the City; and
- c. Can furnish the common name of the material then being carried by the Pipeline.

Any change in the above information must be provided to the City by contacting the Gas Inspector prior to such change.

9. Each Pipeline Operator shall file a copy of all initial or follow-up reports provided to the U.S. Department of Transportation or the Railroad Commission of Texas on unsafe Pipeline conditions, Pipeline emergencies or Pipeline incidents within the City concurrently with the City. In addition, such Pipeline Operator shall file any initial or follow-up reports filed with state and federal environmental regulatory agencies pertaining to Pipeline releases within the City concurrently with the City.

10. Every Pipeline Operator shall be required to file with the City an annual verified report in letter form on or before June 30 of each year to cover a reporting period of the previous June 1 through May 31. Said written report shall contain a statement that the Pipeline has no outstanding safety violations within the City of Fort Worth as determined in an inspection or audit by either the Railroad Commission of Texas and/or the U.S. Department of Transportation with regard to any Pipeline operating within the City. Alternatively, if there are any safety violations as determined by the Railroad Commission and/or the U.S. Department of Transportation that have not been corrected,

these shall be described to the City with an action plan to correct the safety violations. Said action plan shall include a timeline for corrective action and the individual or firm responsible for each action.

B. City Regulated Pipelines – Permit Required.

1. City Regulated Pipelines shall adhere to all standards outlined in Section A. Federal and state statutory or regulatory requirements shall apply to Pipelines between the well and the point of custody transfer. Prior to the transport of gas, oil, liquids or hydrocarbons, the Operator shall provide to the City certification from a professional engineer registered with the State of Texas that the design and installation of the Pipelines meet all state and federal requirements.

2. Prior to Pipeline Construction and the issuance of notice required in Section A.5, a Pipeline Operator shall obtain a Pipeline Permit from the City for all City Regulated Pipelines. Exceptions to this permitting requirement are those Pipelines from the well to the first point of custody transfer and for construction necessary to respond to a Pipeline Emergency.

3. At the same time the Operator submits a Gas Well drilling permit application, the Operator shall require the Pipeline Operator to submit a proposed Pipeline route from the well bore to the transmission line, for all City Regulated Pipelines.

4. The Pipeline Operator shall be required to submit an application for a Pipeline Permit to the City prior to making any offer or initiating any negotiation or action to acquire any easement or other property right to construct, install, maintain, repair, replace, modify, remove or operate a Pipeline in Private Residential Areas.

5. The Pipeline Operator shall backfill all trenches and compact such trenches to ninety five percent (95%) standard density proctor in eight inch (8") lifts and construct the Pipeline so as to maintain a minimum depth of ten feet (10') below the finished grade except in public rights-of-way, where minimum cover to the top of the pipe shall be at the discretion of the City based on existing or planned utilities. During the backfill of any Pipeline excavations in open cut sections, the Pipeline Operator shall bury "Buried Pipeline" warning tape one foot (1') above any such Pipeline to warn future excavators of the presence of a buried Pipeline. The Gas Inspector may also require that a proposed or existing Pipeline be relocated should it conflict with the proposed alignment and depth of a gravity dependent utility.

6. The Pipeline Operator shall equip all City Regulated Pipelines with an automated pressure monitoring system that detects leaks and shuts off any line or any section of line that develops a leak. In lieu of such system, the Pipeline Operator may have twenty-four (24) hour pressure monitoring of the Pipeline system which provides monitoring of the Pipeline within the City limits.

7. Review by the Gas Drilling Review Committee for all proposed Pipelines through Private Residential Areas shall be required prior to the issuance of a permit for the commencement of Pipeline Construction.

8. A Pipeline Permit application shall be required as follows:

a. Applications for a City Regulated Pipeline or other activities regulated by this Subsection shall be submitted to the City in a form prescribed by the City.

b. Plans submitted with each application for a Pipeline Permit shall be in a format approved by the City showing the dimensions and locations of the Pipeline and related items or facilities, as well as all proposed lift stations, pumps or other service structures related to such Pipeline and the location, type and size of all existing utilities, drainage, Right-of-way and roadway improvements. The plans must additionally show the elevation and location of all known public utilities within fifteen (15) feet of the centerline of the proposed Pipeline. Any application that fails to meet these requirements will be returned unfiled to the applicant.

- c. The following information shall be provided in the application:
 - i. The name, business addresses and telephone numbers of the Pipeline Operator;
 - ii. The names, titles and telephone numbers of the following:
 - a. The person signing the application on behalf of the Pipeline Operator;
 - b. The person designated as the principal contact for the submittal; and
 - c. The person designated as the twenty-four (24) hour emergency contact;
 - iii. The origin point and the destination of the proposed subject Pipeline;
 - iv, A text description of the general location of the proposed subject Pipeline
 - v. A description of the substance to be transported through the proposed subject Pipeline;
 - vi. A copy of the substance material safety data sheet (MSDS);
 - vii. Engineering plans, drawings and/or maps with summarized specifications showing the horizontal location, covering depths and location of shutoff valves of the proposed subject Pipeline. To the extent that information can be obtained, drawings shall show the location of other Pipelines and utilities that will be crossed or paralleled within fifteen (15) feet of the proposed subject Pipeline Right-of-way;
 - vili. A description of the consideration given to matters of public safety and the avoidance, as far as practicable, of existing Habitable Structures and Private Residential Areas;
 - ix. Detailed cross section drawings for all public street Right-of-way and easement crossings;
 - x. The proposed method or methods to be used for the installation of the Pipeline;
 - xi. Methods to be used to prevent both internal and external corrosion;
 - xii. A binder or certificates of all bonds and insurance; and
 - xiji. A proposed alignment strip map showing name and address of all affected Property Owners.

C. Gas Drilling Review Committee.

 After the filing of an administratively complete application, the Gas Drilling Review Committee shall review all applications for Pipelines located in a Private Residential Area. For other Pipeline locations, an administrative conference may be conducted to seek resolution of any substantive, non-resolvable technical issues. If deemed necessary by the City, a third-party Technical Advisor may be employed as set out in Section 15-48. The costs associated with the Technical Advisor shall be borne by the Pipeline Operator. Any recommendation by the Gas Drilling Review Committee to the Planning and Development Department - Gas Well Division is final.

2. If the Gas Drilling Review Committee determines that the City should obtain an independent study or analysis of an application to construct a new Pipeline, upon approval by the City Council, the City shall engage duly qualified independent consultant(s) or contractor(s) to conduct such special studies or analyses as required to fully evaluate and act upon an application for a new Pipeline as set forth in Section 15-48. The actual cost for said consultant or contractor, including the cost of any inspections deemed necessary by the Gas Drilling Review Committee or otherwise required, shall be paid by the Pipeline Operator.

D. Pipeline Information Reporting Requirements.

If the Pipeline Operator has no reporting responsibility to the Railroad Commission or the U.S. Department of Transportation and is otherwise exempt from the safety regulations of either of such agencies, the following documents pertaining to the preceding reporting period of June 1 through May 31 shall be furnished to the City:

- 1. Copies of internal reports of responses to Pipeline Emergencies;
- 2. Current operations and maintenance logs; and
- 3. Current emergency response plan.

E. Abandoned Pipelines.

1. All Pipelines shall be maintained in an active condition unless abandoned according to applicable state and federal regulations. The Pipeline Operator shall notify the City within thirty days of Abandonment of any Pipeline.

2. Reactivation of abandoned Pipelines shall require notification to the City pursuant to the standards and requirements specified in Section 15-46. Reactivation shall require pressure testing for integrity and compliance with Railroad Commission and/or United States Department of Transportation regulations.

F. Emergency Response Plans and Emergency Incident Reporting.

1. Each Pipeline Operator shall maintain written procedures to minimize the hazards resulting from an emergency. These procedures shall at a minimum provide for the following:

a. Prompt and effective response to emergencies, including but not limited to the following:

- i. Leaks or releases that can impact public health safety or welfare;
- ii. Fire or explosions at or in the vicinity of a Pipeline or Pipeline easement; and
- iii. Natural disaster;
- iv. Effective means to notify and communicate required and pertinent information to local fire, police and public officials during an emergency;
- v. The availability of personnel, equipment, tools and materials as necessary at the scene of an emergency;
- vi, Measures to be taken to reduce public exposure to injury and probability of accidental death or dismemberment;
- vii. Emergency shut down and pressure reduction of a Pipeline;
- viii. The safe restoration of service following an emergency or incident; and
- ix. A follow-up incident investigation to determine the cause of the incident and require the implementation of corrective measures.

2. Upon discovery of a Pipeline emergency or incident, any affected Pipeline Operator shall as soon as practical communicate to the City's 911 system the following information:

- a. A general description of the emergency or incident;
- b. The location of the emergency or incident;
- c. The name and telephone number of the person reporting the emergency or incident;
- d. The name of the Pipeline Operator;
- e. Whether or not any hazardous material is involved and identification of the hazardous material so involved; and
- f. Any other information as requested by the emergency dispatcher or other such official at the time of reporting the emergency or incident.
- G. Pipeline Repairs and Maintenance.

1. All repairs and maintenance of Pipelines are to be performed in accordance with U.S. Department of Transportation and Railroad Commission mechanical integrity requirements.

2. If non-emergency repairs necessitate excavation of a Pipeline, the Pipeline Operator shall send notification to occupants of business establishments and residential dwellings located adjacent to the Pipeline to be excavated at least five (5) days prior to commencing such repairs.

3. If above-ground non-emergency repairs that are not routine maintenance are required, the Pipeline Operator shall send notification to occupants of businesses and residential dwellings located within five hundred (500) feet from the centerline of the Pipeline section to be repaired at least five (5) days prior to commencing such repairs.

4. The notice required in Subsections (2) and (3) of this Section shall be sent by U.S. regular mail, postage prepaid mailed at lease five (5) days prior to commencing any nonemergency repair; provided, however, that the Pipeline Operator may use hand delivery notice as an alternative, at the Pipeline Operator's discretion.

5. Inspection of the interior of all Regulated Pipelines shall comply with United States Department of Transportation and Railroad Commission rules.

H. Protection and Painting of Structures.

A Pipeline Operator shall keep protected and painted all Pipeline risers and all appurtenances related to Pipeline construction and operations which are composed of materials which are generally protected or painted. Such Operator shall repaint all such items at sufficiently frequent intervals to maintain same in good condition. It shall be a violation of this Ordinance for any Pipeline Operator to permit any Pipeline riser and/or appurtenances related to Pipeline Construction and operations to be in a state of disrepair or to have chipped, peeling or unpainted portions.

I. No Implied Grant of Use of Public Rights-of-Way, Utility Easements or other Cityowned Property.

Nothing in this Subsection grants permission for the use of any street, public rights-of-way, utility easements, or City-owned property. In the event a Pipeline Operator wishes to undertake any Pipeline Construction on, over, under, along, or across any public rights-of-way, utility easements or other City-owned property, the Pipeline Operator shall apply for and execute a written agreement with the City governing the terms and conditions for such use; obtain all required permits and comply with any other applicable provisions of the City Code.

J. Expiration of Pipeline Permit.

If construction of a Pipeline has not commenced within one (1) year of the date of issuance of the Pipeline Permit, or if the Pipeline has not been completed and the surface restored within two (2) years, the Pipeline Permit shall expire; provided, however, that the Director of Planning and Development Services may grant an extension of time not to exceed an additional one (1) year if the Director of Planning and Development Services determines that weather or other unexpected physical conditions justify such an extension.

K. No Assumption of Responsibility by City.

Nothing in this Subsection shall be construed as an assumption by the City of any responsibility of a Pipeline Operator of a Pipeline not owned by the City.

L.

It is the joint and several responsibility of the owner and the Pipeline Operator of any and all Pipeline to maintain the markers in accordance with this Ordinance. The

- location of all new or replacement pipe and Pipelines shall be marked by the owner(s) thereof or by the person installing or operating such Pipelines as follows:
 - 1. Marker signs shall be placed at all locations where pipe or Pipelines cross property boundary lines and at each side of a public street or road Right-of-way which the pipe or Pipeline crosses;
 - 2. The top of all marker signs shall be a minimum of four (4) feet above ground level, and the support post must be sufficient to support the marker sign and shall be painted yellow or such other color as may be approved by the Director of Transportation and Public Works or his designee;
 - 3. All marker signs shall be a minimum of twelve (12) inches square and shall be marked as "Gas Pipe Line;"
 - 4. All marker signs shall contain the name of the owner and operator of the Pipeline and a twenty-four (24) hour local contact number;
 - 5. Pipelines shall be marked along there entire length with a buried metal wire and metallic flag tape;
 - 6. All signs shall also contain an 811 designation "Call Before You Dig" statement; and
 - 7. The Pipeline Operator shall annually replace signage that has been lost, damaged or removed.
- **M.** Annually, all Pipeline Operators will provide affected landowners, public official and emergency providers with appropriate Public Awareness information as outlined in API 1162.
- SEC. 15-47. SALT WATER PIPELINES.
- A. All references in this Subsection to "Pipe" or "Pipelines" shall mean "salt water Pipelines."
- **B.** No Pipeline for the transportation of saltwater shall be constructed, installed, maintained, repaired, replaced, modified, removed or operated within the City without first obtaining a Pipeline Permit from the City.
- C. Salt water pipe shall be installed beneath all City utilities, no seams shall be allowed within City Right-of-way and minimum cover to the top of the pipe shall be at the discretion of the City based on existing or planned utilities. The Pipeline crossings must pass through a casing of a design and constructed in accordance with the United States Department of Transportation standards set forth in 49 CFR 192.323 (Casing) as same exists on the date of the adoption of this ordinance.
- **D.** All infrastructure included under this Section shall be designed and sealed by a Registered Professional Engineer in the State of Texas.
- E. All new or replacement Pipe or Pipelines shall be installed in such a manner that the Pipelines clear the lowest City utility by a minimum of five (5) feet. In areas where no City Utilities are present, Pipelines shall be covered and must be not less than thirty six (36) inches below the existing ground level as verified and approved by the inspector.

Prior to installation, the owner of the Pipeline shall submit to the Director of Planning and Development and the Gas Inspector the Pipeline design criteria, including but not limited to, operating pressures, Pipeline gradient and elevation to sea level, location, pipe ASTM grade, pipe manufacturer, pipe wall thickness, Pipeline capacity and volume. Prior to and subsequent to installation of each segment of new or replacement Pipeline, the pipe and Pipeline must receive and pass an on-site inspection of the compliance with design criteria and the process of installation. The design submittal must be signed and sealed by a Professional Engineer registered in the State of Texas.

The depth requirements in this Subsection shall not apply to piping constructed or installed within the secondary containment perimeter of the tank battery, which piping may be placed at ground level.

- Pipe location information shall be provided to the City in an electronic format acceptable to the Director of Planning and Development.
 - It is the joint and several responsibility of the owner and the operator of any and all Pipeline to maintain the markers in accordance with this Ordinance. The location of all new or replacement pipe and Pipelines shall be marked by the owner(s) thereof or by the person installing or operating such Pipelines as follows:
 - 1. Marker signs shall be placed at all locations where pipe or Pipelines cross property boundary lines and at each side of a public street or road Right-of-way which the pipe or Pipeline crosses;
 - 2. The top of all marker signs shall be a minimum of four (4) feet above ground level, and the support post must be sufficient to support the marker sign and shall be painted yellow or such other color as may be approved by the Director of Transportation and Public Works or his designee;
 - 3. All marker signs shall be a minimum of twelve (12) inches square and shall be marked as "S.W. Pipe Line";
 - 4. All marker signs shall contain the name of the owner and operator of the Pipeline and a 24-hour local contact number;
 - 5. Pipelines shall be marked along their entire length with a buried metal wire and metallic flag tape; and
 - 6. The Pipeline Operator shall annually replace signage that has been lost, damaged or removed.
- H. General Pipeline Design Requirements.

F.

G.

All infrastructure included under this memorandum shall be designed and sealed by a Registered Professional Engineer in the State of Texas and all Pipelines shall:

- 1. Have a maximum inside diameter of twelve inches;
- 2. Consist of material approved by the City; and
- 3. Be monitored by a SCADA system that allows shutdown via automatic valves spaced at each well head, major Pipeline junctions, at the influent and effluent of the recycling unit(s), and prior to ultimate disposal.



PETER T. GREGG Fritz, Byrne, Head & Harrison, PLLC 98 San Jacinto Blvd., Suite 2000 Austin, TX 78701 www.fbhh.com Telephone: (512) 322-4756 Email: pgregg@fbhh.com

Peter Gregg's legal career has been devoted to the practice of environmental law. Over the course of his 18-year career, he has worked with most of the significant federal and Texas programs. His practice includes a focus on environmental issues involving waste management and contaminated properties, including the management of state and federal CERCLA matters, RCRA corrective action and compliance counseling, transactions involving contaminated properties, and counseling on state and federal regulatory cleanup programs. Mr. Gregg has also counseled clients on all manner of air, water, waste management, water and wastewater utility regulatory issues (permitting, enforcement, and general compliance matters). Mr. Gregg began his career at the Texas Commission on Environmental Quality (TCEQ), where he provided program development and legal/litigation support for various air, water quality, and industrial and hazardous waste programs. He also spent several years as in-house counsel at an international energy company, where he provided environmental regulatory, transactional and litigation counsel. During the course of his career, he has represented national and international clients within the chemical, petroleum refining, and natural gas production, processing and transportation industries, among others, as well as various local and regional manufacturing and utility interests.

Mr. Gregg is the current Chair of the Texas Bar's Environmental and Natural Resources Law Section, and a former Chair of the Houston Bar Association's Environmental Law Section. He is listed in *The Best Lawyers in America* in the specialty of Environmental Law and has been distinguished in other legal publications. He is AV Peer Review Rated.

Avi Samuel Garbow – EPA Deputy General Counsel (Bio.)

In September 2009, Avi Garbow was appointed by President Obama to serve as the Environmental Protection Agency's Deputy General Counsel. With nearly two decades of environmental law experience – in the private and public sectors – Garbow is primarily engaged in the significant legal and related policy issues confronting the Agency in its media programs, including air, water, waste, and toxics. From 1992 to 1996, he served in EPA's Office of Enforcement and Compliance Assurance, and then served with distinction as a federal prosecutor in the Department of Justice Environmental Crimes Section. In private practice, Garbow was a litigation partner and junior partner at two major international firms. Garbow has served on the boards of directors, and in other capacities, for various environmental and international human rights organizations, and previously held leadership positions in the American Bar Association's International Human Rights Committee. He is the recipient of the University of Virginia School of Law's Robert F. Kennedy Award for Public Service, holds a Masters Degree in Marine Affairs, and is a former volunteer firefighter.

Al Armendariz was appointed by President Obama on November 5, 2009, as the Regional Administrator for EPA's Region 6 office in Dallas. He is responsible for managing Agency activities in Arkansas, Louisiana, New Mexico, Oklahoma, Texas, and 66 tribal nations, under the direction of EPA Administrator Lisa P. Jackson.

Al Armendariz was appointed by President Obama on November 5, 2009, as the Regional Administrator for EPA's Region 6 office in Dallas. He is responsible for managing Agency activities in Arkansas, Louisiana, New Mexico, Oklahoma, Texas, and 66 tribal nations, under the direction of EPA Administrator Lisa P. Jackson.

Dr. Armendariz has brought a deep commitment to environmental issues to his work at EPA. He has made working with communities a priority across the Region, frequently engaging directly with those most vulnerable to harm from polluters. This was especially evident during the Agency's response to 2010's Gulf of Mexico oil spill, during which he worked tirelessly with area residents, local governments, and community groups.

His passion for working with communities mirrors Administrator Jackson's agency priority of working for environmental justice. He has led the region's efforts in assessing resident concerns in Port Arthur, Texas, a heavily industrialized area near the Gulf Coast and one of EPA's ten environmental justice showcase communities. He has also forged similar ties in Mossville, Louisana, and other areas where families live and work near industrial polluters. As he continues his tenure, he brings the same passion to the Region's work on air quality, wetlands protection, climate change and other environmental goals.

Prior to his appointment, he spent eight years as a professor in the Department of Environmental and Civil Engineering at Southern Methodist University in Dallas, where he received several faculty awards. For the past 15 years, Dr. Armendariz has worked in a variety of research and academic positions including, for a short time in 2002, in the Region 6 offices.

Before joining SMU, he was a chemical engineer with Radian Corporation in North Carolina. During and after college he worked as a research assistant at the Massachusetts Institute of Technology (MIT) Center for Global Change Science at its Atmospheric Chemistry Laboratory in Massachusetts.

Throughout his career, Dr. Armendariz has spent countless hours volunteering his time with several environmental groups and the Volunteer Center for North Texas. Through this work he has helped address a number of complex environmental and public health challenges, ranging from solid waste landfills to community and tribal priorities.

Dr. Armendariz received his doctorate in Environmental Engineering from the University of North Carolina at Chapel Hill's School of Public Health where he was also selected as a Royster Society Fellow. He holds an M.E. in Environmental Engineering from the University of Florida. Al is a chemical engineer by training, with an undergraduate degree from MIT.

Al is a third generation Texan, descended from Mexican and Mexican-American grandparents who settled in the border city of El Paso. Born and raised in El Paso, he graduated from Coronado High School in 1988. He has also lived in Houston, Albuquerque and New Orleans. Al currently lives in Dallas with his wife Cynthia, a public school teacher in Irving ISD, and two sons, Ferris and Simon.





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PRACTICES

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- Solid Waste and Resource Recovery

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- University of Texas School of Law (J.D.)

BAR ADMISSIONS & MEMBERSHIPS

- Texas
- American Bar Association
- Austin Bar Association, Environmental Section

LANGUAGES

- Portuguese
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Lydia González Gromatzky

Lydia González Gromatzky is Of Counsel in the Austin, Texas office of Beveridge & Diamond, P.C. with a practice that includes both domestic and international environmental law. Her experience includes advising and representing entities on a broad range of permitting, compliance, enforcement, remediation and other regulatory, transactional and litigation matters. As a member of the Firm's Latin American practice group, she assists clients with compliance and regulatory issues in Latin American countries including Argentina, Brazil, Chile, Colombia, Mexico and Peru.

Prior to joining the firm, Ms. González Gromatzky served as chief legal advisor to the Executive Director of the Texas Commission on Environmental Quality (TCEQ). In that capacity, she provided legal advice and counsel on all matters within the agency's jurisdiction. During her seventeen-year tenure at the TCEQ, she served as lead counsel on numerous contested agency proceedings, managed litigation involving the TCEQ, and provided legal representation on a wide variety of complex and controversial issues facing the state in all environmental media.

In private practice, Ms. González Gromatzky has broad experience counseling clients in a number of different sectors regarding regulatory compliance, defense of environmental enforcement actions, permitting issues and environmental transactions. She has also assisted multinational corporations and trade associations with compliance and regulatory issues arising under Latin American domestic laws including the tracking and analysis of pending and enacted chemicals, waste and product stewardship laws.

Ms. González Gromatzky is a graduate of the University of Texas School of Law.

PUBLICATIONS

- Carbon Storage: Texas Stakes its Claim, ABA's Natural Resources & Environment (Fall 2010)
- Emerging Environmental Regimes for Contaminated Land in Latin America, BNA International Environment Reporter (October 2008)
- Growing Attention to Product Stewardship Initiatives Seen in Latin America, BNA International Environment Reporter (August 2006)
- A Look Back: Twenty Years of the Clean Water Act's Whole Effluent Toxicity Biomonitoring Program, Eastern Water Law (June 2006)
- Texas Environmental Updates
- Latin American Region Environmental Quarterly

MASSACHUSET

NEW JERS

Product Stewardship

"The Lorax"

E-Waste Take-Back Initiatives in the Americas

Lydia González Gromatzky

Beveridge & Diamond, P.C. 98 San Jacinto Center, Suite 1420 Austin, Texas 78701-4039

Texas Environmental Superconference "Oh, the Places We'll Go!" August 4 - 5, 2011

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PRODUCT STEWARDSHIP -- "THE LORAX"

E-WASTE TAKE-BACK INITIATIVES IN THE AMERICAS

By: Lydia González Gromatzky

Beveridge & Diamond, P.C.

I. **INTRODUCTION.** The U.S. Environmental Protection Agency (EPA) defines product stewardship as "a product centered approach to environmental protection. Also known as extended product responsibility, product stewardship calls on those in the product life cycle manufacturers, retailers, users, and disposers - to share responsibility for reducing the environmental impacts of products."¹ Over the last decade, environmental protection measures have increasingly focused on product regulation including product design mandates, substance restrictions, energy efficiency requirements and take-back initiatives. While the European Union has set the pace, product stewardship initiatives in the Americas have significantly accelerated. This trend is particularly evident in the growing number of product take-back laws for electronic wastes or e-wastes. This paper provides an overview of key ewaste take-back laws in the United States. Canada and Latin America.

II. UNITED STATES

Α. **OVERVIEW.** The U.S. does not have a federal take-back program for electronic wastes. However, roughly half of the states, including Texas, California and New York have adopted e-waste take-back legislation. California follows a unique advance recycling fee model. The programs in the remaining states, although distinct, share various common features including, among others, the obligation of manufacturers to establish collection programs and satisfy registration and reporting requirements.

Β. **KEY ENACTED MEASURES.**

- 1. TEXAS
 - The Manufacturer Responsibility and Consumer Convenience Computer a. Equipment Recovery Act was enacted by Texas in 2007.² The Texas Commission on Environmental Quality ("TCEQ") adopted implementing regulations the following year.³
 - (1)Product Scope: The program covers computer equipment defined as a desktop or notebook computer, including a computer or other display device that does not contain a tuner. A keyboard and mouse accompanying and produced by the same manufacturer also fall within the purview of the law.⁴ Excluded from the program's scope are any part of a motor vehicle,

See EPA website at http://www.epa.gov/osw/partnerships/stewardship/basic.htm.

² TEX. HEALTH & SAFETY CODE ANN. § 361.951 et seq. (2007). ³ 30 TEX. ADMIN. CODE Chapter 328, Subchapter I.

⁴ 30 TEX. ADMIN. CODE Chapter 328, § 328.135(3).

televisions, telephones, personal digital assistants, or a consumer's lease of computer equipment or use of computer equipment under a lease agreeement.⁵

- (2)Affected Entities: The Texas computer equipment recycling program applies to manufacturers, retailers, recyclers and consumers.⁶
- (3)Key Provisions. Before offering covered products for sale in Texas, manufacturers must affix to the covered equipment a permanent and visible label that identifies the manufacturer's brand and implement a computer equipment recovery plan.⁷ The recovery plan must outline collection methods free of charge to consumers that are reasonably convenient to consumers. Such measures may include: (i) a mail return system, (ii) physical collection sites, or (iii) collection events.⁸ The recovery plan must also include recycling information for consumers. Manufacturers must annually report to TCEQ the total weight of computer equipment collected, recycled and reused during the previous year and verify that the collection, recycling and reuse was conducted in an environmentally sound manner.¹⁰ Recyclers must comply with a number of obligations including those relating to dismantling, processing, packaging, recordkeeping and work practices.¹¹ Retailers may not sell new computer equipment unless the equipment is properly labeled and the manufacturer is included on TCEQ's list of manufacturers that have compliant collection programs.¹² Consumers are encouraged to learn about recommended methods for recycling and reuse of computer equipment.¹³
- b. Senate Bill 329, An Act Relating to the Sale, Recovery, and Recycling of Certain Television Equipment was signed by the Governor on June 17, 2011 ("Act").¹⁴ The Act requires television manufacturers to implement recycling programs and is effective on September 1, 2011. However, Section 3(b) of the Act provides that it may not be enforced before July 1, 2012.
 - Product Scope. The Act covers televisions with a viewable (1)screen of nine inches or larger and display devices peripheral to a computer that contain a television tuner.¹⁵ A list of ten

⁵ 30 TEX. ADMIN. CODE § 328.133(b) 6

Id., § 328.133(c).

<u>Id., §</u> 328.137(a).

TEX. HEALTH & SAFETY CODE ANN§ 361.955(d).

Id. § 361.955(f). 10

<u>ld</u>., § 361.955(h).

¹¹ 30 TEX. ADMIN. CODE § 328.149(b).

¹² <u>Id</u>., § 328.139(a).

¹³ Id., § 328.141(b).

¹⁴ Act approved June 17, 2011, 82d Leg, R.S. (to be codified as TEX. HEALTH & SAFETY CODE ANN., CHAPTER 361, SUBCHAPTER ¹⁵ Id. §1 (to be codified as Tex. HEALTH & SAFETY CODE ANN. §361.971 (3)).

exclusions apply including, among others, telephones, any part of a motor vehicle, personal digital assistants, and global positioning systems.¹⁶

- (2) Affected Entities: Entities with responsibilities under the Act include manufacturers, retailers, recyclers and consumers.¹⁷
- Key Provisions: Manufacturers must label televisions with a (3) permanent and visible label that identifies the manufacturers' brand, register with TCEQ and annually renew that registration and satisfy one of two compliance obligations. Under the first compliance alternative, manufacturers pay a registration fee, implement an individual or collective recovery plan to collect. transport and recycle covered television equipment, meet a collection quota based on a market share allocation and submit annual reports. ¹⁸ Under the second compliance alternative, manufacturers may establish a "recycling leadership program." This program is required to provide a collection, transportation and recycling infrastructure that offers at least 200 collection sites, a return-by mail program or collection events. Manufacturers participating in the recycling leadership program are exempt from the annual registration fee.¹⁹ Retailers may only sell covered television equipment that has been identified on TCEQ's website as compliant with the requirements of the Act.²⁰ Recyclers must register with TCEQ and certify that they satisfy applicable management and recycling standards.²¹ Consumers are encouraged to learn about recycling programs.²²
- 2. CALIFORNIA
 - a. The Electronic Waste Recycling Act of 2003. First adopted in 2003 and subsequently amended in 2004 and 2005, the Act established a recycling program for certain electronic devices funded by payment of fees from consumers.²³
 - (1) Product Scope: The Act covers electronic devices that include any video display device containing a screen greater than four inches, measured diagonally, that is identified in the California Department of Toxic Substances Control (DTSC) regulations. To date, DTSC has identified nine categories of covered electronic devices as follows: cathode ray tubes ("CRTs"), devices containing CRTs, computer monitors containing CRTs, televisions containing CRTs, laptop computers with liquid crystal

¹⁶ <u>Id</u>., §1 (to be codified as TEX. HEALTH & SAFETY CODE ANN.§ 361.973(b)).

¹⁷ Id., §1 (to be codified as TEX. HEALTH & SAFETY CODE ANN.§§ 361.971, 361.978, 361.981, 361.982 and 361.989).

¹⁸ Id., §1 (to be codified as TEX. HEALTH & SAFETY CODE ANN. §§361.976, 361.978).

¹⁹ Id., §1 (to be codified as TEX. HEALTH & SAFETY CODE ANN. § 361.979).

²⁰ Id., §1 (to be codified as TEX. HEALTH & SAFETY CODE ANN. § 361.981).

²¹ Id., §1 (to be codified as TEX. HEALTH & SAFETY CODE ANN. § 361.982).

²² Id., §1 (to be codified as TEX. HEALTH & SAFETY CODE ANN. § 361.989).

²³ CAL. PUB. RES. CODE § 42460 et seq. (2005).

display ("LCD") screens, LCD containing desktop monitors, televisions containing LCDs, portable DVD players with LCD screens, and plasma televisions.²⁴ A list of exclusions also apply.25

- (2)Affected Entities: The Act applies to retailers, manufacturers, consumers and vendors.²⁶
- Key Provisions: Generally, consumers are required to pay a (3)recycling fee to retailers upon purchase of a new or refurbished covered electronic device. The fee ranges from six to ten dollars depending on the screen size of the device.²⁷ Collected fees are deposited in the Electronic Waste Recovery and Recycling Account.²⁸ Funds are used to make payments to qualified collectors and recyclers to cover costs of managing covered electronic devices and, under certain circumstances, to manufacturers that take back a covered electronic device for recycling.²⁹ Manufacturers must notify retailers if the devices they sell are covered electronic devices under the Act, make information available to consumers describing where and how to return, recycle and dispose of covered electronic devices and comply with labeling obligations.³⁰ Manufacturers must also annually report detailed information to the California Integrated Waste Management Board (CIWMB) (now CalRecycle) relating to covered electronic devices sold by the manufacturer in the state during the previous year: total estimated amount of recyclable materials contained in covered electronic devices; and total estimated amounts of restricted substances used in covered electronic devices manufactured by the manufacturer that year, among other information.³¹ Generally, covered electronic devices may not be sold in California if the device is prohibited from being sold or offered for sale in the European Union under Directive 2002/95/EC ("RoHS Directive").³² State procurement requirements and export restrictions also apply.33

²⁴ CAL. CODE REGS. tit. 22, §66261.126, Appendix X, part c. See also California Department of Toxic Substances Control website at http://www.dtsc.ca.gov/HazardousWaste/RoHS_CED.cfm.

CAL, PUB, RES, CODE § 42463(e)(2),

²⁶ <u>Id</u>. §§ 42463(c), (m), (q), and (s).

²⁷ Id. § 42464(a). ²⁸ Id. § 42476(a).

²⁹ <u>Id.</u> ³⁰ <u>Id.</u> ³⁰ <u>Id.</u>, §§ 42465.1 and 42465.3 and CAL. HEALTH & SAFETY CODE §§ 25214.10.1. ³¹ <u>Id.</u>, §§ 42465.2(a)(1). These reporting requirements may be I ³¹ CAL. PUB. RES. CODE § 42465.2(a)(1). These reporting requirements may be limited if California's DTSC determines that products are in compliance with the European Union's RoHS Directive (Directive 2002/95/EC of the European Parliament and of the Council on the restriction of the use of certain hazardous substances in electrical and electronic equipment.) Id., § 42465.2(b). See also Integrated Waste Management Board Guidance on Manufacturer Reporting for the Electronic Waste Recycling Act (Revised May 2008). ³² CAL. PUB. RES. CODE § 42465.2 and CAL. HEALTH AND SAFETY CODE § 25214.10. See also California DTSC website at

http://www.dtsc.ca.gov/hazardouswaste/rohs.cfm.

CAL. PUB. RES. CODE §§ 42476.5 and 42480.

- 3. **NEW YORK**
 - The Electronic Equipment Recycling and Reuse Act was adopted by the a. State of New York in 2010.³⁴ The Act requires manufacturers of covered electronic equipment to collect and recycle electronic waste.
 - (1)Product Scope. The Act defines "covered electronic equipment" as any computer, computer peripheral, small electronic equipment, small-scale server, cathode ray tube, or television. The Act also includes a list of exclusions.³
 - (2)Affected Entities: The Act imposes obligations on manufacturers, retailers, owners/operators of electronic waste collection sites, consolidation facilities, and recycling facilities and consumers.³⁶
 - (3) Key Provisions: A manufacturer must register with the New York State Department of Environmental Conservation (NYSDEC) and pay a fee of \$5,000 by January 1, 2011. To register, the manufacturer must identify the brands for which it is responsible, include sales data information, generally describe the recycling program and provide a statement indicating whether certain substances (e.g., cadmium, mercury and lead) exceed the EU RoHS Directive or whether it qualifies for an exemption from a maximum concentration value under the directive.³⁷ Beginning April 1, 2011, a manufacturer is required to collect and recycle discarded or unwanted covered electronic equipment for which it is the manufacturer. A manufacturer must also accept one piece of electronic waste of any manufacturer's brand if it is offered by a consumer with the purchase of the same type of covered electronic equipment.³⁸ An electronic waste acceptance program must provide for the collection, handling, and recycling or reuse of covered electronic equipment, through a mail back return program; collection events; fixed acceptance locations; agreements with local governments, retail stores, outlets, or nonprofits; community collection events; or a combination of these or other reasonably convenient methods.³⁹ Manufacturers must either satisfy a set acceptance standard based on market share or pay a recycling surcharge.⁴⁰ The Act further requires manufacturers to maintain records for the program and be responsible for all costs of the electronic recycling program.⁴¹ Retailers must provide consumers with

³⁴ The Electronic Equipment Recycling and Reuse Act, N.Y. ENVTL. CONSERV. LAW §§ 27-2601 et seq. (2010).

³⁵ Id. § 27-2601(5). Exclusions include, for example, equipment that is part of a motor vehicle, cameras and video cameras, portable digital assistants and other devices.

 $^{^{36}}$ Id. §§ 27-2603, 27-2605, 27-2607, 27-2611 and 27-2613. 37 Id. § 27-2605(1). 38 Id. § 27-2603(1).

³⁹ Id. § 27-2605(5)(a).

⁴⁰ Id. § 27-2603(4).

⁴¹ <u>Id</u>. §§ 27-2605(6), (8).

information on returning electronic equipment at the point of sale and they are prohibited from selling brands that are not registered.⁴² Electronic waste collection, consolidation and recycling sites are subject to registration requirements and management. storage, and removal measures.⁴³ The Act also includes a phased in disposal ban that applies to manufacturers, retailers, electronic waste collection, consolidation and recycling facilities as well as consumers.44

C. RECENT DEVELOPMENTS. On November 15, 2010. President Obama signed a proclamation highlighting the need for greater attention on e-waste management.⁴⁵ An Interagency Task Force on Electronics Stewardship that includes EPA, the Council on Environmental Quality and the General Services Administration is currently developing a national framework for electronics stewardship.⁴⁶ At the state level, a number of electronics recycling initiatives were being considered in 2011. Legislative adjournments mean that many initiatives will no longer receive consideration this year. Notable state legislative measures adopted in 2011 include a product take-back law in Utah⁴⁷ and the Texas television recycling bill discussed above. State initiatives that currently remain viable include a number of pending e-waste measures in Massachusetts, a state that currently lacks an e-waste product stewardship regime.⁴⁸

III. CANADA

A. **OVERVIEW.** No Canada-wide mandatory program for recycling e-waste exists but various provinces have adopted measures to address the issue over the last several vears. In 2009, the Canadian Council of Ministers of the Environment (CCME) comprised of federal, provincial and territorial environmental ministers approved in principle a Canada-wide Action Plan (CAP) for Extended Producer Responsibility in an effort to promote harmonization of product stewardship programs.⁴⁹ The CAP charges Canadian jurisdictions with the development of extended producer responsibility laws or regulations to address identified priority products. The list of priority products includes electronic products such as personal and laptop computers, peripherals. printers, televisions, and cell phones.⁵⁰ The CAP also provides guidance on the content of stewardship plans, funding, reporting and performance measures.

⁴² <u>ld</u>. § 27-2607.

⁴³ Id. § 27-2613.

⁴⁴ <u>Id</u>., § 27-2611.

⁴⁵ Proclamation No. 8601, 75 Fed. Reg. 71003 (November 15, 2010)

⁴⁶ Solicitation of Input from Stakeholders to Inform the National Framework for Electronics Stewardship, 76 Fed. Reg. 111243 (March 1, 2011).

Disposal of Electronic Waste Program, UTAH CODE §§ 19-6-1201 et seg. (2011).

⁴⁸ See e.g., S.352, 187th General Ct. Reg. Sess. (Mass. 2011).

⁴⁹ See Canada-wide Action Plan for Extended Producer Responsibility available at CCME website at http://www.ccme.ca/ourwork/waste.html?category_id=128.

Id., at Appendix D, E-Waste Products Recommended for EPR.

Β. **KEY ENACTED MEASURES.**

- 1. ALBERTA
 - Electronics Designation Regulation and Designated Material Recycling a. and Management Regulation.⁵¹ In 2004, Alberta became the first Canadian province to impose a mandatory electronics product stewardship program.
 - (1)Product Scope. Electronic equipment designated for recycling includes televisions, computers, laptops and notebooks including accessories, computer monitors, computer printers, scanners, audio and video playback and recording systems, telephones and fax machines, cell phones and other wireless devices and electronic game equipment.⁵² Electronics that are part of a motor vehicle are excluded.53
 - Affected Entities. Requirements apply to suppliers (i.e., persons (2) who sell or otherwise transfer designated material including manufacturers, distributors, wholesalers and retailers), end users, transporters, couriers and carriers.⁵⁴
 - Key Provisions. To sell designated electronic equipment in (3) Alberta, suppliers must register and remit advance disposal surcharges for designated electronics.⁵⁵ Suppliers collect the advance disposal surcharges from the persons to whom designated electronics are supplied.⁵⁶ A non-profit association, the Alberta Recycling Management Authority (ARMA) manages the recycling program funded by the advance disposal surcharges.⁵⁷ ARMA is charged with using the funds to establish and administer waste minimization and recycling programs. collection, transportation, storage, processing and disposal of designated electronic equipment and public education programs.⁵⁸ Alberta has more than 260 municipal collection sites for designated electronic equipment.59

⁵¹ Electronics Designation Regulation, Alberta Regulation 94/2004 and Designated Material Recycling and Regulation, Alberta Regulation 93/2004.

The Alberta Recycling Management Authority has not yet established surcharges for all of these electronic product categories.

Electronics Designation Regulation, Alberta Regulation 94/2004, § 1(d).

 ⁵⁴ See Electronics Recycling Bylaw, Alberta Recycling Management Authority.

⁵⁵ Designated Material Recycling and Regulation, Alberta Regulation 93/2004, §§ 3 and 9.

⁵⁶ Electronics Recycling Bylaw, Alberta Recycling Management Authority, § 3.3.

⁵⁷ Id., § 2. See also ARMA website at

http://www.albertarecycling.ca/MainPageWithSiteFinder.aspx?id=40&ekmensel=a681a8bf_8_10_btnlink.

Designated Material Recycling and Regulation, Alberta Regulation 93/2004, §6.

⁵⁹ See ARMA website at http://www.albertarecycling.ca/BasicContent.aspx?id=78.

2. BRITISH COLUMBIA

- a. Recycling Regulation.⁶⁰ In 2004, British Colombia adopted a framework recycling regulation and subsequently amended it to add a schedule that includes electronics.
 - (1) Product Scope. The Recycling Regulation establishes a phased approach for incorporating various electronic equipment categories. Until July 1, 2010, computers (both desktop and portable), desktop printers and televisions were covered. Categories progressively expand each year until 2012 when most electrical and electronic products are included.⁶¹
 - (2) Affected Entities. The Recycling Regulation applies to producers (defined to include manufacturers, importers and owners or licensees of a trademark under which a product is sold in British Columbia) and retailers.⁶²
 - (3) Kev Provisions. To sell or distribute covered electronic equipment in British Columbia, producers must participate in or appoint an agency to satisfy an approved product stewardship plan. Product stewardship plans must describe the proposed management of the regulated products, including program targets, performance measures, consumer awareness campaigns, reasonable and free access to collection facilities. Management of the product must be undertaken in compliance with the pollution prevention hierarchy that requires the following in descending order of preference: reuse, recycling, material or energy recovery and disposal. In the alternative, producers may satisfy specified product stewardship program requirements.⁶³ These alternate product stewardship program requirements involve: (i) providing retailers with information regarding safe use and storage of products, amount of any deposit charged or refund paid by the producer and the amount of any fee associated with the producer's product stewardship program; (ii) operation of collection facilities at least 5 days per week near retailer sites that are available to consumers at no charge for unlimited quantities of products and (iii) compliance with the pollution prevention hierarchy.⁶⁴ In either case, annual reporting requirements apply.⁶⁵ The Electronics Stewardship Association of British Columbia (ESABC) a non-profit association that includes major producers in British Columbia currently implements an electronics recycling program with an extensive number of collection depots that are reportedly accessible to more than 97% of the population of province. Collection and

⁶⁰ Recycling Regulation, British Columbia, B.C. Reg. 449/2004 (as amended).

⁶¹ Id. Part 1 and Schedule 3.

⁶² Id., Part 1 and Part 3.

⁶³ Id., Part 2.

^{64 &}lt;u>Id</u>. Part 3.

⁶⁵ Id., Parts 2 and 3

recycling of covered electronic products are funded by an environmental handling fee on members products remitted on distribution and sale.⁶⁶

3. ONTARIO

- Waste Diversion Act, 2002 and Ontario Regulation 393/04, Waste a. Electrical and Electronic Equipment. Under the Waste Diversion Act, Ontario's Ministry of Environment designates wastes for which a program for waste diversion must be implemented. A waste diversion program includes activities to reduce, reuse and recycle the designated waste.⁶⁷ In 2004, the Ministry of Environment issued Regulation 393/04, Waste Electrical and Electronic Equipment, identifying a list of seven schedules of waste electrical and electronic equipment (WEEE) for which a waste diversion program would be required. However, in his final program request letter to the non-governmental entity charged with implementing the program known as Waste Diversion Ontario (WDO), the Minister of Environment adopted a phased-in approach for implementation of the WEEE diversion program. WDO was directed to work with an Industry Funding Organization (IFO) to develop the program.⁶⁸ The Ontario Electronic Stewardship (OES) was created to fulfill this role.
 - Product Scope. Regulation 393/04 identifies a broad range of products listed under seven schedules as follows: (i) Schedule 1, Appliances; (ii) Schedule 2, Information Technology Equipment; (iii) Schedule 3, Telecommunications Equipment; (iv) Schedule 4, Audio-visual equipment; (v) Schedule 5, Electronic toys, leisure and sports equipment; (vi) Schedule 6, Electrical and electronic tools; and (vii) Schedule 7, Navigational, measuring, medical and control instruments. However, under the program plan submitted by OES and approved by the Minister of Environment in 2009, a narrower list of products is currently covered by the active phases of the program.⁶⁹
 - (2) Affected Entities. The Waste Diversion Act authorizes IFOs to designate "stewards" that will be responsible for payment of fees to fund the waste diversion program.⁷⁰ OES program rules identify brand owners, first importers and/or assemblers of nonbranded equipment for sale and use in Ontario that result in WEEE as stewards.⁷¹ Stewards may enter into written agreements with remitters (generally, retailers) whereby remitters

⁵⁹ See OES Final Revised (Phase 1 and 2) WEEE Program Plan (July 10, 2009).

 ⁶⁶ See ESABC Stewardship Plan 2012-2016 available at <u>http://www.esabc.ca/stewardshipplan/ESABCStewardshipPlan.pdf</u>.
 ⁶⁷ Ontario Waste Diversion Act §§ 23 and 25.

⁶⁸ See Letter from L. Broten, Minister of Environment, to G. Zecchini, Chair, WDO (June 17, 2007) available at <u>http://www.wdo.ca/content/?path=page80+item38689</u>.

⁷⁰ Ontario Waste Diversion Act § 30.

⁷¹ See OES Program Rules available at <u>http://ontarioelectronicstewardship.ca/program/program-rules</u>.

pay fees to OES on behalf of stewards.⁷² OES also has programs to approve collectors, reusers and refurbishers, transporters and recyclers.⁷³

- (3) Key Provisions. Stewards are required to register with OES, pay fees and file monthly reports.⁷⁴ Stewards may opt out of the program managed by OES and collect their own WEEE at their own expense under self-managed programs. In order to do so, stewards must obtain OES approval and they must continue to pay fees. However, these fees may be reduced by OES depending on the quantity of WEEE that flows through the selfmanaged program⁷⁵ The OES program plan includes provisions relating to recycling, reuse and refurbishment standards, collection, transportation and consolidation requirements as well as performance targets.⁷⁶
- C. **RECENT DEVELOPMENTS.** The Province of Quebec has recently published a waste management policy and plan that is intended to increase recycling. In particular, the plan states the government's intention to adopt a regulation for electronics take-back.⁷⁷ The issuance of this waste management policy and plan signals a renewed emphasis on the adoption of the draft regulation that has been under development by Quebec since 2009.⁷⁸ Development of an electronics stewardship regulation is also underway in the Province of Newfoundland and Labrador.⁷⁹

IV. LATIN AMERICA

A. **OVERVIEW**. Product take-back initiatives for electronic products are in full force in Latin America. The lack of sufficient waste infrastructure and growing environmental awareness in the region are among the factors that have led Latin American governments to view the adoption of product take-back mandates for e-wastes as an attractive policy option. Final national product take-back laws have been adopted in a number of countries and new measures are being proposed at an increasing pace. Like other jurisdictions, state and local governments are also moving forward with measures of their own, creating a patchwork of waste management requirements.⁸⁰

⁷² See OES website at <u>http://www.ontarioelectronicstewardship.ca/faq/what-remitter%E2%80%99s-agreement-and-remitter%E2%80%99s-report.</u>

⁷³ OES Final Revised (Phase 1 and 2) WEEE Program Plan (July 10, 2009).

⁷⁴ Id., Section 4.1.

⁷⁵ <u>Id</u>., Section 4.4.

⁷⁶ Id., Sections 4 and 5.

⁷⁷ Québec Residual Materials Management Policy - 2011-2015 Action Plan available at <u>http://www.mddep.gouv.qc.ca/matieres/pgmr/plan-action_en.pdf</u>.

⁷⁸ Ministry of Sustainable Development, Environment and Parks Draft Regulation respecting the recovery and reclamation of products by enterprises, Gazette Officielle du Québec (November 25, 2009).

⁷⁹ See Multi-Materials Stewardship Board 2009-10 Annual Report available at

http://www.mmsb.nl.ca/uploads/file/MMSB%20Annual%20Report%20Final%202009-2010.pdf.

⁸⁰ See e.g., São Paulo State Decree No. 54.645/2010, *Decreto No. 54.645 de 5 de agosto de 2009, Regulamenta dispositivos da Lei no. 12.300 de 16 de março de 2006, que institui a Política Estadual de Residuos Sólidos.*

B. KEY ENACTED MEASURES.

1. BRAZIL

- a. Solid Waste Policy Law (2010), *Lei No. 12.305 de 2 de agosto de 2010, Institui a Política Nacional de Resíduos Sólidos.* In 2010, after more than a decade of consideration, Brazil adopted a national framework solid waste law that calls for mandatory product take-back for a broad range of products including electronics, lamps and batteries. The Law establishes only the general outlines of a "reverse logistics" program but anticipates the development of subsequent regulation and industry sector agreements for its implementation.
 - Product Scope. Mandatory product take-back applies to electronic products and their components, batteries, fluorescent lamps, sodium and mercury vapor lamps and mixed light lamps. (Additional products required to be managed under a reverse logistics scheme include agro-toxins and their packaging, oil lubricants and their packaging and tires.)⁸¹
 - (2) *Entities Affected*: Entities with responsibilities under the Law include manufacturers, importers, distributors and merchants as well as generators of wastes and consumers.⁸²
 - (3) Key Provisions: Generally, manufacturers, importers, distributors and merchants must implement reverse logistic systems.⁸³ Reverse logistics systems may include establishing procedures to buy back used products or packaging, setting up collection stations for recyclable or reusable wastes, or participating in recycling cooperatives.⁸⁴ Take-back obligations may be satisfied by means of sector-specific agreements or industry-government agreements.⁸⁵ The Law includes a number of other provisions relating to, among other things, the development of incentive programs, design for environment requirements for packaging, the establishment of a waste management hierarchy and the obligations of certain waste generators to develop waste management plans.⁸⁶
- Solid Waste Policy Regulation (2010), Decreto No. 7.404 de 23 de dezembro de 2010. About ninety days after enactment of the longawaited Solid Waste Policy Law, its implementing regulation was adopted. The regulation fleshes out various aspects of the Solid Waste Policy Law but does not establish firm deadlines for implementation of reverse logistics programs. The primary emphasis of the regulation is

⁸¹ Solid Waste Policy Law (2010), *Lei No. 12.305 de 2 de agosto de 2010, Institui a Política Nacional de Resíduos Sólidos*, Art. 33.

⁸² <u>Id</u>., Arts. 20, 31 and 33.

⁸³ Id., Art. 31.

⁸⁴ Id., Art. 33, Section 3.

⁸⁵ Id., Arts. 33 and 34.

⁸⁶ Id., Arts. 9, 20, 32 and 42.

on establishment of a new inter-ministerial reverse logistics oversight body referred to as the Orientation Committee and providing the details for sectoral agreements.

- Product Scope. See Solid Waste Policy Law (2010). (1)
- (2)Entities Affected: See Solid Waste Policy Law (2010).
- (3) *Key Provisions*: The Regulation vests significant authority in the Orientation Committee. Chief among these powers is the establishment of a schedule for implementing reverse logistics programs.⁸⁷ For the most part, the Regulation envisions that take-back programs will be implemented by means of sectoral agreements. Sectoral agreements may be initiated by industry or the government. Sectoral agreements initiated by government must follow certain procedural steps. First, the Orientation Committee is required to approve the technical and economic viability of implementing the proposed reverse logistics program.⁸⁸ Second, the Ministry of Environment publishes an official notice that sets forth the covered products, the geographical scope of the program and the deadline for industry to submit a sectoral agreement.⁸⁹ A sectoral agreement must satisfy certain specified content requirements. For example, it must include a description of the operations of the take-back system including roles of each participant at each stage of the reverse logistics system, any participation by governmental entities or informal recyclers, and targets to be met.⁹⁰ Third, after review of the proposal by the Ministry of Environment, the Orientation Committee determines whether to sign or request additions or changes to the sectoral agreement. The Orientation Committee may also decide to subject the sectoral agreement to public comment. Once consensus on the sectoral agreement is achieved, it is signed and published in the official gazette. If consensus is not reached on the sectoral agreement, then the proceedings are staved.⁹¹ However, the government has other options as reverse logistic systems may be implemented by the adoption of a regulation or a "term of commitment" that allows the government to enter into a agreement with a covered manufacturer or other affected entity not already subject to a sectoral agreement or regulation.92

2. COLOMBIA

Resolution 1512/2010, Resolución No. 1512/2010, Por la cual se a. establecen los Sistemas de Recolección Selectiva y Gestión Ambiental

⁸⁷ Solid Waste Policy Regulation (2010), Art. 34.

⁸⁸ Id., Art. 21, Section 1.

Id., Art. 21.

⁹⁰ Id., Art. 23.

⁹¹ Id., Arts. 23, 26, 28 and 29.

⁹² Id., Arts. 30-32.

de Residuos de Computadores v/o Periféricos y se adoptan otras disposiciones. Colombia's environmental ministry. Minambiente, has been aggressively promoting product stewardship measures for some time by means of both regulation and "voluntary" agreements with various industry sectors, recently adopted Resolution 1512/2010 to impose product take-back for computers and printers.93

- (1)Product Scope. Mandatory product take-back applies to personal and portable computers (including CPU, mouse, screen and keyboard) and printers.94
- (2)Entities Affected. The Resolution applies to manufacturers and importers of covered products who sell 100 units or more on an annual basis.⁹⁵ Distributors and retailers must also participate in and support the take-back programs.⁹⁶ Consumers also have obligations under the take-back program.
- (3) Key Provisions. The Resolution requires that manufacturers and importers present an individual or collective take-back system to Minambiente for approval by June 30, 2011.97 The take-back system must allow consumers to return end-of-life products at collection sites or by equivalent means.⁹⁸ Beginning in 2012, collection quotas are established at 5% and increase annually by 5% until reaching 50%.⁹⁹ At least 30% of the units collected must be refurbished.¹⁰⁰ Annual reports on the progress of takeback systems must also be provided to Minambiente.¹⁰¹ Public awareness campaigns must also be implemented. 102 Consumers must return covered end-of-life products to the collection locations identified under a take-back system, comply with all handling instructions and separate any covered end-oflife products from household wastes.¹⁰³

3. **COSTA RICA**

a. E-Waste Regulation, Reglamento para la Gestión Integral de los Residuos Electrónicos, (Decree 35933-S/2010). By Decree 35933-

⁹³ Minambiente has also adopted take-back programs for lamps and batteries. See Resolution 1297/2010, Por la cual se establecen los Sistemas de Recolección Selectiva y Gestión Ambiental de Residuos de Pilas v/o Acumuladores y se adoptan otras disposiciones (requiring take-back for batteries) and Resolution 1511/2010, Por la cual se establecen los sistemas de recolección selectiva y gestión ambiental de residuos de bombillas y se adoptan otras disposiciones (imposing take-back for fluorescent and other lamps.)

Resolution 1512/2010, Por la cual se establecen los Sistemas de Recolección Selectiva y Gestión Ambiental de Residuos de Computadores y/o Periféricos y se adoptan otras disposiciones, Art. 2.

Id., Art. 3. Assemblers of computers are also covered under the Resolution. 96

<u>ld.</u>, Art. 14, 97

Id., Art. 8.

⁹⁸ <u>Id</u>., Art. 6.

⁹⁹ <u>Id</u>., Art. 10

Id., Art. 10, Paragraph 2.

¹⁰¹ <u>Id</u>., Art. 9.

¹⁰² <u>Id.</u>, Art. 13.

¹⁰³ <u>Id</u>., Art. 15.

S/2010, Costa Rica has established a national producer take-back program for electronic waste. Producers (defined to include manufacturers, importers and distributors) must form or join a "Compliance Unit" (Unidad de Cumplimiento) that is responsible for take-back and waste management. Notably, the responsibility for managing and defining this national take-back program is assigned to a newly-created entity consisting of representatives from government, state universities, trade associations and the Compliance Units (CEGIRE, by its Spanish acronym).

- (1)*Product Scope.* The scope of products covered by the Decree are listed in Annex 1 and include, among others, monitors, desktop and portable computers (and accessories), printers, cell phones, digital cameras and batteries from portable computers, cell phones and uninterruptible power supplies. The list of covered products may be expanded by the Ministry of Health.¹⁰⁴
- (2)Entities Affected. Producers (defined to include manufacturers, importers and distributors), electronic waste management companies and consumers.¹⁰⁵
- (3) Key Provisions. Producers, through the Compliance Units, must register with the Ministry of Health and develop and implement a Compliance Plan for product take-back and waste management. They must also establish collection centers, satisfy collection quotas and prepare progress reports on the Compliance Plan.¹⁰⁶ The Compliance Plan must identify the members of the Compliance Unit, the type and quantity of equipment sold, the collection centers to be used, the electronic waste management company responsible for treating and disposing of end-of-life products and a mechanism for financial security of the Compliance Plan.¹⁰⁷ Electronic waste management companies must also register with the Ministry of Health and comply with manifesting and recordkeeping requirements.¹⁰⁸ Consumers can be held responsible for environmental damage arising from disposal of covered end-of-life products in unauthorized locations 109
- b. National Solid Waste Law, Law 8839/2010, Lev Para la Gestión Integral de Residuos, and implementing regulation, Reglamento Sobre el Manejo de Residuos Sólidos Ordinarios, Decree 36093-S-2010). This broad framework solid waste law and implementing regulation establish take-back requirements for "special management wastes" that may include e-wastes not covered by the E-Waste Regulation.

¹⁰⁴ Decree 35933-S/2010, Reglamento para la Gestión Integral de los Residuos Electrónicos, Annex I and Art. 2.

¹⁰⁵ Id., Arts. 9, 15 and 16. ¹⁰⁶ Id., Art. 9.

¹⁰⁷ <u>Id.</u>, Art. 21.

¹⁰⁸ <u>Id</u>., Art. 16.

¹⁰⁹ Id., Art. 15 and 18.

- (1)Product Scope. End-of-life products identified as special management wastes are subject to take-back requirements.¹¹⁰ Under Decree 36093-S-2010, special management wastes are those wastes that due to quantity, volume, storage conditions, transport needs or recovery value must be removed from the stream of ordinary wastes.¹¹¹
- (2)Entities Affected. Manufacturers and importers of products identified as special management wastes must assume responsibility for these wastes.¹¹²
- (3) Key Provisions. Manufacturers and importers must implement recycling, reuse or recovery programs, participate in sectoral waste management programs, implement a system that allows consumers to pay a deposit a time of purchase that will be recovered upon return of the end-of-life product, develop products or use packaging that minimizes waste generation or establish strategic partnerships with cities to improve waste management.¹¹³ The Ministry of Health is charged with identifying specific special management wastes.¹¹⁴

4. MEXICO

The General Waste Law, Ley General Para La Prevención y Gestión a. Integral de los Residuos, and implementing Waste Regulation, Reglamento de la Ley para la Prevención y Gestión Integral de los Residuos. Beginning with its adoption of the General Waste Law in 2003. Mexico established product take-back requirements implemented through management plans for special management wastes and hazardous end-of-life products, which can include e-wastes. Implementing measures that would clearly define specific wastes subject to management plans have not vet been adopted and Mexico's regulatory scheme is complicated due to the division of jurisdiction over various wastes depending on category. Briefly, the federal government has jurisdiction over hazardous wastes, the states have jurisdiction over special management wastes and cities have jurisdiction over urban solid wastes. Responsibility for identifying the special management wastes subject to management plans, however, remains with SEMARNAT, Mexico's federal environmental agency. Notwithstanding regulatory uncertainties arising from this division of responsibilities, Mexico's approach clearly anticipates an extended producer responsibility regime for electronic products.

¹¹⁰ National Solid Waste Law, Law 8839/2010, Ley Para la Gestión Integral de Residuos, Art. 42.

¹¹¹ National Solid Waste Regulation, Reglamento Sobre el Manejo de Residuos Sólidos Ordinarios, Decree 36093-S-2010, Art. 3.

¹¹² National Solid Waste Law, Law 8839/2010, Ley Para la Gestión Integral de Residuos, Art. 42.

¹¹³ <u>Id</u>. ¹¹⁴ <u>Id</u>., Art. 41.

- (1)Product Scope. End-of-life products subject to management plans include, among others: (i) special management wastes¹¹⁵, including technological wastes,¹¹⁶ and (ii) hazardous end-of-life products, including accessories that may contain mercury, cadmium or lead.¹¹⁷ Mexico's environmental agency, SEMARNAT, is authorized to expand the list of products subject to management plans.¹¹⁸
- (2)*Entities Affected.* Entities required to implement a management plan include: (i) manufacturers, importers, exporters and distributors of listed hazardous products; (ii) large quantity generators and manufacturers, importers, exporters and distributors of products that upon discard become special management wastes or urban solid wastes and (iii) generators of hazardous wastes.
- (3)Key Provisions. A management plan is defined as an instrument that has the objective of minimizing the generation of wastes and maximizing the "valorization" (i.e., recycling) of wastes designed under the principle of shared responsibility.¹¹⁹ SEMARNAT is authorized to issue rules listing wastes subject to management plans, factors that are to be used to include or exclude wastes, and considerations and procedures for the development of plans.¹²⁰ Management plans may be individual or collective and they may be implemented by the private sector or include participation by both the private and public sectors. In addition, plans may be local, regional or national in scope.¹²¹
- C. **RECENT DEVELOPMENTS.** Venezuela has recently adopted a national solid waste framework law that provides for importers, manufacturers and distributors of products of mass consumption that generate wastes to develop product take-back programs to ensure re-use or effective recycling.¹²² Initiatives pending in other jurisdictions would impose producer take-back programs either in broad terms or specifically targeting electronics. Measures that are modeled on the European Union's WEEE Directive framework¹²³ are also pending in a number of jurisdictions.¹²⁴ Countries with existing product take-back programs continue to refine them. For example, in Mexico, the rule

¹¹⁵ Special management wastes are required to be classified based on a number of factors including whether the materials have a high economic value and whether the wastes involve a high risk to natural resources, the environment or the population. General Waste Law, Art. 30.

Technological wastes are wastes "from the information sector, from manufacturers of electronic products or automobiles or other [technological] products that at the end of their useful life, because of their characteristics, require special management. <u>Id</u>., Art. 19(VIII).

¹¹⁸ <u>Id</u>., Art. 19(IX).

¹¹⁹ Id., Art. 5, Paragraph XXI.

Waste Regulation, Reglamento de la Ley para la Prevención y Gestión Integral de los Residuos, Art. 12.

¹²¹ <u>Id</u>., Art. 16.

¹²² Venezuela Waste Management Law, Ley de Gestión Integral de la Basura (December 30, 2010).

¹²³ Directive on Waste Electrical and Electronic Equipment, Council Directive 2002/96, 2003 O.J. (L 37/24)(EC).

¹²⁴ See e.g., Colombia Senate Bill 17/2010, Proyecto de Ley 17 de 2010 mediante el cual se regula la política pública de Residuos Eléctricos y Electrónicos -RAE-en Colombia.

that would identify the category of technological wastes subject to management plans has moved closer to adoption.¹²⁵

V. **<u>CONCLUSION</u>** Product take-back initiatives for end-of-life electronic products are at center stage in the Americas. Not only have disparate regulatory programs emerged, but they also continue to evolve. Companies that manufacture or distribute electronic products face increasing challenges in navigating this regulatory landscape. Understanding and complying with existing take-back requirements and anticipating future product stewardship measures is essential to ensure market access.

¹²⁵ Draft Special Management Wastes Official Mexican Norm (*Proyecto de Norma Oficial Mexicana PROY-NOM-XXX-SEMARNAT-2011, Que Establece los Criterios Para Clasificar a los Residuos de Manejo Especial y Determinar Cuales Están Sujetos a Plan de Manejo*).

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- Disclosure of environmental liabilities in public filings
- Climate change disclosures
 Compliance with the Chemical
- Compliance with the Chemical Facility Anti-Terrorism Standards

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- Litigation
- Transactions

- Mergers and Acquisitions
- Energy
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EXPERIENCE

Heather Corken practices all aspects of environmental law, advising clients on regulatory requirements, assisting them in the evaluation and negotiation of corporate and real estate transactions and representing them in environmental litigation and enforcement matters. A major focus of her practice is representing clients in state and federal Superfund matters.

Heather advises clients on a wide range of environmental issues impacting the oil and gas, petrochemical and pipeline industries, including permitting, spill prevention, water supply, water rights, and wastewater treatment, storage, recycling and disposal in connection with hydraulic fracturing activities. In addition, she counsels clients on allocating environmental liabilities in connection with the acquisition and divestiture of oil and gas properties in the major shale plays in North America, including the Barnett, Marcellus, Haynesville, Eagle Ford, and Bakken Shales. She also counsels corporations on compliance with the Sarbanes-Oxley Act, disclosure of environmental matters in public filings and meeting the requirements of the Chemical Facility Anti-Terrorism Standards.

REPRESENTATIVE EXPERIENCE

Heather's recent significant projects include:

- Providing counsel to clients named as potentially responsible parties at state and federal Superfund sites in Alabama, Arizona, California, Georgia, New Jersey, Oklahoma, Pennsylvania, Tennessee and Texas, including serving as common counsel in connection with the Many Diversified Interests Superfund Site in Houston, Texas
 - Negotiated with the United States Environmental Protection Agency (EPA), the United States Department of Justice (DOJ) and other federal and state regulatory agencies to reduce settlement amounts on behalf of clients

- Defending a client in a multimillion dollar enforcement action brought by the EPA and the DOJ under the Resource Conservation and Recovery Act and corresponding state law
- Providing counsel to a large foreign corporation on the allocation of environmental liabilities associated with the acquisition of more than 400 gasoline service stations in the United States
- Assisting several large foreign corporations in assessing potential environmental liabilities under state and federal law arising out of the transportation of crude oil and other petroleum products in waters of the United States
- Advising oil and gas companies and private equity investors on the allocation of environmental liabilities in connection with the acquisition and divestiture of oil and gas properties in the Barnett, Marcellus, Haynesville, Eagle Ford, and Bakken Shales and the Uinta Basin
- Providing counsel to international energy and manufacturing companies on the disclosure of the financial impacts of environmental compliance and loss contingencies, including the potential impact of climate change and greenhouse gas emissions on business operations and financial performance, in their 10-Ks, 10-Qs and other public filings
- Advising oil and gas, petrochemical, and pipeline companies on compliance with the Chemical Facility Anti-Terrorism standards

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- Houston Bar Association
 - Environmental Law Section
 - Litigation Section
- State Bar of Texas

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- Environmental and Natural Resources Law Section
- Litigation Section
- American Bar Association
 - Litigation Section
 - Environmental Litigation Committee
 - Mass Torts Litigation Committee
 - Energy Litigation Committee
 - Section of Environment, Energy, and Resources
 - Special Committee on Environmental Disclosure
 - Superfund and Natural Resource Damages Litigation Committee

- Environmental Transactions and Brownfields Committee
- Environmental Litigation and Toxic Torts Committee

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- Chambers USA: America's Leading Lawyers for Business (2006 2011)
- "Texas Super Lawyer" (2010 2011)
- "Rising Star," Environmental Law, Law & Politics (2006 2008)
- Legal 500 US (2011), "recommended for regulatory matters"
- Lawdragon 3000 Leading Lawyers in the United States (2010)
- "500 New Stars, New Worlds," Lawdragon (2006)
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SPEECHES

FULBRIGHT

GJaworski L.L.P.

- "Keeping Kids Safe on the Internet," Fulbright & Jaworski L.L.P. Privacy Seminar, November 2010
- "Ethical Considerations for the Environmental Practitioner," Fulbright & Jaworski L.L.P. Environmental Law Update, October 2010
- "Disclosure of Environmental Issues in SEC Filings," American Bar Association Conference on Environmental Issues in Region 6, June 2010
- "State and Federal Site Contamination Law," Texas Land Law Conference for Civil Engineers and Land Surveyors, March 2010
- "Ethical Considerations for the Wetlands Practitioner," Texas Wetlands Conference, February 2010
- "Water Law Update," Fulbright & Jaworski L.L.P. Environmental Law Update, October 2009
- "Environmental Compliance Update," FERC Gas Compliance Conference, June 2009
- "Hot Enforcement Issues at EPA and TCEQ," CDM Seminar, May 2009
- "What Keeps Your General Counsel Awake at Night," Fulbright & Jaworski L.L.P. Environmental Law Update, May 2008
- "New Accounting for Environmental Liabilities," Risk and Insurance Management Society, Inc. Conference, May 2007
- "Work Life Balance," Texas Diversity and Leadership Conference hosted by the Texas Diversity Counsel, May 2007
- "Site Security and the New Anti-Terrorism Standards," Fulbright & Jaworski L.L.P. Environmental Law Update Seminar, May 2007
- "Balancing Career and Personal Life," Women in Leadership Symposium hosted by the Gulf Coast Chapter of the Texas Diversity Council, January 2007
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- "Environmental Disclosure 101: What You Don't Know Can Hurt You," Fulbright & Jaworski L.L.P. Breakfast Seminar, January 2006
- "Environmental Liabilities in Oil and Gas Acquisitions," South Texas College of Law Energy Law Institute for Attorneys and Landmen, September 2005
- "The Impact of the Sarbanes-Oxley Act on Environmental Disclosures," Seventeenth Annual Texas Environmental Superconference, August 2005

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LANGUAGE CAPABILITIES

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Glaworski L.L.P.
HOT TOPICS IN DOCUMENT PRODUCTION AND RETENTION

Heather M. Corken Fulbright & Jaworski L.L.P. 2011 Texas Environmental Superconference August 5, 2011

Every large environmental or toxic tort lawsuit involves an avalanche of documents and electronic data. Sorting through this mountain of information can be very time-consuming and extremely costly. With the proliferation of email, text messages and other electronic data, the sheer volume of information and the informality of electronic communications can cause major headaches for parties involved in environmental litigation. In addition, determining what documents to keep and for how long and making the call on what documents to discard or delete can involve difficult decisions. Making the wrong call can result in sanctions or legal malpractice claims; participating in unlawful destruction can potentially result in disciplinary action from the State Bar.

This paper highlights some of the emerging trends in document production and retention to help counsel and their clients avoid some of the traps for the unwary.

I. DOCUMENT PRODUCTION IN THE DIGITAL AGE

Discovery of electronically stored information ("ESI") has become a routine part of litigation. Conceptually, there is no difference between the duty to preserve electronic data and the duty to preserve hard documents. The Texas and Federal Rules of Civil Procedure apply to both. However, the difficulty lies in the logistics of preservation and collection of ESI. The sheer volume of information and the multiple locations that data can be found (office computer, home computer, laptop, BlackBerry, cell phone, hard drive, jump drive, backup tape, network server, etc.) present significant challenges to lawyers and their clients when responding to discovery requests.

A. METADATA

In most companies, almost every document available on paper is also available in electronic form. There are even more documents such as correspondence, memoranda, pleadings, contracts, drafts, notes and email messages that may only be available electronically. In almost all cases, the electronic copy of a document contains more information than its hard copy—basically data about data, commonly referred to as "metadata."

Metadata essentially functions as the "DNA" of electronic documents. While metadata is generally harmless, it can contain privileged or confidential information. For example, it can reveal who authored or revised the document, what substantive revisions were made and when, who received the document and on what date, and any comments embedded within the content. Depending on the software package, file type and operating system, there can be as many as 300 fields of potentially available metadata. Production of metadata can result in the inadvertent disclosure of client confidences, attorney work product, and information protected by the attorney-client privilege.

The ethical rules require lawyers to use reasonable care to prevent client confidences from being revealed to opposing counsel or third parties. *See, e.g.*, MODEL RULES OF PROF'L CONDUCT R. 1.6 cmt. (providing that lawyers must act competently to protect a client's information against inadvertent or unauthorized disclosures); TEX. DISCIPLINARY R. PROF'L CONDUCT 1.05(b). In Formal Opinion 06-442, the American Bar Association's Standing Committee on Ethics and Professional Responsibility confirmed that this obligation applies to the transmission of metadata in electronic documents. *See* ABA Comm. On Ethics & Prof'l Responsibility, Formal Op. 06-442 (2006).

The ethical rules also require lawyers to act competently in any matter the lawyer undertakes. See MODEL RULES OF PROF'L CONDUCT R. 1.1; TEX. DISCIPLINARY R. PROF'L CONDUCT 1.01. Model Rule 1.1 provides: "A lawyer shall provide competent representation to a client. Competent representation requires the legal knowledge, skill, thoroughness and preparation reasonably necessary for the representation." MODEL RULES OF PROF'L CONDUCT R. 1.1. The duty of competence likely requires a lawyer to understand that: (i) metadata is created in the generation of electronic files; (ii) the transmission of electronic files will include transmission of metadata; (iii) recipients of the electronic files can access metadata; and (iv) actions can be taken to prevent the transmission of confidential or privileged metadata, such as the use of scrubbing software. See Minnesota Opinion 22 (Mar. 26, 2010) (finding that "a lawyer is ethically required to act competently to avoid improper disclosure of confidential and privileged information in metadata in electronic documents").

Several state ethics committees have recognized that lawyers have a duty to use reasonable care to prevent the transmission of confidential metadata. *See, e.g.*, Alabama Opinion 2007-02 (Mar. 14, 2007); Colorado Opinion 119 (May 17, 2008); District of Columbia Opinion 341 (Sept. 2007); Florida Opinion 06-2 (Sept. 15, 2006); Maine Opinion 196 (Oct. 21, 2008); Maryland Opinion 2007-09 (Oct. 19, 2006); Minnesota Opinion 22 (Mar. 26, 2010); New Hampshire Opinion 2008-2009/4 (Apr. 16, 2009); New York Opinion 782 (Dec. 8, 2004); Pennsylvania Opinion 2009-100 (undated); Vermont Opinion 2009-1 (Sept. 1, 2009); West Virginia Opinion 2009-1 (June 10, 2009). The State Bar of Texas has not yet addressed this issue.

Therefore, lawyers should take care when producing electronic documents in discovery to prevent the inadvertent disclosure of confidential or privileged information in metadata. One federal district court has held that a party's failure to object and produce a privilege log regarding metadata contained in Excel spreadsheets waived any assertion of attorney-client privilege or work product protection for that metadata. See Williams v. Sprint/United Mgmt. Co., 230 F.R.D. 640, 656 (D. Kan. 2005).

B. REDACTION

Many applications, including Word, Excel, PowerPoint, and Acrobat, allow you to apply layers or images to, in effect, redact information (*e.g.*, using the drawing tool in Word to cover text with a solid white rectangle). Using this type of redaction in a file can create a significant risk of exposure. Acrobat Distiller, the printer option commonly used to create Acrobat files, does not remove the hidden text. Although the cover can no longer be moved, a search or selection of the "hidden text" is still possible, and the text can still be copied and read. In the file itself, simply moving or deleting the cover will expose the hidden text.

Failure to remove information from an electronic document (such as for a court filing or discovery) could result in the disclosure of confidential information in violation of state or federal law. Lawyers who allegedly improperly file or otherwise disclose protected data could be liable for such disclosure. *See, e.g., Hageman v. Sw. Gen. Health Ctr.*, 893 N.E.2d 153 (Ohio 2008) (holding that a lawyer may be liable for unauthorized disclosure of litigation adversary's medical information to third party). In addition, lawyers who ineffectively redact electronic documents containing confidential or other protected information could face judicial sanctions.

In a recent bankruptcy proceeding, a law firm faced sanctions for failing to properly redact confidential information in a complaint filed on behalf of certain creditors. See Lowe, "Brown Rudnick Likely to Escape Sanctions for Improper Redaction," The Am. Lawyer (Aug. 4, 2010). The lawyers blacked out confidential information in a Microsoft Word file, converted it to an Adobe PDF file, and emailed it to another law firm to be electronically filed with the court. *Id.* The complaint then became available in the federal court system's database (PACER) to anyone with an account. *Id.* While the redacted material did not visually appear within the PDF that was filed, the confidential information did show up if a reader copied and pasted the text of the document back into a Word file. *Id.* Another creditor and its lawyers filed a motion for sanctions against the law firm had made a similar mistake in a different bankruptcy, resulting in a firm wide memo warning of the PDF problem. *Id.* The bankruptcy examiner indicated that the court was unlikely to impose harsh sanctions for the mistake, but the court would probably order the lawyers involved to pay any attorneys' fees incurred by the party that filed the motion for sanctions. *Id.*

In November 2010, a judge in the U.S. District Court for the District of Minnesota sanctioned another law firm for the electronic filing of documents disclosing birth dates, names of minors, financial account numbers, and at least one social security number in violation of Rule 5.2(a) of the Federal Rules of Civil Procedure. See Allstate Ins. Co. v. Linea Latina de Accidentes, No. 09-3681, 2010 U.S. Dist. LEXIS 124773, at *10-11 (D. Minn. Nov. 24, 2010). After being notified of the error, the lawyer tried to redact the information using Adobe Acrobat's rectangle tool to place black-filled rectangles over the information. Id. at *6-7. The court found the redaction method wholly ineffective because the court was able to remove the rectangles and expose the underlying information with a few keystrokes. Id. at *7 n.4. In a sternly worded opinion, the court noted:

Every federal district has now embraced electronic filing. The days of attorneys being able to ignore the computer and shift blame to support staff in the event of an error are gone. The consequences are simply too serious. To the extent there are attorneys practicing in federal court who are under the impression that someone in the Clerk's office will comb their filings for errors and call them with a heads-up, the Court delivers this message: It is the responsibility of *counsel* to ensure that personal identifiers are properly redacted. . . . Attorneys who are slow to change run the very real risk of sanctions.

Id. at *8-9; see also Engeseth v. Cnty. of Isanti, 655 F. Supp. 2d 1047, 1048 (sanctioning a lawyer for failing to redact the full social security numbers and birth dates for 179 individuals in a court filing).

Redaction mistakes are not limited to the private sector. In August 2007, the Federal Trade Commission inadvertently disclosed a company's trade secrets and confidential and proprietary information by electronically filing a document that had been improperly redacted. *See* Rugaber, "Error by FTC Reveals Whole Foods' Trade Secrets," The Washington Post (Aug. 15, 2007). The FTC apparently tried to redact that information by applying black shading over black text. *Id.* However, because the relevant text was only shaded black, the redacted portion could be searched, copied, pasted, and read. *Id.* After court officials realized the redacted portion could easily be read, they blocked the document from being downloaded until it was replaced by a properly redacted version, but not before the Associated Press obtained a copy of the pleading. *Id.*

As a result, lawyers should take care to properly redact all documents that may contain privileged or confidential information before filing those documents electronically or producing electronic files in discovery. At best, ineffective redaction is embarrassing; at worst, it could subject the lawyer to civil liability or judicial sanctions.

II. DOCUMENT RETENTION

Information is a valuable asset of all companies. Like other assets, information must be managed and protected. In order to manage and protect information effectively, a company must have a records management program in place that covers the life cycle of records from creation to authorized destruction or permanent archive. Virtually all companies have such programs; those that do not, regardless of their size, are inviting trouble.

Document retention policies play an important role in a company's overall records management system. It is impractical and imprudent for companies to keep all documents and data forever. In the ordinary course of business, companies will (and should) discard documents and delete or overwrite data that are no longer needed. By developing and implementing written policies that address what documents and data should be maintained and for how long, how that information should be maintained (hard copy, electronic copy, or both), and the process for discarding or deleting that information, companies can ensure that records are handled properly and uniformly throughout the organization.

While having a document retention/destruction policy in place will not necessarily shield a company if relevant documents are later found to have been destroyed, it will help the company show that such destruction was reasonable and performed in good faith as part of its ordinary course of business. *See Micron Tech., Inc. v. Rambus Inc.*, No. 2009-1263, 2011 U.S. App. LEXIS 9730, at *23-24 (Fed. Cir. May 13, 2011).

A. LITIGATION HOLDS

Courts generally impose a duty on a party to preserve evidence before litigation is commenced, typically when the party knew or should have known that litigation was likely. *See, e.g., John B. v. Goetz*, 531 F.3d 448, 459 (6th Cir. 2008) (finding that "[t]he obligation to

preserve evidence arises when the party has notice that the evidence is relevant to litigation or when a party should have known that the evidence may be relevant to future litigation"); Zubulake v. UBS Warburg LLC, 220 F.R.D. 212, 216 (S.D.N.Y. 2003) ("Zubulake IV") (explaining that the duty to preserve material evidence arises not only during litigation but also includes the period before litigation when a party reasonably should know that the evidence may be relevant to anticipated litigation). Therefore, the duty to preserve documents and ESI can arise before a lawsuit is filed or before receipt of formal notice of suit.

The duty arises at the point in time when litigation is reasonably anticipated whether the party is the initiator or the target of litigation. As the Federal Circuit has observed, "[t]his is an objective standard, asking not whether the party in fact reasonably foresaw litigation, but whether a reasonable party in the same factual circumstances would have reasonably foreseen litigation." *Micron*, 2011 U.S. App. LEXIS 9730, at *17. Because plaintiffs control the timing of litigation, a plaintiff's duty to preserve evidence is often triggered before litigation commences. *See Pension Comm. of the Univ. of Montreal Pension Plan v. Banc of Am. Sec.*, *LLC*, 685 F. Supp. 2d 456, 466 (S.D.N.Y. 2010) ("Pension Committee").

Unfortunately, there is no bright-line rule for when a party should reasonably anticipate litigation. Courts normally will examine the specific facts and circumstances of each case in determining whether litigation was imminent, likely, or should otherwise have been expected. See, e.g., Rimkus Consulting Grp., Inc. v. Cammarata, 688 F. Supp. 2d 598, 612 (S.D. Tex. 2010); Pension Committee, 685 F. Supp. 2d at 464-65.

The Sedona Conference Commentary on Legal Holds suggests that it is helpful to consider when a duty to preserve *does not* arise. For example, a reasoned analysis of vague rumors, indefinite threats, and a lack of credibility (either from the nature of the threat itself or from past experience regarding the type of threat) will support a decision not to preserve as long as an experienced person in a position to make a reasoned decision has reviewed the available facts and circumstances prior to reaching that conclusion. *See* THE SEDONA CONFERENCE, COMMENTARY ON LEGAL HOLDS: THE TRIGGER & THE PROCESS (A PROJECT OF THE SEDONA CONFERENCE WORKING GROUP ON ELECTRONIC DOCUMENT RETENTION & PRODUCTION (WG1), 11 Sedona Conf. J. 265, 272 (2010).

As soon as a party reasonably anticipates litigation, "it must suspend its routine document retention/destruction policy and put in place a 'litigation hold' to ensure the preservation of relevant documents." *Treppel v. Biovail Corp.*, 249 F.R.D. 111, 118 (S.D.N.Y. 2008). While courts generally do not require litigants to keep or retain *every* document in their possession once a lawsuit is filed, a party "is under a duty to preserve what it knows, or reasonably should know, is relevant in the action, is reasonably calculated to lead to the discovery of admissible evidence, is reasonably likely to be requested during discovery and/or is the subject of a pending discovery request." *Zubulake IV*, 220 F.R.D. at 217 (noting that there is no broad requirement to preserve information that is not relevant: "Must a corporation, upon recognizing the threat of litigation, preserve every shred of paper, every email or electronic document, and every backup tape? The answer is clearly, 'no.' Such a rule would cripple large corporations").

When engaged on a litigation matter, a lawyer should immediately discuss with the client the duty to preserve potentially relevant evidence and the consequences of failing to do so. The lawyer should also outline the steps that should be taken to carry out this obligation properly, as well as who will be responsible for completing those steps. If the client has not instituted a litigation hold, the lawyer should advise the client to do so immediately. Although many sophisticated clients may have well-established litigation hold procedures, the lawyer should still discuss the preservation requirements with the client and ensure the client's continued compliance with those requirements. While not all courts require a written litigation hold, some do. *Compare Pension Committee*, 685 F. Supp. 2d at 465 (holding that "the failure to issue a *written* legal hold constitutes gross negligence") *with Kinnally v. Rogers Corp.*, No. 06-CV-2704, 2008 WL 4850116, at *7 (D. Ariz. Nov. 7. 2008) (holding that sanctions should not be imposed merely because of the absence of a written litigation hold when a party has taken "the appropriate actions to preserve evidence"). Therefore, the issuance of a written litigation hold is *strongly* recommended and may be required in some jurisdictions.

Litigation holds should be tailored to the client's individual needs. Considerations for developing and implementing a litigation hold include:

- Establishing the scope of the litigation hold—This will include the time period, subject matter, custodians, and potential locations of relevant information.
- Identifying who should receive the litigation hold memorandum—Companies should issue the litigation hold memo to all employees who could potentially have relevant information relating to the matter in dispute. In addition, the memo should be provided to IT personnel so that they know to modify or suspend regularly scheduled deletion of electronic information. Counsel should also consider whether the facts and circumstances warrant sending the litigation hold memo or a similar written request to third parties within the company's control.
- Drafting the litigation hold memorandum—Counsel should carefully draft the litigation hold memo, keeping in mind that the ultimate audience for the memo may be a court. The memo should include, among other things, a summary of the litigation, a description of the types of documents and electronic information that must be preserved and how those documents and information should be maintained and stored, a discussion of the legal obligations to preserve information, and a warning that non-compliance could result in unfavorable consequences for both the company and the individual employee. The litigation hold should also require an immediate stop on any automatic destruction of data.
- Distributing the litigation hold memorandum—Because all employees may not have uniform access to email, the litigation hold memo should be distributed in both paper and electronic format.
- Requiring acknowledgement of receipt—It would be prudent to have recipients of the litigation hold memo acknowledge their receipt and understanding of the memo.
- Creating a mechanism for collecting information subject to the litigation hold— Counsel should create a mechanism for collecting all preserved records so that

they can be searched for responsive information. Counsel should not rely on the employees to search and select what those employees believe to be relevant information.

- Locating all sources of potentially relevant information—Counsel should take steps to identify all sources of potentially relevant information (office computers, home computers, laptops, BlackBerrys, PDAs, cell phones, hard drives, jump drives, backup tapes, network servers, etc.). This should include reviewing the company's document retention policy and interviewing IT personnel about the company's computer system, backup procedures, automated destruction of electronic information, and storage or recycling of backup tapes and other media. Key players should also be contacted and questioned regarding their procedures for document management and retention. Obviously, how these employees store or attempt to delete email is particularly important.
- Hiring outside consultants or vendors—There are many consultants and vendors in the business of electronic discovery. Some companies and law firms have the capability to handle large-scale electronic discovery projects in-house, but many do not. Depending on the volume of information involved, the multiple sources of relevant data, the complexity of the underlying litigation, and the scope of the discovery requests, litigants may want to consider hiring outside vendors to assist them.
- Designating responsible persons—Companies should designate one or more persons responsible for ensuring that the litigation hold is followed, such as a client records manager or an IT employee.

Lawyers should be proactive in monitoring the client's preservation activities, keeping in mind that the litigation hold memo may need to be reissued periodically. In addition, clients should be reminded that stays of discovery or of the case will not release the client from its preservation obligations. Counsel should also follow up with key employees to ensure that they have fully disclosed and are continuing to preserve all potentially relevant information. *See, e.g., Zubulake v. UBS Warburg LLC*, 229 F.R.D. 422, 432 (S.D.N.Y. 2004) ("*Zubulake V*") (finding that "it is *not* sufficient to notify all employees of a litigation hold and expect that the party will then retain and produce all relevant information"); *Pension Committee*, 685 F. Supp. 2d at 473 n.68 (noting that "not every employee will require hands-on supervision from an attorney. However, attorney oversight of the process, including the ability to review, sample, or spotcheck the collection efforts is important").

In Zubulake V, the court ordered monetary sanctions and an adverse inference instruction against the defendant for the willful destruction of emails presumed to be relevant. Zubulake V, 229 F.R.D. at 439-40. The court found that counsel to UBS had failed to communicate the litigation hold to all the key players involved in the litigation and had not determined each of those players' document management habits. *Id.* at 432. The court emphasized the need for counsel to communicate to the client its discovery obligations and to identify sources of discoverable information once the duty to preserve arises. *Id.* The court also stressed the importance of issuing litigation holds and the need to regularly reiterate the obligation to preserve relevant information as well as the need for counsel to continually monitor compliance. *Id.* at 433. Once counsel has taken these necessary steps, "a party is fully on notice of its discovery obligations." *Id.* at 439. The court in *Zubulake V* did not sanction counsel for their preservation failures since, at the end of the day, "the duty to preserve and produce documents rests on the party," and a party on notice of its discovery obligations "acts at its own peril." *Id.* at 436. However, at least one court has imposed monetary sanctions on both counsel and its client for failure to institute a timely legal hold. *See Green v. McClendon*, 262 F.R.D. 284, 290 (S.D.N.Y. 2009).

Outside counsel should also take all steps necessary to comply with the client's litigation hold and remain vigilant to avoid destruction of documents or electronic information within their control. Failure to comply with the litigation hold can potentially result in the imposition of judicial sanctions or the assertion of legal malpractice claims. See Peoples Energy Corp. v. Ungaretti & Harris LLP, No. 2010-L-014157 (Cir. Ct. of Cook County, Ill.) (filed Dec. 15, 2010) (legal malpractice action alleging lawyer's alleged authorization of destruction of 16 boxes of client documents resulted in an excessive class action settlement in the face of pending sanctions motions).

B. SPOLIATION

Courts have an inherent power to sanction parties for discovery abuses. See FED. R. CIV. P. 37(b)(2); Pension Committee, 685 F. Supp. 2d at 465; Silvestri v. Gen. Motors Corp., 271 F.3d 583, 590 (4th Cir. 2001) ("The policy underlying this inherent power of the courts [to impose sanctions for spoliation] is the need to preserve the integrity of the judicial process in order to retain confidence that the process works to uncover the truth."). Lawyers may be subject to liability for wrongful destruction of documents or ESI under the doctrine of spoliation. See Pension Committee, 685 F. Supp. 2d at 462 (noting that "[b]y now, it should be abundantly clear that the duty to preserve means what it says and that a failure to preserve records—paper or electronic—and to search in the right places for those records, will inevitably result in the spoliation of evidence").

Spoliation is defined as "the destruction or significant alteration of evidence, or the failure to preserve property for another's use as evidence in pending or reasonably foreseeable litigation." West v. Goodyear Tire & Rubber Co., 167 F.3d 776, 778 (2d Cir. 1999); Zubulake V, 229 F.R.D. at 430. The loss or destruction of potentially relevant information after the duty to preserve has arisen can result in sanctions for spoliation ranging from monetary penalties, adverse inference instruction (*i.e.*, inference that the evidence would have been unfavorable to the party responsible for its destruction), or default judgment against the party that failed to preserve the potentially relevant information.

Federal courts generally consider three factors in determining whether spoliation has occurred: (1) the reasonable foreseeability of litigation; (2) the degree of culpability of the party who destroyed the evidence; and (3) the resulting prejudice to the opposing party. See, e.g., Rimkus Consulting Grp., Inc., 688 F. Supp. 2d at 612 (finding that deletions, alterations, and losses of information "cannot be spoliation unless there is a duty to preserve the information, a culpable breach of that duty, and resulting prejudice"). Culpability is typically viewed along a continuum from destruction intended to make evidence unavailable in litigation (*i.e.*, intentional

destruction of relevant information) to inadvertent loss of information for reasons unrelated to the pending litigation (*i.e.*, unintentional destruction of relevant information). *Id.* at 613. Prejudice to the opposing party also can range from an inability to prove claims or defenses to little or no impact on the presentation of proof. *Id.* Depending on the degree of culpability and the extent of prejudice, sanctions may be imposed for failing to preserve evidence. *Id.*

Courts recognize that document retention policies are adopted for benign business purposes, limiting the volume of a company's files and retaining only that which is of continuing value. *See Micron*, 2011 U.S. App. LEXIS 9730, at *23-24. "Thus, where a party has a long-standing policy of destruction of documents on a regular schedule, with that policy motivated by general business needs, which may include a general concern for the possibility of litigation, destruction that occurs in line with the policy is relatively unlikely to be seen as spoliation." *Id.*

Nonetheless, even when the destruction of data results from application of a company's document retention policy, a court may still impose sanctions when relevant information is destroyed or deleted. See, e.g., id. at *23-26; Residential Funding Corp. v. DeGeorge Fin. Corp., 306 F.3d 99 (2d Cir. 2002); Ingoglia v. Barnes & Noble Coll. Booksellers, Inc., 852 N.Y.S.2d 337 (App. Div. 2008) (dismissing complaint as sanction for plaintiff's erasure of data from hard drive); DaimlerChrysler Motors v. Bill Davis Racing, Inc., No. 03-72265, 2005 U.S. Dist. LEXIS 38162, at *3 (E.D. Mich. Dec. 22, 2005) (recommending sanctions for failure to stop automated email deletion).

Rule 37(e) of the Federal Rules of Civil Procedure creates a limited "safe harbor" against sanctions for inadvertent loss of ESI providing that, absent extraordinary circumstances, a court may not impose sanctions if the ESI was lost as a result of the routine, good-faith operation of the party's electronic information system. FED. R. CIV. P. 37(e). However, federal courts apply different standards in determining whether sanctions should be imposed on a party.

Courts in the Second and Sixth Circuits have held that mere negligence suffices to trigger the severe sanction of an adverse inference instruction. See Residential Funding Corp., 306 F.2d at 113 (finding that "discovery sanctions, including an adverse inference instruction, may be imposed upon a party that has breached a discovery obligation not only through bad faith or gross negligence, but also through ordinary negligence"); Rogers v. T.J. Samson Cmty. Hosp., 276 F.3d 228, 232 (6th Cir. 2002).

Courts in the Fifth, Seventh, Eighth, Tenth, Eleventh, D.C., and Federal Circuits have held that bad faith must be shown before such a harsh sanction will be warranted. See Rimkus Consulting Grp., Inc., 688 F. Supp. 2d at 614 ("As a general rule, in this circuit, the severe sanctions of granting default judgment, striking pleadings, or giving adverse inference instructions may not be imposed unless there is evidence of 'bad faith.""); Faas v. Sears, Roebuck & Co., 532 F.3d 633, 644 (7th Cir. 2008) (adverse inference must be based on bad faith); Greyhound Lines, Inc. v. Wade, 485 F.3d 1032 (8th Cir. 2007); Aramburu v. Boeing Co., 112 F.3d 1398, 1407 (10th Cir. 1997) (adverse inference must be based on bad faith; mere negligence insufficient); Penalty Kick Mgmt. Ltd. v. Coca Cola Co., 318 F.3d 1284, 1294 (11th Cir. 2003) (holding that bad faith is required for an adverse inference instruction); Wyler v. Korean Air Lines Co., 928 F.2d 1167, 1174 (D.C. Cir. 1991); Micron, 2011 U.S. App. LEXIS 9730, at *38 (finding that a "determination of bad faith is normally a prerequisite to the imposition of dispositive sanctions for spoliation" and must be made with caution).

The First, Fourth and Ninth Circuits have held that bad faith is not essential if there is severe prejudice, and courts in the Third Circuit balance the degree of fault and prejudice. See, e.g., Sacramona v. Bridgestone/Firestone, Inc., 106 F.3d 444, 447 (1st Cir. 1997) (finding bad faith is not essential to sanction conduct resulting in the destruction of documents if the opposing party is prejudiced); Hodge v. Wal-Mart Stores, Inc., 360 F.3d 446, 450 (4th Cir. 2004) (holding that an adverse inference can be drawn by showing that willful conduct resulted in the loss or destruction of evidence); Silvestri, 271 F.3d at 593 (holding that dismissal is usually justified only in circumstances of bad faith, but "even when conduct is less culpable, dismissal may be necessary if the prejudice to the defendant is extraordinary, denying it the ability to adequately defend its case"); Mosaid Techs. Inc. v. Samsung Elecs. Co., 348 F. Supp. 2d 332, 335 (D.N.J. 2004) (holding that bad faith was not required for an adverse inference instruction as long as there was a showing of relevance and prejudice).

The Federal Circuit Court of Appeals recently addressed the issue of spoliation in two companion cases: *Micron Technology, Inc. v. Rambus Inc.*, No. 2009-1263, 2011 U.S. App. LEXIS 9730, at *1 (Fed. Cir. May 13, 2011), and *Hynix Semiconductor Inc. v. Rambus Inc.*, Nos. 2009-1299, 2009-1347, 2011 U.S. App. LEXIS 9728, at *1 (Fed. Cir. May 13, 2011). In these cases, the Federal Circuit reconciled a split between two district courts on whether Rambus acted improperly when it destroyed documents related to its patents. One district court in the Northern District of California found no spoliation and ordered Hynix to pay nearly \$400 million for infringing Rambus' semiconductor patents. *Hynix Semiconductor Inc.*, 2011 U.S. App. LEXIS 9728, at *2-3. Another district court in Delaware ruled that because Rambus had improperly destroyed documents, twelve of its patents were unenforceable. *Micron*, 2011 U.S. App. LEXIS 9730, at *2.

In the *Micron* case, the Delaware district court held that the twelve patents asserted against Micron were unenforceable due to Rambus' spoliation of documents. *Id.* In the months leading up to filing suit, Rambus held "shred days" and a "shred party," destroying between 9,000 and 18,000 pounds of documents in 300 boxes. *Id.* at *12. Rambus also erased all but 1 of the 1,269 backup tapes storing its email from the previous several years. *Id.* at *10. However, on instruction from the company's vice president, employees kept documents considered to be "helpful" in establishing that the company had intellectual property. *Id.* The court held a bench trial on the spoliation issue and concluded that the patents in suit were unenforceable against Micron because Rambus had engaged in spoliation by intentionally destroying relevant, discoverable documents in derogation of a duty to preserve them. *Id.* at *15-16.

On appeal, the Federal Circuit found that the Delaware court had seen ample evidence supporting its decision that Rambus destroyed documents in its possession knowing that it would likely be forced to produce them in litigation and intending to prevent that production. *Id.* at *34-35. The Federal Circuit held that Rambus' document retention policy, which was first instituted approximately one year prior to the first patent lawsuit, appeared to be part of a litigation strategy and that Rambus was aware its competitors were potentially infringing on its patents. *Id.* at *23-26. The court further concluded that because Rambus was the patent holder, whether litigation was reasonably foreseeable depended largely on whether it chose to assert the

patents. *Id.* at *32. Nonetheless, the Federal Circuit vacated the Delaware court's decision to dismiss the case as sanctions for the company's spoliation, remanding the issue for a further assessment of the record to determine whether Rambus acted in bad faith when it destroyed the documents. *Id.* at *40-41.

In the *Hynix* case, the Federal Circuit found that the California court applied too narrow a standard of foreseeability in determining that litigation was not reasonably foreseeable until late 1999 and vacated the district court's final judgment and its findings of fact and conclusions of law regarding spoliation. *Hynix*, 2011 U.S. App. LEXIS 9728, at *5. It then remanded the case for the district court to determine when Rambus' duty to preserve documents began under the framework set forth in the Micron decision and whether any sanction would be appropriate if spoliation is found to have occurred. *Id*.

Spoliation continues to be an ever-changing area of law. Because the standards imposed on parties can vary widely by jurisdiction and the determination of whether sanctions are warranted depends heavily on the specific facts and circumstances of each case, counsel should take care when advising clients about their preservation obligations.



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Tobias Smith represents clients in business litigation matters, with an emphasis on environmental and real estate issues in state and federal courts. Tobias routinely handles complex litigation matters alleging breach of contract, indemnity disputes, property damage claims, and toxic tort cases arising from exposure to various hazardous substances and petroleum constituents. Tobias frequently defends clients in civil enforcement actions brought by state and local environmental agencies and the US Environmental Protection Agency (EPA).

Tobias also provides counseling to clients on a wide variety of environmental and real estate matters, including underground storage tank (UST) regulations, property remediation, negotiation of property access agreements and other environmental regulatory compliance issues. In addition, Tobias has conducted extensive environmental due diligence for clients in mergers, acquisitions, divestitures and real estate transactions.

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- Obtained no-liability settlement for national retailer in property damage suit arising from allegations of faulty store design and construction.
- Assisted in successful defense of a major gasoline retailer accused of contaminating soil and groundwater with MtBE and other gasoline constituents in multidistrict litigation (MDL).
- Obtained partial summary judgment in favor of business owner in litigation involving allegations of destruction of commercial property and interference with business activities.
- Assisted in the successful settlement of a multi-facility enforcement initiative brought by EPA against one of the world's largest corporations, resulting in a single, multi-site administrative settlement and nominal penalty.
- Assisted national grocery retailer with obtaining favorable

settlement with EPA for alleged construction-related storm water violations.

- Obtained successful resolution of lease dispute, including removal of multiple commercial tenants retail complex.
- Successful defense of healthcare facility against claims alleging exposure to toxic mold.
- Extensive experience in coordinating and conducting electronic discovery (e-discovery) in many complex litigation matters.

Counseling and Transactional

- Negotiated multiple access agreements to address environmental remediation for various clients with neighboring property owners, municipalities, and utilities.
- Assisted in procurement and transfer of multiple environmental and other federal, state and local regulatory permits on behalf of various clients.
- Performed environmental due diligence activities in assisting one of the largest US dairy products distributors with the acquisition of assets across the US and renegotiation of credit agreements, with aggregate values of approximately \$1 billion, and in dispositions totaling more than \$400 million.
- Performed environmental due diligence activities on behalf of a Dutch bank's US representative office in connection with the restructuring of a \$30 million loan to a Mexican manufacturing company with fixed assets in the US and other countries.
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Ethical Issues Involving Social Media

Tobias Smith Strasburger & Price, LLP Presented August 5, 2011

The term social media encompasses a vast sea, largely uncharted in terms of its ethical implications on lawyers and the practice of law. Nevertheless, social media plays an ever-increasing and increasingly important role in the legal world. Whether it be networking on Facebook or LinkedIn, video sharing on YouTube, location sharing on Foursquare, commenting on Twitter, or messaging in virtual chat rooms, forums, blogs or instant messaging services, these web-based communications of user-generated content have become highly relevant to the practice of law. Social media's impact on your case can be outcome-determinative, making or sinking your case with the click of a mouse. The relative newness of social media in the practice of law, as well as its potentially significant impact, give rise to several ethical questions.

As an initial matter, is there an ethical implication for the lawyer who does not use or is not familiar with any forms of social media? Under applicable ethics rules, the nonparticipating lawyer may indeed be *obligated* to become social-media savvy. Rule 1.1 of the ABA Model Rules requires competent representation by lawyers. See MODEL RULES OF PROF'L CONDUCT R. 1.1 (2010). Comment 6 thereto advises lawyers to "keep abreast of changes in the law and its practice." Id. cmt. 6; see also TEX. DISCIPLINARY RULES PROF'L CONDUCT R. 1.01 cmt. 6 (2010). Thus, Model Rule 1.1 and Texas Rule 1.01 include a duty to maintain competence in modern practice techniques in addition to substantive legal developments. Attorneys may also have a duty under Model Rule 1.3 to advise their clients against the dangers of communicating potentially adverse information via social media. See Margaret (Molly) DiBianca, Complex Ethical Issues of Social Media, THE BENCHER (AMERICAN INNS OF COURT), Nov./Dec. 2010. Considering the fact that not only is your client using social media, but also the opposing parties, their counsel, witnesses, members of the jury and yes, even the judge, if you are not aware of the pitfalls and benefits of social media you may not be providing adequate service to your client and thus may not be meeting your ethical obligations to do so.

Social Media Use in the Practice of Law

The potential uses (and misuses) of social media in the practice of law are seemingly endless in the relatively new and astoundingly rapid growing social media universe. While there are an ever-increasing number of social media applications available, the discussion herein will be limited to just a handful of those most widely used by attorneys. The following examples briefly illustrate how social media can contribute or be fatal to the success of your case:

Social Networking Sites (e.g., Facebook) – The most popular of social media sites, Facebook, has roughly 200,000,000 users in the United States (of its 750,000,000 users Worldwide). In other words, *over half* the US population has

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a Facebook account! Facebook allows users connected as "friends" to view and comment on a wide range of applications, from biographical information, status updates, photos, videos, and products "liked" by a user and displayed on the user's profile. It can be a virtual goldmine of evidence (especially so in family, employment, and personal injury law matters), as well as a jury panel research tool. However, attorneys must exercise caution when interacting with clients, witnesses, judges, and jurors on Facebook, as a host of ethical rules are triggered by such interactions.

- Professional Networking Sites (e.g., LinkedIn) Widely used by attorneys as a virtual network of classmates, colleagues, experts, and clients, LinkedIn is essentially a beefed-up interactive electronic Rolodex. In addition to merely listing contact information, LinkedIn can also be used to cultivate and expand professional networks. Attorneys must ensure that their profiles do not violate applicable anti-advertising/solicitation ethics rules.
- Blogs Many attorneys author online blogs, which allow them to quickly publish commentary on hot topics in their practice area or breaking legal news. Attorneys must be mindful, however, not to give legal advice, solicit clients, or disclose client communications in these self-published forums.
- Location Sharing Applications (e.g., Foursquare) While the purpose is to allow users to share where they are dining or shopping at a particular moment, because these create a GPS tracking log of locations where the user "checks-in," they can be used to confront a witness who claims to have been elsewhere at the time.
- Consumer Review/Complaint Forums (e.g., Epinions) Many internet savvy consumers write and review product complaints posted online. Often, manufacturers take note of the discussions, sometimes as silent observers, other times posting response commentary. These communications could be used to demonstrate that company representatives acquired knowledge of product defects or hazards at the time of the online discussion.

Specific Ethical Considerations Implicated by Social Media Use

While social media potentially touch on nearly all legal ethics canons, some of the areas most likely to trigger ethics implications are discussed below.

Breaching Client Confidentiality

One of the most obvious issues facing an attorney engaging in social media communication is the duty to preserve the attorney/client relationship and confidential client communications (both privileged and non-privileged) to clients and former clients. See TEX. DISCIPLINARY RULES PROF'L CONDUCT R. 1.05 (2010); MODEL RULES OF PROF'L CONDUCT R. 1.6, 1.9. If an attorney and client are Facebook "friends" for instance, they should not engage in communication via the publically accessible Facebook forums.



Additionally, blogging attorneys must be mindful not to reveal confidential client information in the content of their blogs. The informal nature of blog postings makes blogging ripe for unintended breaches of client confidentiality.

Spoliation of Evidence

Our ethical obligations as attorneys prohibit us from altering or destroying evidence, including electronic information such as social media, or instructing others to do the same. See MODEL RULES OF PROF'L CONDUCT R. 3.4(a); TEX. DISCIPLINARY RULES PROF'L CONDUCT R. 3.04(a). Failure to preserve potentially relevant information can result in significant sanctions against either the attorney, client, or both. Specifically, if, for example, an attorney instructs his or her client to delete the client's Facebook page after litigation has commenced or is reasonably anticipated, such action could constitute spoliation of evidence. A spoliation violation could result in consequences to the client in the form of an adverse-inference instruction to a jury or to both client and attorney in the form of monetary sanctions. See Margaret (Molly) DiBianca, Complex Ethical Issues of Social Media, THE BENCHER (AMERICAN INNS OF COURT), Nov./Dec. 2010. The better course of action for attorneys is to advise their clients (and heed for their own Facebook profiles) to closely control the privacy settings to ensure that profile content is not accessible by the general public. Nevertheless, courts have granted motions to compel the release of Facebook passwords in discovery disputes, thereby enabling the opposing party to view communications made via the website. Thus, merely making profiles private will not preclude potential discoverability of a client's profile if a sufficient basis exists to demonstrate the profile contains potentially relevant information.

Ex Parte Communication

While judges and attorneys often maintain social relationships outside of court, they must exercise the same restraint concerning online ex parte communication as they do offline, meeting their obligations under Model Rule 3.5. Some states are taking a more extreme position when it comes to use of social media by the judiciary. In North Carolina, a district judge became Facebook "friends" with one party's counsel (the opposing counsel did not have a Facebook account). From time to time, the judge would post comments about his caseload and at one point made a specific comment about the case in question, to which the attorney replied, "I have a wise Judge." Allison Petty, *Social Networking Web Sites Raise Ethical Issues for Judges, Lawyers*, CHICAGO DAILY LAW BULLETIN, *republished in* ALL BUSINESS, Feb. 3, 2010 at http://www.allbusiness.com/legal/trial-procedure-judges/13862837-1.html. The judge was subsequently formally repreminaded by the state's Judicial Standards Commission for an ex parte communication via Facebook. *See id.*

In Florida, the state's legal ethics board has gone so far as to opine that judges and lawyers should not be Facebook "friends" due to the liklihood that such an online relationship "conveys to others the impression that these lawyer 'friends' are in a special position to influence the judge." *Id.* Other states, however, do not prohibit online social networking among judges and lawyers. Rather, in New York and South Carolina, for example, the governing ethics bodies have taken a more leniet and workable approach, indicating that judges should exercise caution to avoid the appearance of impropriety



(just as they do in their daily offline lives). See Martha Neil, Can a Judge Have Facebook Friends? It Depends on What State They Work In, ABA JOURNAL, Dec. 15, 2009 at http://www.abajournal.com/news/article/can_a_judge_have_facebook_ friends_it_depends_on_what_state_they_work_in/. The South Carolina Advisory Committee on Standards of Judicial Conduct issued an opinion stating, "[c]omplete separation of a judge from extra-judicial activities is neither possible nor wise; a judge should not become isolated from the community in which the judge lives...Allowing a Magistrate to be a member of a social networking site allows the community to see how the judge communicates and gives the community a better understanding of the judge. Thus, a judge may be a member of a social networking site such as Facebook." *Id*.

In addition to prohibited ex parte communication with judges, attorneys may also run afoul of Model Rule 3.5 by improperly communicating with or influencing jurors. The use of social media to research a potential jury pool is a legitimate and rapidly expanding practice by trial attorneys. Direct communication and attempted influence are not a proper use of social media. The courts have considered and upheld counsel's right to utilize social media to research potential jurors' online activity. Trial counsel and their jury consultants are increasingly resorting to the quick online searches they can perform against their jury panels where, as one jury consultant explains, "[u]sing Facebook and other social media such as MySpace and blogs are particularly appealing during jury selection because lawyers have limited time to ask questions. Socialnetworking sites often contain candid, personal information generated directly by the user. These days, it's the place where people voice their opinions." Ana Campoy & Ashby Jones, Searching for Details Online, Lawyers Facebook the Jury, WALL STREET JOURNAL, Feb. 22, 2011. While some potential jurors might have overtly expressed views published on various social media, others may simply give subtle cues in their online profiles, such as their favorite television shows and religious affiliations, which can be of interest of trial counsel during voir dire. Of course, going beyond research would violate an attorney's ethical obligations. Attorneys and their clients must not actually communicate with enpaneled jurors prior to discharge of the jury. See MODEL RULES OF PROF'L CONDUCT R. 3.5.

False Statements to the Court

Model Rule 3.3 prohibits attorneys from knowingly making a false statement of fact to the court. See MODEL RULES OF PROF'L CONDUCT R. 3.3. Attorneys must be mindful that when they or their clients engage in the use of social media, the whole world can see their activities, including social-media savvy judges. Attorneys must avoid the temptation to offer one explanation of facts to the court and publicly contradict those facts online. District Court Judge Susan Criss in Galveston County, Texas, reported at a recent ABA convention that an attorney appearing before her with whom she happened to be "friends" on Facebook, requested a continuance due to a death in the family. Meanwhile, Judge Criss had access to photos and comments on the attorney's Facebook showing that she had actually been out on the town socializing at the time. See Molly McDonough, Facebooking Judge Catches Lawyer in a Lie, Sees Ethical Breaches, ABA JOURNAL, July 31, 2009 at

http://www.abajournal.com/news/article/facebooking_judge_catches_lawyers_in_lies_cr



ossing_ethical_lines_abachicago/. Clearly, sharing one's personal life online can be a double-edged sword, not only when it comes to evidence against a client, but also the attorney.

Deceptive Means of Eliciting Information

Attorneys may not obtain information under false pretenses or by employing deceptive traps to ensnare their subject, whether it be the opposing party or a witness. See MODEL RULES OF PROF'L CONDUCT R. 4.1-3; TEX. DISCIPLINARY RULES PROF'L CONDUCT R. 4.01-4.03. While Texas has not as yet published an ethics opinion on whether resorting to trickery to elicit information from a party or witness by an attorney would violate the Texas Rules, other jurisdictions, however, have addressed the question. The Philadelphia, Pennsylvania, Bar Association Professional Guidance Committee considered the issue as it relates to social media under its ethics rules and issued an advisory opinion finding that to approach a witness online, specifically through the witness's Facebook account, asking for "friend" status in order to view the non-public portions of the witness's Facebook profile "would involve dishonesty, fraud, deceit, or misrepresentation on behalf of the lawyer, or the encouragement of such behavior, all in violation of the aforementioned rules." Philadelphia Bar Association Professional Guidance Committee: Opinion 2009-02, PHILADELPHIA BAR ASSOCIATION, March 2009 at http://www.philadelphiabar.org/WebObjects/PBAReadOnly.woa/Contents/WebServerRe sources/CMSResources/Opinion 2009-2.pdf.

Similarly, in interpreting the New York Rules of Professional Conduct, the New York City Bar Association's Committee on Professional Ethics issued an opinion clarifying that while an attorney may seek witness information from Facebook and may contact an unrepresented individual through the attorney's *real* Facebook account, an attorney may not directly, or through an investigator, request a Facebook "friend" under false pretenses, such as "falsely portraying the attorney or investigator as the witness's long lost classmate, prospective employer, or friend of a friend." *Formal Opinion 2010-2: Obtaining Evidence From Social Networking Websites*, New York City Bar Ass'n. (visited July 6, 2011) at http://www.abcny.org/ethics/ethics-opinions-local/2010opinions/786-obtaining-evidence-from-social-networking-websites.

> Advertising

Attorneys in private practice, or oftentimes the marketing departments of their law firms, are increasingly relying on social media for marketing efforts. LinkedIn is a primary example of a professional networking site that is utilized heavily by attorneys with an eye toward its marketing potential. While LinkedIn is ostensibly for maintaining personal and professional contacts, it can also be, whether intended or not, a marketing tool and therefore invoke certain ethical rules concerning attorney advertising. There can be a fine line between using social media to maintain and build professional networks and behavior that would constitute client solicitation under the ethics rules. On LinkedIn, for example, a user's contacts can endorse the user and post testimonials about his or her work. In Texas, this is permissible for an attorney, so long as the testimonial does not otherwise violate the applicable rules, which require that attorneys be vigilant in monitoring any content posted on their profiles by others. Other states prohibit



testimonials altogether. See Debra Bruce, *Ethically Navigating the Social Media Landscape*, 73 TEX. BAR J. 196, March 2010.

In addition to networking sites, attorneys who author blogs utilize them as a platform to generate or contribute to dialogue on topics in their areas of practice or interest. While a blog should not be used as a client solicitation technique, which could violate a number of Model Rules, there are legitimate attorney uses for blogs so long as they are authored and maintained responsibly. A blog that is editorial or educational would be exempt from Texas's advertising filing requirements under Texas Rule 7.07, but still must not contain false, misleading, or deceptive information. *See id.*

Conclusion

Just as with day-to-day realtime communications, attorneys must be mindful of their ethical responsibilities when using social media to communicate online. Given the informal nature and perceived degree of anonymity of these online activities, it may be easy to let one's guard down with respect to his or her ethical obligations, but the consequences of doing so can be significant. Awareness of the risks, as well as rewards, of using social media is paramount. Once these are known and accepted by the user, applying the same common sense approach that would be applied to real time communications will assist attorneys in utilizing social media in a manner consistent with their ethical responsibilities. Taking a step further, corporate and law firm social media policies can and should be designed to anticipate and appropriately address many of the potential problems raised by the use of social media, but as the technology and its applications expand, so too will the challenges of using it in an ethical manner.



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Mr. Payne, a fifth generation Texan, is the firm's senior trial attorney. His practice focuses on commercial litigation with an emphasis on cases involving environmentally-impacted properties. Mr. Payne has been the lead attorney for plaintiffs and defendants in hundreds of lawsuits, and he has tried numerous jury, bench, and administrative cases to verdict. Mr. Payne regularly handles high stakes, multi-party litigation and has successfully defended clients against aggregate claims exceeding one billion dollars. Mr. Payne is AV rated by Martindale-Hubbell.

Mr. Payne has been lead trial counsel in cases filed in Texas, Louisiana, Oklahoma, New Mexico, California, Kansas, Wyoming, New York, Illinois, and Missouri, and he has handled lawsuits in many diversified areas including the following:

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- Environmental enforcement actions
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- Condemnations and property appraisal protests

Mr. Payne received his law degree in 1991 from Texas Tech University School of Law and his Bachelor of Arts degree from Baylor University in 1988. Mr. Payne is a member of the State Bar of Texas, Texas Association of Defense Counsel, Defense Research Institute, College of the State Bar of Texas, and the Dallas (Environmental Law Section Secretary 2011), Tarrant (Chairman of Environmental Law Section 2009-2010), and Rockwall County Bar Associations. He is also a member of the American Bar Association (Environmental Litigation Section and Environment, Energy and Resources Section). He is licensed by the State Bar of Texas and the U.S. District Courts in the Northern, Southern, Eastern, and Western Districts of Texas as well as the U.S. Fifth Circuit Court of Appeals and the United States Supreme Court. Mr. Payne is a member of the Million Dollar Advocates Forum as a result of handling plaintiffs' cases where the actual recovery has exceeded one million dollars. Additionally, Mr. Payne is a former Director of the Dallas Chapter of the American Indoor Air Quality Council. He is on the Board of Directors for the Dallas Gun Club, and is active in various Masonic organizations including the Dallas Scottish Rite, the York Rite, and the Hella Shrine.

Mr. Payne's appellate decisions include the following:

Environmental Conservation Organization v. City of Dallas, No. 07-11247, 2008 WL 5243638 (5th Cir. Dec. 17, 2008);

Environmental Conservation Organization v. City of Dallas, 529 F.3d 519 (5th Cir. 2008), cert. denied, 129 S.Ct. 418, 172 L.Ed.2d 288 (2008);

Environmental Conservation Organization v. City of Dallas, 516 F.Supp.2d 653 (N.D. Tex. 2007);

Environmental Conservation Organization v. City of Dallas, No. 3-03-CV-2951-BD, 2007 WL 4165917 (N.D. Tex. Nov. 20, 2007);

Environmental Conservation Organization v. City of Dallas, No. 3-03-CV-2951-BD, 2005 WL 1771289 (N.D. Tex. July 26, 2005); and

K-7 Enterprises, L.P. v. Jeswood Oil Co., No. 2-03-312-CV, 2005 WL 182947 (Tex. App.-Fort Worth Jan 27, 2005, no pet.).

Mr. Payne's papers and presentations have included:

- "Turn a Sow's Ear Into a Silk Purse! How an MSD can Solve Your Underground Petroleum Storage Tank Problems" (May 2011) (joint presentation with M. Goldman, and G. Rogers for seminar for petroleum marketers).
- "EPA Asserts Fracking Contaminated Water Wells" (April 2011) (Dallas Bar Association *Headnotes*).
- "Is the Barnett Shale Bound for the Courtroom?" (2010) (prepared with regard to related speaking engagement for seminar for natural gas producers).
- "Home on the Range: Environmental Issues Pertaining to Texas Wind Farms" (2009) (prepared with regard to related speaking engagement for "Blowin' in the Wind: The Future of Wind Turbine Farms" Conference sponsored by Texas Tech University School of Law).
- "Home on the Range: Environmental Issues Pertaining to Texas Wind Farms" (2008) (prepared with regard to related speaking engagement for Wind Law III sponsored by Texas Tech University School of Law, the West Texas Wind Energy Consortium, and the American Wind Energy Association).
- "Trends in Environmental Litigation" (2007) (prepared with regard to related speaking engagement for National Conference of Insurance Guaranty Funds Claims Seminar).
- "Texas Mold: The Litigation Gusher That Didn't Hit,... Yet" (2003) (prepared with regard to related speaking engagement at the 25th Annual Corporate Counsel Institute; also presented at a meeting of the Dallas Chapter of the American Indoor Air Quality Council).

NEW FEDERAL PROCEDURAL RULES GOVERN CATS IN EXPERT HATS

(Recent amendments to Federal Rule of Civil Procedure 26 greatly alter expert witness discovery)

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State Bar of Texas 23rd ANNUAL TEXAS ENVIRONMENTAL SUPERCONFERENCE August 4-5, 2011

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NEW FEDERAL PROCEDURAL RULES GOVERN CATS IN EXPERT HATS

(Recent amendments to Federal Rule of Civil Procedure 26 greatly alter expert witness discovery)

James D. Payne

I. <u>INTRODUCTION</u>

Effective December 1, 2010, significant changes regarding expert witness discovery were made to Federal Rule of Civil Procedure 26. Drafts of expert reports and most communications between attorneys and testifying expert witnesses are now specifically exempt from discovery. This is a complete reversal of the practice in the majority of federal jurisdictions where draft expert reports and communications between counsel and a testifying expert witness were discoverable. Rule 26 has also been amended to require parties to disclose a summary of the facts and opinions to be presented at trial by non-retained expert witnesses. This paper examines the recent changes to Rule 26 regarding expert discovery, as well as contrasts the new Rule 26 amendments regarding draft expert reports and attorney-expert communications with Texas state court practice.

II. <u>Relevant History Underlying the December 1, 2010 Rule 26 Amendments</u> <u>Regarding Draft Expert Reports and Communication Between Attorneys</u> and Testifying Expert Witnesses

In 1993, Rule 26(a)(2)(B) was amended to require a retained testifying expert to produce a written report which contained "a complete statement of all opinions to be expressed" as well as "the data and other information considered by the witness in forming the opinions." This amendment, especially the "other information" portion, significantly increased the scope of expert witness discovery from that which existed prior to 1993.¹ The prevailing view at the time of the 1993 Rule 26 amendment was to permit a broad range of discovery from expert witnesses. One Advisory Committee comment to the 1993 amendment is instructive regarding the desired scope of expert witness discovery.

> The report is to disclose the data and other information considered by the expert and any exhibits or charts that summarize or support the expert's opinions. Given this obligation of disclosure, litigants should no longer be able to argue that materials furnished to their experts to be used in forming their opinions -- whether or not ultimately relied upon by the expert -- are privileged or otherwise protected from disclosure when such persons are testifying or being deposed.²

From the forgoing comment, the Advisory Committee's intent was clear that any "information considered by" the testifying expert was discoverable, whether or not the expert

ultimately relied upon such information in forming the expert's opinions. There was an obvious effort to eliminate the argument by some litigants that certain materials provided to their testifying experts were privileged.

Despite the 1993 Rule 26 amendment and the Advisory Committee's guidance in 1993, two lines of cases developed regarding the discoverability of draft expert reports and communications with expert witnesses. The minority position was that the 1993 rule change and the Committee note were insufficient to waive the Rule 26(b)(3) protection for "opinion" or "core" work product.³ Thus, pursuant to the minority position, any draft expert reports or expert communications with counsel that would divulge attorney work product were privileged.

However, the majority of the courts interpreting the 1993 amendment to Rule 26 have held that draft expert reports and communications between a party's attorney and expert are subject to discovery.⁴ The cases in the majority usually rely on the Advisory Committee comment previously quoted as the basis for their opinion.⁵ Moreover, in support of the court opinions holding that draft expert reports and attorney-expert communications should be discoverable, there was and is the opinion that a party has a right to know who is really testifying, the lawyer or the expert. As one United States magistrate judge put it:

The trier of fact has a right to know who is testifying. If it is the lawyer who really is testifying surreptitiously through the expert (i.e., if the expert is in any significant measure parroting views that are really the lawyer's), it would be fundamentally unfair to the truth finding process to lead the jury or court to believe that the background and personal attributes of the expert should be taken into account when the persuasive power of the testimony is assessed.⁶

Over the past 18 years, several unintended consequences have resulted from draft expert reports and attorney communications with experts being discoverable. For instance, many practitioners have found it prudent to hire both a consulting and a testifying expert on the very same issue. This allows practitioners to communicate freely with the consulting expert in order to develop a theory of the case without fear of such communication being subject to discovery by opposing counsel. Obviously, hiring two experts for the same issue increases the cost of litigation. Other avoidance behaviors have also occurred, including experts not even sharing or printing any unfinished reports from their computers until such time as the report is in final form. This can lead to an expert's report not being as refined or on point as much as trial counsel would like. Also, attorneys and testifying experts often avoided written communications in order to avoid creating discoverable documents that might reveal trial strategies or thought processes of counsel.

The problems associated with broad expert witness discovery under the 1993 version of Rule 26 have lead many practitioners to negotiate agreements with opposing counsel narrowing the scope of expert witness discovery that will be allowed in a particular case. Such agreements often protect draft expert reports and attorney-expert communications from discovery. Two purposes of the 2010 amendments are to reduce litigation costs and also to allow for uninhibited communication between attorneys and testifying expert witnesses. The Advisory Committee note in this regard is instructive.

The committee has been told repeatedly that routine discovery into attorney-expert communications and draft reports has had undesirable effects. Costs have risen. Attorneys may employ two sets of experts -- one for purposes of consultation and another to testify at trial -- because disclosure of their collaborative interactions with expert consultants would reveal their most sensitive and confidential case analysis. At the same time, attorneys often feel compelled to adopt a guarded attitude toward their interaction with testifying experts that impedes effective communication, and experts adopt strategies that protect against discovery but also interfere with their work.⁷

Accordingly, Rule 26 was amended, effective December 1, 2010, in an effort to counter the unintended consequences of the 1993 amendments regarding expert discovery.

III. RULE 26 2010 AMENDMENTS

A. "Other Information" Phrase has Been Deleted from Rule 26(a)(2)(B)(ii)

Rule 26(a)(2)(B)(ii) used to provide that "the data or other information considered by the [expert] witness" in forming the expert's opinion were discoverable.⁸ Federal courts varied in their interpretation of the phrase "other information" when determining whether draft expert reports and communications between attorneys and testifying expert witnesses should be disclosed. The "or other information" phrase was often used to support the argument that draft expert reports and communications between attorneys and testifying experts should be disclosed.⁹

The 2010 amendment to Rule 26(a)(2)(B)(ii) has attempted to remove any ambiguity regarding the scope of discovery created by the "or other information" phrase contained in the 1993 version of this rule. As a result of the 2010 amendment, only the "facts or data" considered by the expert witness in forming the expert's opinions need be disclosed. By deleting "or other information" and replacing that phrase with "facts or data," the scope of Rule 26(a)(2)(B)(ii) has been narrowed.¹⁰ This change was made specifically to "alter the outcome in cases that have relied on the 1993 formulation in requiring disclosure of all attorney-expert communications and draft reports."¹¹

This is not to say that all attorney-expert communications will be privileged. Factual information conveyed to a testifying expert by an attorney is still subject to discovery.

The refocus of disclosure on "facts or data" is meant to limit disclosure to material of a factual nature by excluding theories or mental impressions of counsel. At the same time, the intention is

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that "facts or data" be interpreted broadly to require disclosure of any material considered by the expert, from whatever source, that contains factual ingredients. The disclosure obligation extends to any facts or data "considered" by the expert in forming the opinions to be expressed, not only those relied upon by the expert.¹²

The Western District of Texas has already utilized the change in this rule to narrow the scope of permissible expert witness discovery. In *National Western Life Insurance Company vs.* Western National Life Insurance Company,¹³ the parties agreed to be bound by the 2010 amendments to Rule 26. National sought the discovery of e-mail communications and draft expert reports shared between Western's testifying expert and its non-testifying expert. Discovery of those items was prohibited because of the change in Rule 26(a)(2)(B)(ii).¹⁴ The Western District of Texas found that under new Rule 26(a)(2)(B)(ii), Western was only required to produce the "facts or data" relied upon by the testifying expert in forming his opinions.¹⁵ The production requirement of 26(a)(2)(B)(ii) did not include draft expert reports shared with a consultant or e-mails with the consultant that did not contain facts or data.¹⁶ The Western District found that Western complied with Rule 26(a)(2)(B)(ii) by producing the testifying expert's final report and all e-mails that contained facts or data.¹⁷ The court did not permit discovery of draft expert reports and e-mails that did not contain facts or data.

The change to Rule 26(a)(2)(B)(ii) is the foundation for the Rule 26 amendments that specifically exclude draft expert reports and most attorney-expert communications from discovery.

B. Draft Expert Reports are Now Specifically Protected from Disclosure

With regard to draft reports, new Rule 26(b)(4)(B) provides as follows:

Trial-Preparation Protection for Draft Reports or Disclosures. Rules 26(b)(3)(A) and (B) protect drafts of any report or disclosure required under Rule 26(a)(2), regardless of the form in which the draft is recorded.¹⁸

This new rule protects the draft reports of both retained and non-retained expert witnesses. The protection of draft reports is not absolute. As under the 1993 version of Rule 26, a "substantial need" exception applies to the discovery of draft reports if a party can make the requisite showing that it has a substantial need for the discovery and cannot obtain the substantial equivalent of the materials sought without undue hardship.¹⁹ According to the Advisory Committee's notes to the 2010 version of Rule 26, it should be a rare occurrence for a party to be able to meet the "substantial need" exception.²⁰ Even if the "substantial need" exception is met, the court must still protect against the disclosure of an attorney's mental impressions, opinions, and legal theories.²¹

C. Most Attorney-Expert Communications are Now Specifically Protected from Disclosure

The new rule protecting attorney-expert communications from discovery is very similar to the new rule protecting draft expert reports. New Rule 26(b)(4)(C) provides as follows:

Trial-Preparation Protection for Communications Between a Party's Attorney and Expert Witness. Rules 26(b)(3)(A) and (B) protect communications between the party's attorney and any witness required to provide a report under Rule 26(a)(2)(B), regardless of the form of the communications, except to the extent that the communications:

- (i) relate to compensation for the expert's study or testimony;
- (ii) identify facts or data that the party's attorney provided and that the expert considered in forming the opinions to be expressed; or
- (iii) identify assumptions that the party's attorney provided and that the expert relied on in forming the opinions to be expressed.²²

None of the exceptions require the disclosure of the mental impressions or opinions of counsel. The exception in subpart (ii) to new Rule 26(b)(3)(A) is consistent with the change to Rule 26(a)(2)(B)(ii). Simply put, the raw facts or data considered by a retained testifying expert in forming the opinions to be expressed are discoverable, no matter the source of the facts or data. However, attorney-expert communications about the potential relevance of facts or data are protected.²³

There is a distinction made in Rule 26(b)(4)(C) between attorney provided facts or data and attorney provided assumptions. Not all assumptions provided by an attorney to an expert are subject to discovery. Only those assumptions that the expert actually relied on in forming the expert's opinions are subject to discovery. If the attorney provided assumption was considered by the expert, but not relied upon for the expert's opinions, then such assumption does not fall within the exception of Rule 26(b)(4)(C)(iii).

Rule 26(b)(4)(C) only applies to those experts who are "retained or specially employed to provide expert testimony in the case or one whose duties as the party's employee regularly involve giving expert testimony." Unlike the protection offered to the draft reports of both retained and non-retained expert witnesses, the protection to attorney-expert communications does not extend to non-retained expert witnesses.²⁴

As with draft reports, the "substantial need" exception of Rule 26(b)(3)(A)(ii) applies to the discovery of attorney-expert communications that fall outside the three exceptions of Rule 26(b)(4)(C).²⁵ Once again, as with draft expert reports, even if the "substantial need" exception is met, the court must still protect against the disclosure of an attorney's mental impressions, opinions, and legal theories. It is difficult to think of a situation where the "substantial need" exception would be met requiring disclosure of any meaningful attorney-expert communications

that would not infringe on an attorney's mental impressions, opinions, and legal theories. As pointed out in the Advisory Committee's notes, it should be a rare case where a party is able to make a showing of "substantial need" in order to obtain discovery of attorney-expert communications that do not relate to expert compensation, "facts or data" considered by a testifying expert, or assumptions relied upon by a testifying expert.²⁶

D. A Summary of the Facts and Opinions to be Offered by Non-Retained Expert Witnesses is Now Required Under New Rule 26(a)(2)(C)

With regard to non-retained experts, Rule 26(a)(2)(C) now requires a party to disclose the subject matter on which the witness is expected to testify as well as provide a summary of the facts and opinions to be offered by the witness. This disclosure requirement is meant to be "considerably less extensive than the report required by Rule 26(a)(2)(B)" for retained expert witnesses.²⁷ Courts are cautioned to take care against requiring undue detail in this disclosure requirement because non-retained experts are not likely to be as responsive to counsel as retained experts.²⁸

Some federal judges required full Rule 26(a)(2)(B) expert reports even from non-retained expert witnesses.²⁹ Rule 26(a)(2)(C) now makes it clear that reports from non-retained expert witnesses are not required.³⁰ Undoubtedly, case law will develop over what constitutes proper disclosure of non-retained expert witnesses under new Rule 26(a)(2)(C).

E. An Ohio Court has Ruled that New Rule 26(a)(2)(C) Does Not Apply Retroactively

In adopting the amendments to Rule 26, the United States Supreme Court ordered that "the foregoing amendments to the Federal Rules of Civil Procedure shall take effect on December 1, 2010, and shall govern in all proceedings thereafter commenced and, insofar as just and practicable, all proceedings then pending."³¹ The 2010 Advisory Committee notes are silent as to what may be "just and practicable" for the application of the amendments to cases filed before December 1, 2010. The "just and practicable" language gives courts discretion regarding the retroactive application of the new rules to cases pending before December 1, 2010.

At least at the time of the writing of this paper, only one case has been found addressing the issue of retroactive application of any of the new Rule 26 amendments. In *Lattuga v. United States Postal Service*,³² the Southern District of Ohio refused to apply new Rule 26(a)(2)(C)retroactively because this amendment was not in place at the time expert disclosures were required in the case. Expert disclosures in *Lattuga* occurred before December 1, 2010, the effective date of Rule 26(a)(2(C)). The ruling makes sense, as it would not have been "just and practicable" to hold a party to a Rule 26(a)(2)(C) disclosure requirement that did not even exist at the time expert disclosures occurred. Pursuant to the *Lattuga* ruling, litigants disclosing expert opinions should adhere to the new Rule 26 amendments for expert witness disclosures that occur after December 1, 2010, even for cases that were pending before December 1, 2010.

The *Lattuga* decision gives some guidance, but many questions remain unanswered as to the retroactive application of the 2010 amendments to Rule 26. For example, the question arises as to the discoverability of attorney-expert communications that occurred prior to December 1,

2010 when experts are disclosed after that date. Some litigants may choose to enter into agreements with opposing counsel applying the 2010 version of Rule 26 retroactively in order to resolve questions about the application of the new rules.

IV. TEXAS STATE COURT PRACTICE REGARDING THE SCOPE OF EXPERT WITNESS DISCOVERY

Suffice it to say, the practice in Texas state courts is the complete opposite of the 2010 version of Rule 26 regarding the discovery of draft expert reports and attorney-expert communications. Texas affords wide open discovery when it comes to expert witnesses. In a case illustrative of the point of wide open expert discovery, the Texas Supreme Court has held that expert disclosure rules prevail even over the Texas "snap-back" procedure that allows for the recovery of privileged documents which have been inadvertently produced.³³

In the *Christus Spohn Hospital Kleberg* case, a hospital paralegal sent privileged documents to the hospital's sole expert on standard of care issues. The expert only glanced at the documents, and did not rely upon them in forming any opinions. The hospital sought the return of the inadvertently produced documents pursuant to Texas Rule of Civil Procedure 193.3(d), commonly known as the "snap-back" provision. The Texas "snap-back" provision specifically allows for the retrieval of privileged documents that have been produced to opposing counsel inadvertently with no intent to waive privilege.

The Texas Supreme Court recognized competing interests between the "snap-back" provision and the testifying expert disclosure rule in deciding which rule would prevail over the other. In making its ruling the Texas Supreme Court pointed out that documents produced to a testifying expert lose their work product designation even if the production to the expert was inadvertent.³⁴ Moreover, the *Christus* Court recognized that an attorney often selects the materials that provide the "color and hue" to the powerful image painted by an expert witness "on the litigation canvas."³⁵ The Texas Supreme Court favors the policy that the fact finder should know the source of materials and information considered by an expert in order to assess the worth of the expert's testimony.³⁶ Accordingly, the Texas Supreme Court held that "once privileged documents are disclosed to a testifying expert, and the party who designated the expert continues to rely upon that designation for trial, the documents may not be retrieved even if they were inadvertently produced."³⁷ "[W]e conclude that [the Texas expert disclosure rules] prevail over Rule 193.3(d)'s snap-back provision so long as the expert intends to testify at trial despite the inadvertent document production."³⁸

The *Christus* opinion is recent, having been decided in 2007. Simply put, and as seen in *Christus*, there is no work product protection, or privilege of any kind, that attaches to information known by a testifying expert witness in Texas state courts. Draft reports of testifying experts and attorney communications with testifying experts are afforded no protection or privilege whatsoever. Practitioners should be cognizant of the polar opposite treatment to be given draft expert reports and attorney-expert communications between the federal and state courts in Texas. It is not uncommon for a case filed in federal district court to be remanded to state court. In the event of a remand to Texas state court, an attorney who was planning on the confidentiality of draft expert reports and attorney-expert communications may be in for an unpleasant surprise.

V. CONCLUSION

The amendments to Rule 26 adopt a belt and suspenders approach in order to exclude draft expert reports and most attorney-expert communications from discovery. The belt was utilized in replacing the phrase "or other information" with "facts or data" in FRCP 26(a)(2)(B)(ii). This change was made specifically to reverse the outcomes in those court cases which held that the disclosure requirement of "or other information" considered by an expert included draft reports and attorney-expert communications. Suspenders were utilized with the adoption of two new rules which specifically exclude draft expert reports and most attorney-expert communications (with three exceptions) are protected from discovery in federal courts.

There is a "substantial need" exception to the ample protections now afforded draft expert reports and attorney-expert communications. Nevertheless, it is anticipated that it will be a rare circumstance when a party is able to meet the "substantial need" test. Even if a showing of "substantial need" is made, federal courts must still protect against the disclosure of an attorney's mental impressions, opinions and legal theories.

Texas state court practice is directly opposite that of the new Rule 26 amendments regarding the discovery of draft expert reports and attorney-expert communications. Texas state courts allow wide open expert witness discovery. Simply put, draft expert reports and attorney-expert communications are discoverable in the state courts of Texas. Lawyers handling federal litigation in Texas should still remain cautious in sharing draft reports and otherwise communicating with their testifying experts if there is a chance of remand from federal to state court. In the event of a remand, draft reports and attorney-expert communications that were thought to be privileged would soon be subject to full discovery.

Non-retained testifying experts are now subject to disclosure requirements pursuant to new Rule 26(a)(2)(C). This disclosure requirement is meant to be less extensive than the report required for retained testifying experts by Rule 26(a)(2)(B). Undoubtedly, federal case law will develop over what constitutes proper disclosure under this entirely new rule.

The United States Supreme Court has ordered that the new amendments to Rule 26 apply to all cases filed after December 1, 2010 and to all cases pending on that date as is "just and practicable." Accordingly, federal courts have discretion as to the application of the new amendments to cases that were filed before December 1, 2010. In order to resolve questions regarding the retroactive application of the new Rule 26 amendments, counsel may choose to enter agreements with opposing counsel agreeing to be bound by the new amendments.

The new rules should reduce federal litigation costs because parties will retain fewer consulting only experts. The amended rules also allow attorneys more freedom to discuss strategy and case theories with testifying experts without fear that such discussions will be subject to discovery. The new rules should also result in fewer agreements among counsel where the scope of expert witness discovery is negotiated and limited. Expert reports will also likely be more refined without the worry of having to produce various draft expert reports.

VI. ENDNOTES

⁸ FED. R. CIV. P. 26(a)(2)(B)(ii) (1993 amendment).

¹¹ Id.

¹⁴ Id. at 1.

¹⁵ Id. at 2.

¹⁶ Id.

¹⁷ Id.

- ²⁰ FED. R. CIV. P. 26 (Advisory Committee Notes to 2010 amendments, para. 18).
- ²¹ Id. at para. 19.

- ²³ FED. R. CIV. P. 26 (Advisory Committee Notes to 2010 amendments, para. 16).
- ²⁴ Id. at para. 11.
- ²⁵ Id. at para. 18.
- ²⁶ Id.

 27 *Id.* at para. 5.

²⁸ Id.

²⁹ *Id.* at para 6.

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<sup>30</sup> Id.; FED. R. CIV. P. 26(a)(2)(B).
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³¹ April 28, 2010 Order of United States Supreme Court adopting amendments to FED. R. CIV. P. 26.

³² William J. Lattuga v. United States Postal Service, Case No. 1:09-CV-416, Doc. #29, Nov. 29, 2010.

- ³⁴ Id. at 439.
- ³⁵ Id. at 440.
- ³⁶ Id.

³⁷ Id. at 440-441.

¹ 8 FED. PRAC. & PROC. § 2016.5(3d. ed); In re Christus Spohn Hospital Kleberg, 222 S.W.3d 454, 441 (Tex. 2007).

² FED. R. CIV. P. 26 (Advisory Committee Notes to 1993 amendments, para. 17).

³ 8 FED. PRAC & PROC. CIV. § 2016.5 (3rd ed).

⁴ Id.

⁵ Nat. Western Life Ins. Co. v. Western Nat. Life Ins. Co., 2011 WL 840976 (W.D. Tex. March 3, 2011).

⁶ Intermedics, Inc. v. Ventritex, Inc., 193 F.R.D. 384, 396 (N.D. Cal. 1991).

⁷ FED. R. CIV. P. 26 (Advisory Committee Notes to 2010 amendments, para. 2).

⁹ FED. R. CIV. P. 26 (Advisory Committee Notes to 2010 amendments, para. 3); See also, Basco v. Spiegel, 2009 WL 3851002 (W.D. La. Sept. 29, 2009)(holding that draft expert reports should be produced pursuant to the 1993

version of Rule 26).

¹⁰ Sara Lee Corp. v. Kraft Foods, Inc., 2011 WL 1311900 (N.D. Ill. April 1, 2011).

¹² FED. R. CIV. P. 26 (Advisory Committee Notes to 2010 amendments, para. 4).

¹³ Nat. Western Life Ins. Co. v. Western Nat. Life Ins. Co., 2011 WL 840976 (W.D. Tex. March 3, 2011).

¹⁸ FED. R. CIV. P. 26 (26)(b)(4)(B).

¹⁹ FED. R. CIV. P. 26(b)(3)(A)(ii); FED. R. CIV. P. 26 (Advisory Committee Notes to 2010 amendments, para. 18).

²² FED. R. CIV. P. 26(b)(4)(C).

³³ In re Christus Spohn Hospital Kleberg, 222 S.W.3d 434, 440-41 (Tex. 2007).

³⁸ Id.