RAFI-USA Landowner Oil and Gas Rights Leasing Education Packet



United States Department of Agriculture National Institute of Food and Agriculture March 2012



Rural Advancement Foundation International-USA

274 Pittsboro Elementary School Road • P.O. Box 640 • Pittsboro, NC 27312 • Tel: 919-542-1396 • Fax: 919-542-0069 • www.rafiusa.org The following education packet is a compilation of materials for North Carolina farmers and landowners on oil and gas rights leasing issues. Drawing on a wide range of resources, this packet attempts to provide an objective, but not exhaustive, introduction to the complexity of oil and gas right leasing.

This resource is not meant to be legal advice. RAFI-USA strongly recommends that landowners interested in leasing their oil and gas rights consult with an attorney before signing any contract.

Additional information can be found on RAFI-USA's mineral rights leasing webpage: <u>http://www.rafiusa.org/gaslease.html</u>

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Locations of Mineral Rights Leases in Lee County, North Carolina





Lee County shale region believed to have natural gas

For more information on mineral rights leases: Jordan Treakle Mineral Rights Project Coordinator, RAFI-USA 919-444-1321; Jordan@rafiusa.org



signed in Lee County.

& North Carolina Geological Survey



Red dots show where mineral rights leases have been

property. Land parcel size is not represented on this map. Lease locations are approximate and only display leases

signed. Red dot is located in the center of the leased

Map information provided by the Lee County Register of Deeds Office

Map created by the Rural Advancement Foundation International - USA

United States Department of Agriculture National Institute of Food and Agriculture

Frequently Asked Questions about Oil & Gas Leasing and Production in North Carolina: What Every Landowner Should Know

Attribution: North Carolina Cooperative Extension Service with adaptations by the staff of the Office of the Secretary of State and the North Carolina State Geologist

Disclaimer:

The following is provided for informational purposes only and should not be construed as legal advice or guidance. Individuals should always obtain an attorney who is licensed to practice in North Carolina whenever signing a contract or lease in North Carolina. The Information herein is based on best practices in North Carolina and other states. While every effort has been made to provide up-to-date information laws and technology change rapidly and anyone considering leasing their property for oil or gas production must do their own due diligence.

Mineral Rights

Question:

If I own the surface rights to my property, do I own the mineral rights also?

Answer:

The owner of the surface rights may or may not own the mineral rights as well. At some point in the past the mineral rights may have been severed from the surface rights and sold — and the records of these transactions may be difficult to find through a mineral rights title search. The surface rights owner then may be unaware that the mineral rights are held by another owner who may have been paying property taxes on these rights over time. For this reason, it is important to obtain the advice of a North Carolina licensed attorney experienced with conducting mineral rights title searches before ever considering warranting the title to these rights. There are risks with warranting the title to rights that the owner must understand, which may include being liable to the leasing company and the actual owner of the rights should it be determined that the title is not clear. The company leasing the land for exploration and production is likely to be better able to bear the risk of a defective title than the landowner.

Surface Rights

Question:

If I own the surface rights, but not the mineral rights, can someone use my property to drill for natural gas and/or oil?

Answer:

Yes. A company leasing the rights to natural gas, oil, or other minerals is allowed to use the surface, in a non-negligent manner, to extract these resources. A drilling operation may require the modification or displacement of structures or other surface features on a tract of land, and the drilling company and/or company leasing the mineral rights may or may not be required to restore the surface to its original

condition. The terms of the lease agreement will determine whether the leasing company will be required (absent negligence) to restore or make payment for damage to surface structures, as well as whether the owner of the surface rights is a beneficiary of the lease agreement. The mineral rights holder may or may not be required to pay for surface damages depending on the terms of the lease.

Legal Representation

Question:

Should I consult an attorney before I lease my property for oil and gas exploration and production?

Answer:

Yes. To protect your property rights and your property, and to ensure that you achieve the maximum income benefit from a lease allowing for production of gas, oil, or other products from your parcel, you should always consult a North Carolina licensed attorney with experience in natural gas and/or oil leases. The landowner should establish and understand all fees that will be charged by an attorney and all services that will be performed in return. You should have a written contract (retainer agreement) with your attorney that sets this information out in a clear and understandable fashion. Signing a lease without consulting an attorney can result in lease provisions unfavorable to the owner, and reduced compensation — and can expose the owner to unexpected costs and liabilities associated with exploration for and extraction of mineral resources on your property. In addition, the owner may be subject to liability, fines, and other costs that result from lease terms favoring the entity leasing your rights. The North Carolina Bar Association has a free lawyer referral service that can be reached at 1-800-662-7660 (in-state) or 919-677-8574 (out-of-state and in the Raleigh calling area). Details can be found atwww.ncbar.org/public-pro-bono/lawyer-referral-service/for-the-public.aspx.

Communication with Attorney

Question:

If I am a mineral rights owner, how involved should I be in the lease negotiation?

Answer:

If you are a mineral rights owner, you should be involved in all aspects of the lease negotiation to make sure your needs and rights are addressed. It is very important that you communicate your positions to your attorney as a lease is negotiated with regards to terms of the lease including compensation — and that these are all addressed in the lease. You and your attorney should review the lease in its entirety before signing it to ensure that all terms are met. Additionally, you should consult with an attorney experienced in natural gas or oil leasing, and give thought to modifying the terms of the lease agreement, if necessary, to meet the leasing company's terms as well.

Registration and Licensing of Leasing Agents in North Carolina

Question:

What qualifications and requirements should I look for in a company or leasing agent to which I may lease my mineral rights?

Answer:

Companies that transact business in North Carolina should be registered with the North Carolina Secretary of State's office. Additionally, there may be a requirement that the broker or agent who is acting as an intermediary between the company leasing the rights and the mineral right's owner be

licensed by the North Carolina Real Estate Commission. You should ask if the company is registered to transact business in North Carolina and should then verify this information by calling the Corporations Division of the North Carolina Department of the Secretary of State at 1- 888-246-7636 or 1-919-807-2225. Information is also available online at www.secretary.state.nc.us/corporations. The fact that a company is not registered with the Corporations Division should be taken as a warning sign that additional information is needed before you conduct business with that company. In addition, any leasing agent, whether an employee of the leasing company or of a third company, who receives either extra compensation (i.e., a bonus) or a commission for such activity, must be licensed by the North Carolina Real Estate Commission. To verify that the leasing agent is properly licensed, you may contact the Commission at 1-919-875-3700 or by going online at www.ncrec.state.nc.us. You should also contact the Better Business Bureau at www.bbb.org/us/ to check out a company's background before signing a lease agreement. There are also for-profit companies which provide business reports for a fee. Public companies' financial information can be found on the U.S. Securities and Exchange Commission website at www.sec.gov/edgar/searchedgar/webusers.htm.

Methods for Extracting Gas and Oil in North Carolina

Question:

What drilling and extraction methods used to extract natural gas are legal in North Carolina?

Answer:

Two of the technologies required to maximize the extraction of natural gas in North Carolina (1) horizontal drilling and (2) fracturing ("fracking") are not currently allowed under North Carolina law. At this time, the only legal extraction method in North Carolina is vertical well drilling. This is authorized by Chapter 113, Article 27 of the North Carolina General Statutes. Rules for drilling, completion or abandonment, and development of wells are contained within Title 15A, Chapter 5, Subchapter D of the North Carolina Administrative Code. Regulations are enforced by the North Carolina Geological Survey office of the North Carolina Department of Environment and Natural Resources, which may be contacted at (919) 733-2423, ext. 401. If the law in North Carolina were to change at some point, the value of the rights to extract natural gas could increase depending on other market factors.

Natural Gas and Oil Production

Question: What are drilling and production units?

Answer:

Resources like natural gas and oil form underground reservoirs, which can underlie the surface holdings of many tracts of land. Exploratory drilling will be conducted prior to drilling, and natural gas or oil may be found in these exploratory wells, also referred to as test wells. However, the location of these test wells may not be at the best location over a reservoir for actual extraction and production of natural gas and oil. To ensure adequate production, and spacing between wells so that one well does not drain all of the resource from areas held by other subsurface mineral rights owners, drilling units, also called production units, are formed. A *drilling unit* is an area of size specified and created by the North Carolina Department of Environment and Natural Resources (the Department) upon which drilling for production may occur. Drilling units may include one or more parcels of land and are created to prevent the wasting of gas and oil during extraction. The formation of these units is also referred to as a "pooling of owners" or "unitization of tracts." A drilling unit can be established over a single reservoir of

natural gas or oil, or a reservoir may be divided up into zones — and a drilling unit may then be created for each zone. Like a drilling unit, the Department can determine the number of zones that may be established as well as the size of those zones. These drilling units, and zones, serve to limit the number of wells drilled, thereby limiting risks associated with excessive drilling. If a landowner is part of a unit, then their royalty payment will correspond to the percentage that their mineral rights comprise of that unit. If a tract of land is not large enough to comprise a unit, it is usually necessary to include additional mineral rights owners in the same area to form a unit before a company will lease those rights. In some circumstances a landowner may be included in a unit even if they still do not lease their mineral rights they own that are part of the drilling or production unit.

Compensation

Question:

What type of compensation would I receive for allowing someone to extract natural gas and/or oil from my property, if I have mineral rights?

Answer:

Whether a landowner will be compensated will depend on whether the landowner owns the mineral rights — and, if the rights are separate, whether the surface rights holder must be compensated either by the terms of a lease or by law. For surface rights-only owners, please refer to the "Surface Rights" section of this document. There are two types of compensation a landowner can receive. The first is what is referred to as "bonus" money, which is paid to the landowner by an energy company for the right to drill and extract natural gas from their property. This is paid per acre of mineral rights leased and it gives the company the right to conduct exploratory activities, including well drilling, as well as the construction of wells for the production of natural gas and oil. The second form of compensation is a royalty, which is a percentage of the profit made from the sale of natural gas that is actually extracted from the property and sold. If there is more than one mineral rights owner, this royalty will be divided among all of the owners of the mineral interests in a unitized production area that has been leased. Both bonuses and royalty percentages may vary due to many factors, including the number of wells that have already been drilled and the current or expected future demand for natural gas at the time a lease is signed. In some states, like Louisiana, it is not uncommon for leases to be signed for thousands of dollars per acre in bonus money in one month, and the next month leases may be worth much less. Landowners should take time to consider whether it is to their advantage to sign a lease now or wait to see if factors change in the future that will allow them to maximize the compensation they receive. Compensation should also be provided to the owner of the surface rights for damages to crops, trees, structures, or other assets due to site clearing and construction for all aspects of the production operation. This includes the building of roads, the clearing of drilling sites, and for pipeline right-ofways. This compensation is normally separate from bonus monies and royalties paid to the mineral rights owner.

Warranty of Title

Question:

Should I warrant the title to my property when leasing or selling mineral rights in North Carolina?

Answer:

Landowners may not be completely certain that the mineral rights were never severed from a parcel's surface rights. Because of the length of time that many titles go back in North Carolina, it may be extremely difficult to search a title in such a way that a property owner can warrant the title to be absolutely free and clear of any other interests in either the surface or mineral rights. An owner should never considering warranting the title to their property without obtaining the advice of a North Carolina licensed attorney experienced in both land and mineral title searches.

Term of Lease

Question:

What is an acceptable period of time that should be included in the lease that will allow for natural gas and/or oil exploration and extraction on my property?

Answer:

Any period of time may be included in a lease. However, the owner of the mineral rights should understand that market forces always change, and that such forces will affect the price paid. For example, a lease signed when the demand for natural gas is high may allow for a larger bonus money amount per acre – and a greater percentage of royalty in the lease. Conversely, if demand for natural gas is low, or drilling companies have already signed leases for most of the areas they need for drilling, then the bonus money paid and royalty percentage could be much lower. Thus, prices for a mineral may change, negatively or positively, over the period of the lease. If a mineral rights owner expects that the price may go down within a certain period time he or she may want to offer a shorter lease to ensure that extraction of the minerals is done within a shorter time period. In states like Louisiana and Texas, where gas and oil have been produced for over a century, these leases tend to be around 3 years. If drilling does not start within the full time period covered by the lease, including grace and renewal periods, then the landowner may seek another entity to lease his or her rights. However, a company may exercise its lease rights at any time during the period covered by the lease, including the last day and if the lease agreement provides for it ten years or more to drill and extract minerals from a parcel the leasing company can legally take ten years to engage in this activity. A long-term lease may also affect what may be done on the surface of the parcel because of the uncertainty of when or where wells will be drilled, and gas pumping and pipeline infrastructure will be constructed. Rights-of-ways and buffers for this infrastructure, to ensure the protection of the equipment and the safety of those around it, will create a larger undevelopable footprint than the actual infrastructure itself. Leases are usually divided into phases. During the first phase, the leasing company will secure the necessary permits, conduct some exploratory drilling, build infrastructure and conduct other activities necessary to extract natural gas or oil. A grace period may be added to the first phase of the lease agreement so that if permits are not secured, or other circumstances do not allow for drilling (e.g., "acts of God"), extra time is allowed to create a commercially productive well. For example, a lease with a term of 3 years may provide for a grace period of 3 additional years. This allows for phase one to be a total of 6 years. The second phase may begin at the end of the first phase when a well has been drilled

that is producing a natural gas or oil in paying quantities — or if the leasing company is engaged in

efforts to begin or restore production of natural gas or oil within the area being leased. However, depending on the terms of the lease agreement, a leasing company may extend the agreement into a second phase of some number of years even if there is no commercial production, or any activity on the part of the leasing company that would allow for commercial production. This may occur if an additional bonus payment is made to the mineral rights owner.

The terms of the lease will determine the length of phase two and can vary from lease to lease. Some leases may state that the second term will remain in effect for as long as a well continues to be commercially productive. Alternatively, a lease may state that the second phase continues for as long as any amount of gas or oil is produced —or for as long as operations are conducted, but the production of gas or oil is not required. The mineral rights owner and his or her attorney need to carefully examine the duration of the lease agreement and all conditions under which a phase of a lease may commence and be extended. The lease agreement should allow the mineral rights owner to release his or her rights once the total time period of the first phase has expired if it has not transitioned to the second phase, or when the second phase has expired. However, usually included in the lease is a right of first refusal provision that allows the leasing company to match a bona fide offer from another company after the original lease agreement terminates. This provision allows a landowner to solicit better offers from other companies while giving the leasing company the ability to protect its investments such as the roads and other infrastructure that have been constructed already.

Water Usage

Question:

How much water is required for a drilling operation and where will it come from?

Answer:

Water for the drilling, and fracturing if legalized by the North Carolina General Assembly, could be on the low end of maybe 250,000 gallons to a high end of perhaps several million gallons and it may be recycled and reused for these processes. This water may come from the surface or from underground. If possible, it is preferable to use water from a source other than the property being drilled. However, if it is necessary to remove water from the same tract, the lease agreement should state whether the leasing company has the right to drill and extract water from the unit where it is drilling — and it must provide for what protections will be put in place to protect the water quality of surface and groundwater from the construction and operation of these wells. The lease agreement should specify that the usage of this water for drilling and extraction operations will not affect the availability or quality of water for other purposes, including personal consumption, or for growing crops or raising livestock.

Warranty of Title to Water Rights

Question: Should I warrant the right to use water on a property in a lease?

Answer:

Mineral rights and surface rights owners should never warrant to the leasing company the right to use surface or groundwater on a property without first consulting with a North Carolina licensed attorney

experienced in water rights. It is possible that the water rights, either above or below the surface, could be deeded to an owner other than those that own the surface and mineral rights for that same tract of land. The lease agreement should require the leasing company to cover the costs of determining who owns the rights to the water that will be used in the drilling operation, as well as the costs of leasing or purchasing those water rights. The lease agreement should address who will be responsible for obtaining and paying the cost of any permits from any governmental agency for the proposed water use.

Indemnification/Hold Harmless from Liability and Environmental Considerations

Question:

What potential liabilities should I consider before I lease the mineral rights on my property?

Answer:

There are many liability issues you should consider in consultation with your attorney. These liabilities include, but are not limited to, the potential contamination of water and soil from drilling wastes. The lease should specify that the energy company is responsible for obtaining and disposing of water and drilling muds used in drilling operations in a way that meets all local, state, and federal laws and regulations. Drilling for natural gas and oil can involve the use of large amounts of water and chemicals to fracture the rock underground in order to release these resources and force them to the surface for extraction. These materials must be used and disposed of in accordance with all local, state, and federal laws and regulations. If these materials are not handled properly and according to regulations, ground contamination and surface and underground water contamination in the area drilled may result. Additionally, neighboring underground drinking water supplies may also become contaminated. This may in turn lead to civil suits from neighboring landowners and enforcement actions against the mineral rights owner by regulatory agencies.

The mineral rights owner should ensure that an indemnification clause is included in the lease that will hold him or her harmless for all liability associated with drilling and its accompanying activities. The indemnification clause should require the drilling company and/or the energy company leasing the rights to bear the costs of defending against all civil actions. The company should also be required to bear all the costs for complying with all applicable rules and regulations – as well as those resulting from noncompliance.

Local Regulations

Question:

Are there local land use regulations in North Carolina, which may apply to oil and natural gas operations?

Answer:

Natural gas and oil operations are uses that can be regulated under local land use regulations such as county and municipal zoning ordinances. These uses must be included within a zoning ordinance for them to be allowed, and must be conducted in accordance with all ordinance requirements if they are allowed, or the owner of the property is in violation of the ordinance. The owner(s) may face fines and other penalties for ordinance violations. The mineral rights owner should ensure that the lease agreement require the leasing company to abide by all local, state, and federal laws and regulations — and that the leasing company will cover all costs of compliance with, or violations of, all applicable rules

and regulations. See also the section "Indemnification/Hold Harmless from Liability and Environmental Considerations."

Additional Expenses

Question:

What are additional expenses associated with drilling that should be considered in the lease?

Answer:

Additional costs to consider include those associated with securing the drilling site, the handling of materials and wastes associated with drilling, and site restoration. There are additional cost considerations that will be specific to each individual property and each mineral rights owner's circumstances. All of these should be considered and addressed appropriately in the lease, which should be reviewed by an experienced attorney, before it is signed.

The lease should be written so that you both the surface owner and mineral rights owner are not responsible for any costs associated with the storage, transport, clean-up, or disposal of drilling wastes, equipment, or any other material associated with the drilling and extraction of natural gas or oil. Finally, the landowner may want to include a provision in the lease agreement requiring the leasing company to pay the costs associated with clearing the site for drilling and pipeline infrastructure, as well as those associated with fencing off the drilling infrastructure and materials. It is important that all drilling equipment, wells, pumps, pipelines, and other infrastructure be fenced in to exclude not only people, but also livestock, to prevent injury and death or damage to equipment. Additional costs may include vegetation buffers or other means of shielding pumps or pipelines under land use regulation visual buffer requirements, if applicable. Finally, the lease agreement should specify what will be required of the leasing company to restore the site to pre-drilling and extraction conditions. This includes proper closure of wells, provisions for shut-in wells and production wells, the removal of all equipment and materials used in the operation, replanting of vegetation, and whatever else may be required to restore the site to its original conditions.

Present-Use Value Tax Program

Question:

Can leasing my land for gas exploration affect my continued participation in the present-use value tax program?

Answer:

Yes. Property tax is based on the highest and best use of the real property unless it qualifies for participation in the present-use value tax program. Gas exploration activities may result in loss of participation in the present-use value tax program for all or part of your land. This may be due to several factors including, but not limited to, a reduction in the amount of acreage required to remain enrolled or a change in the type of income generated from a property. For example, if a road is built through your property to reach a well, which takes an acre of land away from a twenty acre tract, this would result in a landowner no longer meeting the twenty-acre minimum required under state law. If you lose your present-use value status, you may be required to pay additional property taxes in the current year as well as three years of back taxes. Your lease agreement should include a provision to compensate you for the payment of back taxes and any other expenses incurred as a result of your

property losing its present-use value status. The lease should require the leasing company to pay for attorneys fees associated with any appeals of county tax assessor decisions.

Impact on USDA and State Farm and Forestland Programs and Benefits

Question:

What affect could natural gas and/or oil exploration or production have on my federal price support program, federal and state cost-share program, and other benefits?

Answer:

You may forfeit federal price support and other program benefits if there are violations of Highly Erodible Land Conservation and Wetland Conservation Compliance provisions (Swampbuster) on your land. Additional penalties may include the requirement for immediate repayment of Farm Service Agency or other United States Department of Agriculture loans —and the repayment of funds received from federal cost-share programs. You may also be ineligible in the future for insured or guaranteed loans, disaster relief, crop insurance, conservation and environmental easement payments — and participation in watershed protection and flood prevention projects. Additionally, any activities conducted in areas under conservation reserve program easements that violate federal laws and regulations and/or the terms of easements may result in repayment of funds received for those easements. Loss of program benefits and repayment of cost-share monies received from state programs may also be required. Any landowner with land enrolled in federal and state programs is solely responsible for ensuring that all activities on his or her land comply with all federal and state laws and regulations. It is the landowner that will lose program benefits and have to address repayment of loans, and possible payments of fines, not the leasing company if laws or easement conditions are violated. Detailed property Information, including maps, delineations, and surveys, pertaining to areas of areas of your land that are enrolled in any federal or state program, should be attached to the lease —and the terms of the lease should prohibit any activity on the part of the leasing company in these areas. The landowner may wish to include an indemnification provision covering losses associated with the loss of farm program benefits and legal expenses associated for defending against allegations of violations.

Affinity Fraud

Question: What is affinity fraud?

Answer:

Affinity fraud is fraud directed against members of a group sharing a common characteristic, like belonging to the same ethnic or religious group, being retirees or senior citizens, having the same career or occupation, or engaging in the same community activity. Con artists realize that people tend to trust other members of their group more than they trust outsiders. This is why a key tactic in affinity fraud is to use references from a few people within a group to persuade other members to part with their money. Once the crook has sold a few high-profile members on the investment scheme, their names can be used to dispel others' skepticism or doubt. Group members often unknowingly aid the con artist by persuading unsuspecting friends or family members to get in on the "deal." One way to protect yourself from falling victim to affinity fraud is to remove emotion from what is essentially a business decision. Do not let emotional appeals sway you into making a hasty decision. You should approach all

investment opportunities in a business-like manner. Exercise the same caution and skepticism that you would with any other business transactions.

This is not to suggest that every company that uses community leaders to promote its effort is in violation of the law. Such is certainly not the case. Landowners are simply advised to be aware of such tactics and to exercise caution and due diligence.

Fraud

Question:

What are the warning signs of a potential investment fraud?

Answer:

Financial criminals may be among the smartest people we will ever meet. The "successful" con artist is a marketing expert who understands human nature, and preys upon our fears or desires by unleashing a variety of psychological tactics against us, hoping to find the right combination that will get us to lower our natural defenses and give him what he wants – our money! The key, then, to avoid becoming an investment fraud victim is to recognize the pressure tactics and remember that <u>it is OK to say "NO"</u> to an unsolicited sales pitch. Although not complete, here are the most common psychological tactics con artists employ against their victims:

- Promises of Wealth The salesperson dangles the promise of wealth in a short period of time, often "guaranteed" with "little or no risk" involved. Remember: All investments carry risk.
- Trappings of Success The salesperson projects the image of success or offers testimonials, "proving" he and the offer are "legitimate." Remember: Credibility can be faked.
- The "Lemming" Effect The salesperson tells you that others are investing and that you should too or risk losing out on a good deal. Remember: If everyone jumped off a cliff, would you?
- Favors The salesperson gives you something (like a free meal or a discount) hoping you will feel obligated to give him something in return (like your money). Remember: You have no obligation to return any business-related favor.
- Act Now The salesperson pressures you to "act fast" because the offer will only be available "for a limited time." Remember: Do not feel pressured to make a quick investment decision.

Reporting Fraud

Question: How do I report suspected fraud?

Answer:

If the suspected fraud involves the offer, sale or purchase of investment securities, contact the Securities Division of the North Carolina Department of the Secretary of State. The term "securities" encompasses many different types of financial products. These can include stocks, bonds, certificates of interest or participation in an oil, gas, or mining title or lease, or in payments out of production under a title or lease, or investment contracts. You may call the Securities Division at 1-800-688-4507 or 1-919-733-3924. With limited exceptions, anyone engaged in the offer, sale, or purchase of investment securities must be registered with the Securities Division in order to lawfully conduct business in North Carolina. In addition, the investment security itself generally must be registered with the Securities Division before it can be offered in North Carolina. More information can be found at www.sosnc.com. For all other types of fraud, contact the NC Department of Justice at 1-877-566-7226 or go to http://ncdoj.gov.

Resources

For more information, contact:

NC Department of the Secretary of State (www.sosnc.com) Corporations Division: (919) 807-2225 or (888) 246-7636 Securities Division: (919) 733-3924 or (800) 688-4507

NC Geological Survey: (919) 733-2423 or www.geology.enr.state.nc.us

NC Cooperative Extension Service: (919) 515-5195 or www.ag-econ.ncsu.edu/gasleasing.html

NC Real Estate Commission: (919) 875-3700 or www.ncrec.state.nc.us

NC Department of Justice: (919) 716-6400 or (877) 566-7226 or www.ncdoj.gov

NC Bar Association: (919) 677-8574 or (800) 662-7660 or www.ncbar.org

Better Business Bureau of Eastern North Carolina: (919) 277-4222 or http://easternnc.bbb.org

For definitions of oilfield terminology, please consult Schlumberger's Oilfield Glossary at www.glossary.oilfield.slb.com.



Hydraulic Fracturing in North Carolina Predatory Mineral Rights Leases & Potential Impacts on Farmers and Landowners

Hydraulic fracturing, or "fracking", is a natural gas extraction process using high-pressure fluids to open up fractures in gas-bearing geological formations. North Carolina's current regulations prohibit high-pressure underground injection, horizontal drilling, and injection of toxic wastes that could contaminate groundwater. Nonetheless, gas companies are eagerly working to get leases on thousands of acres in several counties in central North Carolina.

Predatory Mineral Rights Leases in Lee, Chatham, and Moore Counties

Working with the NCSU Cooperative Extension Office, RAFI has analyzed these mineral rights leases and found that they do not adequately compensate individuals for access to this resource and may put significant financial liabilities on the landowner. For example, the leases:

- Offer \$1-\$2 per acre to landowners for the bonus payment of their mineral rights. In other states like Pennsylvania and Louisiana landowners are typically given \$2,000 to \$5,000 per acre.
- Require landowners to pay for future well pad construction, access roads, and other development costs without being compensated for potential destruction to their property or impacts on cropland, timber, or water resources.
- Force landowners to allow gas companies to use millions of gallons of water from the family's water well for drilling.
- Require the landowner to compensate neighbors for any environmental damages that may occur from drilling such as contamination of well water or chemical spills.
- Deny landowners access to the American court system by requiring all disputes be settled through arbitration.

These costs and the potential risks to farmland, water resources, and the environment are the responsibility of the gas company mining this resource, and should not be placed on landowners. Natural gas exploration and extraction should not be developed at the expense of putting rural landowners and farmers in North Carolina in financial risk.

Who Will be Impacted?

Rural landowners and farmers in North Carolina shale-bearing counties are not well informed of the potential risks of hydraulic fracturing to their land. Gas companies are not providing objective information about the benefits and drawback of natural gas extraction. Many landowners are not consulting an attorney before signing a lease. Based on the geography of the shale basins in North Carolina and experiences of landowners in other states, rural landowners and farmers are most likely to be negatively impacted by this industry.

- There are over 2,100 farms in Chatham, Lee, and Moore Counties accounting for over 220,000 acres of farmland. Approximately 59,000 acres in rural Lee County alone are expected to be targeted for drilling, with unknown additional acreage in Chatham, Moore, and Durham Counties.
- Over 9,400 acres in Lee County have been leased already by gas companies under predatory mineral rights leases.
- According to interviews in Lee, Chatham, and Moore Counties, the gas companies have been talking to elderly landowners and farmers with dubious promises of large pay-offs.
- Media reports in Louisiana, New York, Pennsylvania, and many mid-western states have documented livestock kills, crop destruction, and contamination of water resources used for irrigation due to fracking fluid spills.

What is "Fracking"?

Hydraulic fracturing, or "fracking", is a natural gas extraction process using high-pressure fluids to open up fractures in gas-bearing geological formations. This process allows natural gas to be harvested from previously untapped dense porous rock, and drilling horizontally for up to a mile can further increase yields. *Five to seven million gallons of water mixed with a combination of over five hundred possible chemicals are used in the fracking process*, in which one third of these fluids stay in the ground.

Recently, North Carolina's Geologic Survey has been actively studying and evaluating North Carolina's three Triassic Shale Basins that run through 14 counties in central North Carolina. The largest and most accessible shale basin is estimated at 59,000 acres in the Deep River Basin in Chatham, Lee, and Moore counties. It is closest to the surface in Lee County, which is where the companies are focusing their leasing efforts.

For more information on predatory mineral rights leases and hydraulic fracturing contact: Jordan Treakle

Rural Advancement Foundation International (RAFI-USA) 919-444-1321; Jordan@rafiusa.org





United States Department of Agriculture National Institute of Food and Agriculture

RAFI-USA

Rural Advancement Foundation International-USA

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Land Impacts from Hydraulic Fracturing in North Carolina

Predatory Mineral Rights Leases & Potential Impacts on Farmers and Landowners

Hydraulic fracturing, or fracking, is a natural gas extraction process using high-pressure fluids to open up fractures in gas-bearing geological formations. North Carolina's current regulations prohibit high-pressure underground injection, horizontal drilling, and injection of toxic wastes that could contaminate groundwater. Nonetheless, gas companies are working to get leases on thousands of acres in Chatham, Lee, and Moore counties in central North Carolina.

Potential Land Impacts from Drilling to Farms and Rural Communities

The experiences of farmers and rural landowners affected by fracking in other parts of the country raise a number of concerns over the impacts to land and water resources of this controversial mineral extraction method.

- Drilling infrastructure such as well pads, access roads, compressor stations, and gas pipelines require clearing and/or leveling significant amounts of land. These land impacts can be destructive to cropland, pasture, timber, and water resources, and often landowners are not compensated for these damages.
- Numerous reports from across the country document drilling accidents, well explosions, and chemical spills that have killed livestock, agricultural crops, and impacted soil integrity.
- In most states, companies can drill anywhere on a landowner's property even if it impacts agricultural areas, existing buildings, or water resources such as an irrigation pond. In most cases, surface owners cannot influence the location of drilling infrastructure on their property. Additionally, surface owners who have leased their mineral rights or do not own their mineral rights are notified only 7 or 14 days prior to a company entering their land, giving residents little time to secure or move equipment, crops, timber, or livestock from a proposed drilling area.
- Hydraulic Fracturing requires significant use of heavy trucks for transportation of materials for the drilling infrastructure development, fracturing process, and waste removal. This truck traffic can have significant impacts on rural infrastructure including roads and bridges and strain local government resources.
- There are currently no landowner protections in North Carolina that require drilling companies to return a drilling site to its pre-drilling condition once gas extraction has ceased. Without this basic protection, landowners can be forced to bear the cost of reclaiming the surface, removing industrial machinery, and revitalizing soil conditions on their property for future use after the drilling company has left.

Impacts of Drilling on Future Farm Land-use Planning

Mineral rights leases, well infrastructure, and land impacts from drilling activities all affect landowners' future land-use planning. These issues will affect the stability of our rural communities and local agricultural economy:

- Landowners who have leased their mineral rights in other parts of the country have had their eligibility for mortgage applications rejected. This financial risk impacts landowner property rights, economic stability, and long-term financial planning
- Mineral rights contracts in North Carolina limit landowners' ability to manage their property and reacquire control of their mineral rights by offering excessively long primary and secondary drilling term lengths of 15-20 years compared to contracts in other states where the standard lease length is 3-7 years.
- The lifetime of drilling infrastructure will impact land resources for multiple generations although royalty compensation will be minimal for much of the lifetime of the drill-site. Drilling infrastructure is built to last typically 80-100 years, although most gas is extracted from a well in the early drilling years.
- Drilling activity can affect soil integrity and compaction on and around all drilling infrastructure, which can have significant impacts on agricultural crop yields for multiple years after drilling activities have ceased.

The risk of impacts to farmland, water resources, and the environment should be the responsibility of the company mining the mineral resource, not landowners. State laws that protect landowners must be enacted before new drilling takes place in North Carolina.

Natural gas exploration and extraction should not be developed at the expense of putting rural landowners and farmers in North Carolina in financial risk.

For more information on predatory mineral rights leases and hydraulic fracturing contact: Jordan Treakle Rural Advancement Foundation International (RAFI-USA) Jordan@rafiusa.org 919-444-1321





United States Department of Agriculture National Institute of Food and Agriculture

Thinking about leasing your mineral rights?

KNOW YOUR RIGHT'S 1) Talk to a lawyer

- Gas leases are **BINDING LEGAL CONTRACTS**. They are usually **WRITTEN TO BENEFIT THE COMPANY** not the landowner.
- **CONTRACTS TAKE PRECEDENT OVER** any **VERBAL AGREEMENT** that you may have with the company.

2) Don't accept responsibility for the gas company's actions.

- Mineral rights leases may put **LIABILITY** for **ENVIRONMENTAL HARMS** or other liability issues **ON THE LANDOWNER**, not the drilling company.
- Make sure that the company is responsible for complying with local regulations, paying any fines and compensating you for lost income from government conservation programs.

3) Know the impact on your land

 Some contracts ALLOW COMPANIES leasing mineral rights to BUILD BUILDINGS, pipelines, and ROADS or to USE A WELL on the property even if it interferes with other activities such as farming or hunting.





For help finding affordable legal representation contact **Jordan Treakle** at RAFI at **(919) 444-1321** or **jordan@rafiusa.org.** More informatio at www.rafiusa.org/gaslease.html

GENERAL ASSEMBLY OF NORTH CAROLINA SESSION 2011

SESSION LAW 2011-276 HOUSE BILL 242

AN ACT TO (1) INCREASE THE AMOUNT OF THE BOND REQUIRED UPON REGISTRATION IN ORDER TO DRILL FOR OIL OR NATURAL GAS IN THE STATE; (2) INCREASE THE AMOUNT OF FEES APPLICABLE TO DRILLING AND ABANDONING OIL OR GAS WELLS; (3) ESTABLISH PROVISIONS FOR THE PROTECTION OF LANDOWNERS RELATIVE TO LEASES FOR OIL AND GAS EXPLORATION; (4) DIRECT THE DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES TO STUDY THE ISSUE OF OIL AND GAS EXPLORATION IN THE STATE, AND SPECIFICALLY THE USE OF DIRECTIONAL AND HORIZONTAL DRILLING AND HYDRAULIC FRACTURING FOR THAT PURPOSE; AND (5) DIRECT THE DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES TO CONDUCT AT LEAST TWO PUBLIC HEARINGS ON THE ISSUE IN THE AREA IN WHICH EXPLORATION FOR NATURAL GAS BY MEANS OF DIRECTIONAL AND HORIZONTAL DRILLING AND HYDRAULIC FRACTURING MAY OCCUR.

The General Assembly of North Carolina enacts:

SECTION 1. G.S. 113-378 reads as rewritten:

"§ 113-378. Persons drilling for oil or gas to register and furnish bond.

Any person, firm or corporation before making any drilling exploration in this State for oil or natural gas shall register with the Department of Environment and Natural Resources or such other State agency as may hereafter be established to control the conservation of oil or gas in this State. Resources. To provide for such registration, the drilling operator must furnish the name and address of such person, firm or corporation, and the location of the proposed drilling operations, and file with the aforesaid-Department a bond in the an amount totaling the sum of of (i) five thousand dollars (\$5,000) plus (ii) one dollar (\$1.00) per linear foot proposed to be drilled for the well. (\$5,000) running to the State of North Carolina, conditioned that any Any well opened by the drilling operator upon abandonment shall be plugged upon abandonment in accordance with the rules of said-the Department."

SECTION 2. G.S. 113-395 reads as rewritten:

"§ 113-395. Notice and payment of fee to Department before drilling or abandoning well; plugging abandoned well.

Before any well, in search of oil or gas, shall be drilled, the person desiring to drill the same shall notify the Department upon such form as it may prescribe and shall pay a fee of fifty-three thousand dollars (\$50.00)(\$3,000) for each well. The drilling of any well is hereby prohibited until such notice is given and such fee has been paid and permit granted.

Each abandoned well and each dry hole promptly shall be plugged promptly in the manner and within the time required by rules to be prescribed by the Department, and the owner of such well shall give notice, upon such form as the Department may prescribe, of the abandonment of each dry hole and of the owner's intention to abandon, and shall pay a fee of fifteen four hundred fifty dollars (\$15.00)(\$450.00). No well shall be abandoned until such notice has been given and such fee has been paid."

SECTION 3.(a) G.S. 113-389 reads as rewritten:

"§ 113-389. Definitions.

Unless the context otherwise requires, the words defined in this section shall have the following meaning when found in this law:



- (7a) "Oil and gas developer or operator" or "developer or operator" shall mean a person who acquires a lease for the purpose of conducting exploration for or extracting oil or gas.
- (7b) "Oil and gas operations" or "activities" shall mean the exploration for or drilling of an oil and gas well that requires entry upon surface estate and the production operations directly related to the exploration or drilling.
- (15) <u>"Surface owner" means the person who holds record title to or has a purchaser's interest in the surface of real property.</u>

SECTION 3.(b) Article 27 of Chapter 113 of the General Statutes is amended by adding a new Part to read:

"Part 3. Landowner Protection.

"§ 113-420. Notice and entry to property.

(a) If an oil and gas developer or operator is not the surface owner of the property on which oil and gas operations are to occur, before entering the property for oil and gas operations that do not disturb the surface, including inspections, staking, surveys, measurements, and general evaluation of proposed routes and sites for oil and gas drilling operations, the developer or operator shall give written notice to the surface owner at least seven days before the desired date of entry to the property. Notice shall be given by certified mail, return receipt requested. The requirements of this subsection may not be waived by agreement of the parties. The notice, at a minimum, shall include all of the following:

- (1) The identity of person(s) requesting entry upon the property.
- (2) The purpose for entry on the property.
- (3) The dates, times, and location on which entry to the property will occur, including the estimated number of entries.

(b) If an oil and gas developer or operator is not the surface owner of the property on which oil and gas operations are to occur, before entering the property for oil and gas operations that disturb the surface, the developer or operator shall give written notice to the surface owner at least 14 days before the desired date of entry to the property. Notice shall be given by certified mail, return receipt requested. The notice, at a minimum, shall include all of the following:

- (1) <u>A description of the exploration or development plan, including, but not</u> <u>limited to (i) the proposed locations of any roads, drill pads, pipeline routes,</u> <u>and other alterations to the surface estate and (ii) the proposed date on or</u> <u>after which the proposed alterations will begin.</u>
- (2) An offer of the oil and gas developer or operator to consult with the surface owner to review and discuss the location of the proposed alterations.
- (3) The name, address, telephone number, and title of a contact person employed by or representing the oil or gas developer or operator who the surface owner may contact following the receipt of notice concerning the location of the proposed alterations.

(c) If the oil and gas developer or operator fails to give notice as provided in this section, the surface owner may seek appropriate relief in the superior court for the county in which the oil or gas well is located and may receive actual damages.

"§ 113-421. Compensation for damages.

(a) The oil and gas developer or operator shall be obligated to pay the surface owner compensation for all of the following:

- (1) Any damage to a water supply in use prior to the commencement of the activities of the developer or operator which is due to those activities.
- (2) The cost of repair of personal property of the surface owner, which personal property is damaged due to activities of the developer or operator, up to the value of replacement by personal property of like age, wear, and quality.

(b) When compensation is required, the surface owner shall have the option of accepting a one-time payment or annual payments for a period of time not less than 10 years.

(c) The surface owner has the right to seek damages pursuant to this section in the superior court for the county in which the oil or gas well is located. The superior court for the county in which the oil or gas well is located has jurisdiction over all proceedings brought pursuant to this section. If the surface owner or the surface owner's assignee is the prevailing

party in an action to recover unpaid royalties, the court shall award any court costs and reasonable attorneys' fees to the surface owner or the surface owner's assignee.

(d) <u>Conditions precedent, notice provisions, or arbitration clauses included in lease</u> documents that have the effect of limiting access to the superior court in the county in which the oil or gas well is located are void and unenforceable.

"<u>§ 113-422. Indemnification.</u>

An oil or gas developer or operator shall indemnify a surface owner for damage to property that is adjacent to property on which drilling occurs, as well as adjacent infrastructure, and wells.

"§ 113-423. Maximum lease terms.

Any lease of oil or gas rights or any other conveyance of any kind separating rights to oil or gas from the freehold estate of surface property shall expire at the end of 10 years from the date the lease is executed, unless, at the end of the 10-year period, oil or gas is being produced for commercial purposes from the land to which the lease applies. If, at any time after the 10-year period, commercial production of oil or gas is terminated for a period of six months or more, all rights to the oil or gas shall revert to the surface owner of the property to which the lease pertains. No assignment or agreement to waive the provisions of this subsection shall be valid or enforceable. As used in this subsection, the term "production" includes the actual production, withdrawal, storage, or disposal of water, gas, or other fluids, or when rentals or royalties are being paid by the lessee.

"<u>§ 113-424. Applicability; effect.</u>

This Part applies to leases or contracts, and amendments to leases or contracts, entered into on or after June 15, 2011."

SECTION 4. The Department of Environment and Natural Resources, the Department of Commerce as specifically directed by subdivision (5) of this section, and the Consumer Protection Division of the Department of Justice as specifically directed by subdivision (8) of this section shall study the issue of oil and gas exploration in the State and the use of directional and horizontal drilling and hydraulic fracturing for that purpose. The Department of Environment and Natural Resources, in conjunction with the Department of Commerce and the Consumer Protection Division of the Department of Justice, shall report their findings and recommendations, including specific legislative proposals, to the Environmental Review Commission no later than May 1, 2012. At a minimum, the study shall include information on the following:

- (1) Oil and gas resources present in the Triassic Basins and in any other areas of the State.
- (2) Methods of exploration and extraction of oil and gas, including directional and horizontal drilling and hydraulic fracturing.
- (3) Potential impacts on infrastructure, including roads, pipelines, and water and wastewater services. In analyzing potential impacts, the Department shall specifically examine the expected water usage from hydraulic fracturing, water resources in the area in which drilling may occur, as well as existing water users in the area that may be impacted by increased consumption of water for use in hydraulic fracturing.
- (4) Potential environmental impacts, including constituents or contaminants that may be present in the fluid used in the hydraulic fracturing process; the potential for the contamination of nearby wells and groundwater, as well as the options for disposal and reuse of the wastewater produced; stormwater management; the potential for emission of toxic air pollutants; impacts on wildlife; management and reclamation of drilling sites, including orphaned sites; management of naturally occurring radioactive materials (NORM) generated by the drilling and production of natural gas; and the potential for seismic activity in the area in which drilling may occur. In examining this issue, the Department shall formulate regulatory requirements advisable to address potential environmental impacts and in doing so shall gather information on regulatory programs in other states where oil and gas exploration or extraction is occurring, particularly with regard to the use of hydraulic fracturing for that purpose.

- (5)Potential economic impacts, including possible sources of revenue that could accrue to the benefit of the State in the event that drilling for oil or natural gas were to take place in the State. In examining this issue, the Department of Commerce, in consultation with the Department of Environment and Natural Resources, shall gather information on (i) the number of jobs that may be expected as a result from drilling activities in the State and (ii) what severance taxes, fees, royalties, bonds, or assessments may be appropriate in connection with the activity. For any sources of revenue that may be anticipated, the Department of Commerce, in consultation with the Department of Environment and Natural Resources, shall evaluate use of the revenue for the following purposes: funds necessary to implement an oil and gas regulatory program; funds dedicated to the conservation and preservation of land and water resources; funds dedicated to remediation of environmental contamination such as the Inactive Hazardous Sites Cleanup Fund; and funds dedicated to improving water and wastewater infrastructure across the State.
- (6) Potential social impacts, including impacts of drilling operations on nearby communities and quality of life within those communities, recreational activities, and commercial and residential development.
- (7) Potential oversight and administrative issues associated with an oil and gas regulatory program, including statutory authority necessary for implementation of such a program; funding requirements necessary to implement a stable and effective program; criteria for permit issuance or denial; frequency and scope of inspections; compliance and enforcement procedures; coordination of agency involvement to ensure efficient permitting and clear delineation of compliance responsibilities; opportunities for public participation; and data management.
- (8) Consumer protection and legal issues relevant to oil and gas exploration in the State, including matters of contract and property law, mineral leases, and landowner rights. In examining these issues, the Consumer Protection Division of the Department of Justice, in consultation with the Department of Environment and Natural Resources, shall specifically examine appropriate provisions on recommended disclosures to landowners, compensation for damages, payment of royalties, and remedies for breach, and any other matters the Division deems relevant. The Division shall also study such issues in consultation with the Rural Advancement Foundation International (RAFI).
- (9) Any other pertinent issues that the Department deems relevant to oil and gas exploration in the State and the use of hydraulic fracturing for that purpose.

SECTION 5. By February 1, 2012, the Department of Environment and Natural Resources shall hold at least two public hearings at separate locations within the Triassic Basin on the issue of drilling for natural gas by means of directional and horizontal drilling and hydraulic fracturing. The public hearings shall be conducted in order to promote awareness of the issue generally and inform and consult with the public and user groups on potential environmental impacts, potential regulatory controls, potential economic impacts, and consumer protection issues, including landowner rights and mineral leases. In developing the consumer Protection Division of the North Carolina Department of Justice and the Rural Advancement Foundation International (RAFI).

SECTION 6. In order to avoid redundancy and to make the most efficient use of State resources, the Department of Environment and Natural Resources and the Energy Jobs Council shall, to the maximum extent practicable, conduct the study required by Section 4 of this act in conjunction with the study required by Section 3(a) of Senate Bill 709, 2011 Regular Session, if Senate Bill 709 becomes law. The result of these consolidated studies, if applicable, shall result in one final report from the Department.

SECTION 7. This act is effective when it becomes law. In the General Assembly read three times and ratified this the 17th day of June,

2011.

s/ Walter H. Dalton President of the Senate

s/ Thom Tillis Speaker of the House of Representatives

s/ Beverly E. Perdue Governor

Approved 5:16 p.m. this 23rd day of June, 2011

Section 2: Fact Sheets

Gas at Your Door?





Gas at your door?

Then become part of the OGAP movement by joining forces with people nationwide who face drilling in their communities! Even if you are considering allowing drilling or have already leased your land, it's important to remember that the oil and gas industry is under-regulated (when regulated at all) and exempt from major U.S. laws that protect our health, the water we drink, and the air we breathe.

In the end, it's people and communities who pay the price. Get involved today by working with your neighbors and organizations to change the rules—together we can prevent further damage from oil and gas development and hold companies accountable. Learn more and take action online, in your community, and across the country at www.ogap.org.



Photo: Tracy Carluccio

The race is on to find new energy sources, with natural gas companies in the lead. Landowners

who live on top of geologic formations that contain gas—like the Marcellus and Utica Shale formations that stretch across eastern states—face tough decisions about leasing their properties for drilling. Gas development can provide financial benefits, but also transform properties, communities, landscapes, and many families' way of life. The different stages of gas development have big impacts, especially if they aren't done responsibly: land clearing, building of roads and pits, seismic testing, drilling, waste production and disposal,

laying of pipeline, and site clean up. And hydraulic fracturing—the technology used to force the production of deep shale gas—requires large amounts of water and hazardous chemicals.

If you're thinking about leasing your land for drilling,

Photo: Deborah DeWan

or want to renegotiate terms in an expiring lease, don't rush into anything! A lot is at stake for you and your neighbors, and it can be daunting to navigate through a sea of information and gas company assertions. Take the time to fully understand your options so you can help protect your property and the well-being of your community.

As a landowner, you have rights to:

- Protection of your health, land, and traditional livelihood even if you lease or live next to gas operations.
- 2 Accurate information about the real impacts of industrial gas development.
- 3 To not be liable for accidents and damage to your or your neighbors' property or water caused by gas companies.

See back for tips to protect your rights.

inset

P. Carl

- To not suffer from permanent pollution or loss of property value.
- **5** Fair payment and production terms in a lease.

The Delaware River is one of the critical water sources that could be



threatened by gas drilling in the

eastern U.S.

Gas development produces large amounts of contaminated water.



There are many stages of gas development: building of roads for heavy equipment, clearing of land, digging of waste storage pits, laying of miles of pipeline, and use of large amounts of water and hazardous chemicals for drilling and hydraulic fracturing. Photos: left Tracy Carluccio; others Charlene Anderson.

Drilling and you:

What every landowner should know

1 Educate yourself. Gather information on the pros and cons of gas development and how it's done. Do research and talk to your neighbors. Ask questions and demand thorough, written answers.

2 Don't sign anything without fully understanding the document's terms. Whenever possible, get professional advice from an oil and gas attorney or organization that works with landowners.

3 Make a list of what's important to you before

negotiating with a company landman or representative. There's no required "standard lease" that you should be pressured to sign. Everything except your name and the legal description of the property

is negotiable, including location of roads, wells, and equipment and the lease duration, renewal, and royalties. There are also "best management practices" to minimize pollution and damage to land that companies should be required in a lease to follow.

4 Know what you own. Because of the way U.S. resource laws developed, you may own your land but not the minerals under it. Read your property deed, research land use and mineral records, and consider doing a title search. If you own the minerals, you can choose

whether, and how much, to lease. If you own just the surface, you can negotiate a Surface Use Agreement to better protect your property and gain some control over how the gas company uses it and impacts your neighbors.

ipment renewal, also "best " to minimize o land that equired in a **6** No matter what, have your household water source tested before gas development starts, so the company can be held accountable if contamination occurs.

(6) Understand state and local laws on such issues as land use and zoning that influence the gas development process. "Pooling" or "compulsory integration" laws may force landowners to become part of a drilling unit and require that they receive financial compensation. Regulations and laws on well-spacing, light and noise, setbacks from houses, and rights of way influence where roads and pipelines can be placed and when drilling can occur. (State environmental and resource management agencies can provide such information.)

7 Remember that you have rights and that it's your and your family's well-being that matter most. No company should be allowed to take that away from you.

Earthworks' Oil & Gas Accountability Project was founded in 1999 to build the power of people who live with oil and gas development. We are a resource for residents and help ensure government and corporate accountability, responsibility, and respect for people and places. This brochure is based on *Oil and Gas at Your Door? A Landowner's Guide to Oil and Gas Development.* Visit www.ogap.org to order a copy (or receive one free by becoming a member) and for more information on our work across the United States.

EARTHWORKS • 1612 K St., NW, Suite 808 Washington, D.C., USA 20006 • www.earthworksaction.org info@earthworksaction.org • 202.887.1872

Marcellus OGAP • P.O. Box 149 • Willow NY, 12495 www.ogap.org • nsteinzor@earthworksaction.org • 315.677.4111

9-2011.

Gas at Your Door?





CONTINUED AT RIGHT

DEAR NEW YORKER:

In the first decade of the 21st Century, gas exploration has evolved from a predominately regional operation into a large-scale business, attracting national and global companies. As a result, production of natural gas has significantly increased.

This evolution is a direct result of higher natural gas prices coupled with improvements in both gas exploration and extraction technologies.

These advancements have furthered the exploration and extraction of natural gas from two formations that had been previously difficult to tap - the Trentron-Black River and Marcellus Shale.

If done properly, and with proper environmental safeguards, the increased production of natural gas can be a benefit to the landowners, economy, and all New Yorkers. It has already generated significant revenue for energy companies, and some landowners. The companies and the government must be vigilant to protect our environment throughout the process.

In addition to raising environmental concerns, some landowners have complained to my office about abusive, misleading, and/or fraudulent tactics used by certain exploration and development companies, or their agents, in an effort to obtain a lease. If you believe that you have been defrauded by an unscrupulous landman or gas exploration company, or if you have environmental concerns, please contact my office at 1-800-771-7755.

I want to share with you some general information in the event you or someone you know is approached and asked to sign a lease. I hope you find the information contained in this pamphlet useful.

Sincerely,

Eric T. Schneiderman Attorney General



HOW TO ENTER INTO AN OIL AND GAS LEASE

Most landowners who have entered into an oil and gas lease have been approached by a person directly or indirectly representing a gas operator.

This person is commonly referred to as a **landman**. The landman's main purpose is to secure leases on as large an area as possible.

Landmen may approach landowners at their homes or businesses, or may contact landowners preliminarily by telephone before meeting with them in person.

WHAT IS AN OIL AND GAS LEASE?

In very general terms and in the context of mineral rights and exploration, a lease is a written instrument where the landowner (the "lessor") grants to a business (the "lessee") the right to extract oil and natural gas from beneath a landowner's property.

Like many other types of leases, the rights and obligations of the lessor and the lessee are detailed in the lease and, in most cases, landowners will be bound for the duration of the lease to those terms and conditions.

In addition, the lessee will record either the lease or a memorandum of lease at the local county clerk's office.

Thereafter, if you want to sell your property, the buyer will have to accept that lease along with it. In other words, the rights and obligations set forth in the lease are connected to your land.

For this reason, and because of the complexity of oil and gas leases, the Attorney General strongly recommends that before signing a lease you contact an attorney to secure professional, personalized advice in this important transaction.

LANDOWNER'S TIPS

If you are thinking about signing an oil and gas lease, consider the following:

- **1.** CONSULT AN ATTORNEY before you sign a lease, and review each term and condition of the lease with your attorney.
- **2.** ASK ALL NECESSARY QUESTIONS to ensure that you understand all terms and conditions on the lease.
- **3. OBTAIN IN WRITING** all promises and conditions, and make sure those written promises are part of the lease.
- **4.** NEGOTIATE as you may get better terms than those initially offered to you.
- **5. SEARCH FOR** and negotiate with more than one gas operator.
- **6.** THERE IS STRENGTH IN NUMBERS so consider negotiating your lease together with a group of neighbors or interested parties.
- 7. OBTAIN COPIES

of the lease you sign and a copy of the lease signed by both you and the gas operator to make sure that the lease reflects the agreement reached with the landman.

8. THE RIGHT TO CANCEL

is yours for 3 business days after signing the lease, but to cancel, you must comply strictly with all requirements (consult your attorney).

The New York State Office of the Attorney General 1-800-771-7755 www.ag.ny.gov Printed on recycled paper.





OIL & GAS LEASES:

LANDOWNERS' RIGHTS





New York State Office of the Attorney General

ERIC T. SCHNEIDERMAN Attorney general

OIL & GAS LEASES

Four Key Terms In Oil and Gas Leases

THE LEASING CLAUSE

This clause describes in general terms what rights the lessor is granting the lessee, such as "the right to access and extract oil, gas and their constituents" and "all exclusive rights needed to explore, develop, produce, measure and market production." This includes the right to conduct exploratory tests, drill wells, and use or install roads on a landowner's property.

THE LEASING TERM CLAUSE

The leasing term usually consists of a primary term and a secondary term. Generally, the primary term is explicitly stated as a number of years. The secondary term, however, can extend the duration of the lease indefinitely into the future if gas production is ongoing or if one or more specific events occur, like continued rental payments.

THE BONUS PAYMENT CLAUSE

The bonus payment is the amount of money landowners receive as consideration for signing the lease. It may be a fixed amount or it may be a dollar-per-acre amount.

THE ROYALTY PAYMENT CLAUSE

A royalty is the landowners share of the proceeds from the sale of oil, gas, and other constituents. This clause will determine what percentage a landowner will receive and what deductions, if any, will be made from the sale price before the landowner receives his or her royalties.

PROBLEMS WITH LANDMEN

MISLEADING OR MISUNDERSTOOD STATEMENTS

тор 5

1. "Your property will [or won't] be in the unit:"

Neither the landman nor the gas operator can guarantee that any property will be part of a spacing unit because the New York State Department of Environmental Conservation (NYSDEC) makes this determination.

A landman could let you know whether an operator has proposed a spacing unit containing or excluding a specific property, but any statement purporting to guarantee the inclusion of a property in a spacing unit is misleading.

- 2. "This is the standard lease, and it's not negotiable" There is no such thing as a standard lease in the oil and gas leasing business. All leases and all terms in the lease - except for those terms required by law are negotiable.
- 3. "All your neighbors have signed, and you're the sole person holding everything up"

It is highly unlikely that you are holding up the transaction. While it might not be misleading to state that all the neighbors have signed (if, indeed, they have signed leases), it is rarely the case that a landowner's reluctance to sign a lease alone is holding everything up.

The NYSDEC requires gas operators to control a minimum of 60% of the property with the proposed spacing unit and 100% of the property through which the well would be drilled. If the size of one property within the proposed unit is such that the gas operator cannot reach that minimum percentage without that property, or cannot drill the well-bore without traversing through that property, than the statement would be accurate.

4. "Don't you want to receive \$X every month"

The amount of money a landowner receives in royalties is a function of several different factors that change from one day to the next. Therefore, no landman can give you a reasonable estimate of how much money you will receive in royalties. A landman, however, may use examples to show you how your royalties will be calculated.

5. "If you don't sign, we'll take the gas from your property without paying you"

The law in the State of New York does not allow this to happen. If a landowner is located within a unit, she will share in the royalties generated within that unit in the proportion allocated to her property.

PRESSURE TACTICS

Remember, it is your property, and you have the right to decide who can come on it, or contact you.

FEELING UNDER PRESSURE? Consider the Following:

- 1. Obtain the full name, address, and telephone number of both the landman and the business they represent.
- 2. Direct the landman to leave the property and to not return or contact you again.
- **3.** Write a letter to the landmen and the business they represent, restating the above request.
- **4.** Consider contacting local law enforcement to determine if additional action is necessary.

VERBAL PROMISES VS. WRITTEN DOCUMENTS

Verbal promises should be put in writing. It is essential that every single promise and agreement be in writing and included in the lease.

FAILURE TO PROVIDE A COPY OF THE LEASE

Landowners should demand a copy of the lease within a reasonable time after they sign it. In addition, landowners should request the landman leave them a copy of the lease before it is signed by the gas operator.

PROBLEMS WITH THE LEASE

As noted previously, the leasing clause grants the lessee many rights beyond the right to extract oil and gas. Before deciding whether to sign a lease, landowners should pause to consider what type of uses they want to allow on their properties. For example, while one landowner would not object to allowing gathering pipelines to be installed on his property, another may find such intrusion to be unacceptable.

LEASE DURATION

Landowners should also be mindful of those conditions that will extend the duration of the lease beyond its primary term. Before signing a lease, the landowner should understand how the lease will operate, including whether it will trigger a secondary term, and, if so, when.

ROYALTIES

Landowners should understand exactly what they are receiving in royalties. For instance, it the lease calls for an 18% royalty payment, know how will it be calculated and how to independently verify that you are receiving the correct amount of royalties.

DISPUTES

Another issue that landowners must consider is how would a dispute between the lessor and the lessee be resolved. The so-called "standard leases" contain a provision requiring the use of arbitration, typically involving a panel of three arbitrators. The lessee and lessor each pay the fee for an arbitrator and they split the fee for the third arbitrator. This can result in a significant outlay of money just to have your grievance heard.



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The Marcellus Shale Natural Gas Rush: The Impact of Drilling on Surface Owner Rights

(January 18, 2011)

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I. Introduction to Surface Estate Impacts

- A. <u>Generally</u> Natural gas extraction necessarily will have some impact on the surface of land, and thus, on surface owner rights. The amount of the surface estate impacted by drilling and the extent of surface disturbance is dependent upon many factors including the target formation of the well and the technologies used by the drilling company.
- B. <u>Surface Impacts from Marcellus Wells</u> The technologies utilized by many companies to date in the extraction of natural gas from the Marcellus formation differ in several respects from those utilized historically in the extraction of natural gas from sandstone wells in Pennsylvania. The use of these new and different technologies changes the impact that drilling has upon the surface estate. In some cases, the use of these technologies reduces the surface impact from drilling, while other technologies increase the surface impact. The following illustrates how a few common features of Marcellus wells alter the surface impact:

1. Larger well pad sites – Extraction of natural gas from the Marcellus formation is accomplished through the use of hydraulic fracturing, which requires a large amount of water. As a result, well sites must be able to accommodate a large amount of water storage, through construction of a water impoundment and/or through the parking of a large number of tractor-trailers.

2. Fewer well pads sites – Through the use of horizontal drilling, a well operator can reach areas that are up to a mile or more from the well pad. This has the result of requiring that fewer wells be drilled overall in order to extract natural gas

from a defined area. Additionally, horizontal drilling techniques allow multiple wells to be drilled from the same well pad, further reducing the surface impact.

C. <u>Sources of Protection</u> – Surface owners rights relative to the impacts of natural gas drilling are defined by three primary sources:

1. Lease agreement provisions – Lease agreements between a landowner and a gas company typically will include some provisions to reduce the adverse surface impacts of drilling or to compensate the landowner for those impacts.

2. Statutory provisions – Pennsylvania law also provides some minimal protection to surface owners, primarily through the Oil and Gas Act, 58 PA. STAT. §§ 601.101 – 601.607.

3. Common law – Although Pennsylvania oil and gas case law is undeveloped in many areas, there are important cases that address the rights of surface owners with respect to impacts from natural gas drilling.

D. <u>Severed Estates</u> – Not all surface owners own the rights to oil and natural gas beneath their land. In many instances, these subsurface property interests were severed from the surface estate long before the current surface owner acquired title. The current surface owner may or may not have purchased their property interest for a reduced price due to this severance. By owning the surface estate, but not the corresponding oil and gas interests, these surface owners bear the adverse impacts of drilling without receiving any of the financial benefits associated with natural gas production.

1. These surface owners have unique challenges in that they generally are afforded no protections or rights through the provisions of a lease agreement.

2. The protections and rights afforded through statutory provisions and judicial opinions need to be considered carefully to determine if they are applicable to all surface owners, whether or not the surface and natural gas estates have been severed.

E. Scope of Outline

1. This outline will address those issues that pertain directly to the use of, or impact upon, the surface estate regardless of whether the surface estate has been severed from the corresponding oil and gas interests. This outline also will address some issues pertaining to the impact of natural gas drilling upon tracts in close proximity to the well site.

2. This outline will not address property issues that may be important to landowners, but that are not related directly to surface use, such as the distribution of royalties. This outline also will not address the interplay between natural gas drilling and coal operations.

II. Protection of Surface Estate through Provisions in the Lease Agreement

A. Generally

1. The lease agreement governs nearly all aspects of the relationship between the lessor landowner and the gas company. A prudent landowner will negotiate terms in the lease agreement to ensure that surface impacts are minimized consistent with the manner in which the land is used.

2. The surface owner of a severed estate likely will have no ability to influence the terms that are negotiated in a lease agreement.

B. <u>Limitation on Operations</u> – A lease agreement may limit activities that can take place, or the facilities that can be located, on the surface estate. Some examples of manners in which surface activities can be limited are listed below:

1. No surface rights lease – A lease agreement can permit extraction of the oil and gas underlying the property, but prohibit any use of the surface estate for extraction activities. A landowner with a relatively small acreage is more likely to be able to successfully negotiate a no surface rights lease with a gas company. The landowner may or may not receive a lower lease bonus payment in exchange for a no surface rights lease, depending on market conditions.

2. Approval of well site and access road location – If a landowner is not successful in negotiating a no surface rights lease, arguably the most important provision in the lease agreement to limit the impacts on the surface estate is a provision that permits the landowner to provide final approval of the specific location of the well site and all access roads.

- 3. Limit drilling activities to specific portions of the leased property.
- 4. Specifically define the facilities that can be located on the property.

5. Pipelines, gas storage, and injection wells – A lease agreement can prohibit the use of the subject property for the transportation of foreign gas, for use as a gas storage facility, or for location of an injection well.

6. Require the installation of gates or other security measures.

7. Limit subsurface substances included in lease – Limiting the lease grant to natural gas, and no other substances, may limit surface use by reducing the extraction activities related to non-gas substances in the future. Also, doing so may prevent these non-gas extraction activities from initiating or extending the secondary term of the lease.

C. Compensation for Damages

1. A landowner should consider inclusion of provisions addressing the various types of damages that could occur to the surface estate as well as how to value said damages.

2. A landowner who leases his land for another purpose, such as to a neighbor for the production of agricultural crops, should consider the impact that natural gas drilling will have upon his tenant. Such a landowner should ensure that drilling operations will not adversely impact him in this landlord/tenant contractual relationship.

- D. <u>Restoration of Well Site</u> A lease agreement can require that the land affected by drilling be reclaimed in any matter agreed to by the parties.
- E. <u>Termination of Lease Agreement</u> A landowner can limit long-term surface impacts by seeking to prevent the lease from extending into the future any longer than is necessary. Specific considerations include:

1. Automatic renewal of the primary term -A provision of this nature or one providing for renewal at the option of the lessee will effectively extend the primary term.

2. Clearly defined lease terms – The activities that will cause the primary term to be converted into the secondary term and the conditions that will cause the secondary term to end should be clearly defined.

3. Force majeure clause – The landowner should limit or clarify any force majeure clauses in the lease agreement.

4. Pooling / Unitization concerns – Lease agreements often give the gas company the authority to combine a portion of the lessor's property with parts of other properties to form a drilling unit. Inclusion of even a small portion of the lessor's land within the drilling unit may cause the entire leasehold to be converted into the secondary term. The landowner should consider inclusion of a Pugh Clause to alleviate this concern.

5. Forfeiture and abandonment – The circumstances that constitute forfeiture and abandonment should be clearly defined. The lease agreement also should address the gas company's responsibility to remove all equipment upon the completion of drilling operations.

III. Statutory Protections – Notification Requirements

A. <u>Permitting Requirement</u> – Any party who proposes to drill a new well or alter an existing well must first obtain a permit from the Pennsylvania Department of Environmental Protection (DEP). 58 PA. STAT. § 601.201(a).
B. <u>Submission of Plat with Permit Application</u> – Each permit application submitted to DEP must include a plat describing specified information pertaining to the proposed location of the well. The specific information required to be provided to DEP includes "the name of the surface landowner of record and lessor, the name of all surface landowners or water purveyors whose water supplies are within 1,000 feet of the proposed well location." 58 PA. STAT. § 601.201(b).

C. Provision of Plat to Interested Parties

1. Provision of plat to surface owner of tract upon which well to be drilled – Each permit applicant must send a copy of the plat by certified mail to the surface landowner upon whose land the well will be drilled. This notification is complete when provided to the person to whom tax notices for the property are mailed. The applicant must demonstrate proof of this notification when the permit application is submitted to DEP. 58 PA. STAT. § 601.201(b).

2. Provision of plat to those with nearby water supplies – Each permit applicant also must send a copy of the plat by certified mail to "surface landowners or water purveyors whose water supplies are within 1,000 feet of the proposed well location." This notification is to be provided on forms prescribed by DEP, and proof of compliance with this requirement must be demonstrated to DEP when the permit application is submitted. 58 PA. STAT. § 601.201(b).

D. Objections to the Granting of Permit

1. Submission of objections to the granting of permit – A surface owner upon whose land a well is proposed to be located has the right to object to DEP's grant of a permit on two bases: (1) the siting of the well violates the locational restrictions contained in section 205 of the Oil and Gas Act; or (2) information in the permit application "is untrue in any material respect." Objections must be filed with DEP within fifteen days of the surface owner's receipt of the plat, and a presumption of receipt may exist when notice is provided to the surface owner at the address listed with the county assessment office. If an objection is not filed within the fifteen day time period, DEP will then "proceed to issue or deny the permit." 58 PA. STAT. § 601.202(a).

2. Request for conference to resolve permit objection – A surface owner can request that a conference be conducted under the provisions of section 501 of the Oil and Gas Act to resolve the matters raised in the objection. 25 PA. CODE § 78.21.

E. <u>Renewal of Permit</u>

1. A permit will expire one year from the date of issuance if drilling operations are not commenced unless the permit is renewed. 58 PA. STAT. § 601.201(i).

2. The well operator can request that the permit be renewed for an additional one-year period. Operators must notify surface owners and owners of water supplies within 1,000 feet of the well of this request for renewal. 25 PA. CODE § 78.17.

F. <u>Notification of Commencement of Drilling</u> – After a permit has been granted, the well operator may drill at the precise location specified in the permit upon providing "24 hours' notice of the date that drilling will commence" to the surface owner, the subject political subdivision, and DEP. 58 PA. STAT. § 601.201(f).

IV. Statutory Protections – Well Location Restrictions

- A. <u>Generally</u> Lessors can provide limitations on the siting of wells through provisions in the lease agreement. Pennsylvania law, through the Oil and Gas Act, 58 PA. STAT. §§ 601.101 601.607, and the Oil and Gas Conservation Law, 58 Pa. Stat. §§ 401 419, also provides for restrictions upon the location of wells.
- B. Location Restrictions Under the Oil and Gas Act
 - 1. Distance from buildings
 - a) A well must be located a minimum distance of 200 feet from existing buildings. This minimum set-back may be waived in writing by the owner of the affected building. 58 PA. STAT. § 601.205(a).
 - b) This minimum set-back also may be waived "[w]here the distance restriction would deprive the owner of the oil and gas rights of the right to produce or share in the oil or gas underlying said surface tract." In such a case, DEP may grant a variance upon a showing that additional measures will be taken to ensure the safety of any affected persons or property. 58 PA. STAT. § 601.205(a).

2. Distance from water wells – A well must be located a minimum distance of 200 feet from existing water wells. Just as with the minimum building set-back, this restriction can be waived upon written consent of the water well owner or upon the grant of a variance by DEP. 58 PA. STAT. § 601.205(a).

3. Distance from water course – A well must be located a minimum distance of 100 feet from any stream, spring, body of water, or wetland greater than one acre. This minimum set-back may be waived by DEP where additional measures are in place to safeguard "the waters of the Commonwealth." 58 PA. STAT. § 601.205(b).

C. Location Restrictions Under the Oil and Gas Conservation Law

1. Application of Oil and Gas Conservation Law – This law applies to wells that penetrate the Onondaga horizon or that are drilled to a depth of 3,800 feet, whichever is deeper. 58 PA. STAT. § 406(a). The Marcellus formation is more

shallow than the Onondaga horizon, and thus, this law generally does not apply to wells drilled into the Marcellus formation.

2. Distance from property lines – If a spacing order has not been issued, then wells must be located at least 330 feet from the boundary of the leased property. Where the leased property is included within a voluntary unit, wells must be located at least 330 feet from the closest unit boundary. DEP can waive this requirement after notice and hearing. 58 PA. STAT. § 406(a).

V. Statutory Protections – Restoration Requirements

A. Surface Restoration Requirements

1. Restoration generally – All well owners and operators are required to restore the surface lands that they disturb during the drilling process. 58 PA. STAT. 601.206(a).

2. Erosion and Sediment Control Plans – Appropriate measures must be implemented to address surface disturbances during all "activities related to siting, drilling, completing, producing, and plugging the well." 58 PA. STAT. § 601.206(b). *See also* 25 PA. CODE § 78.53.

3. Restoration of site if well not drilled – When a well site is prepared, but a well is not drilled, the site generally must be restored within thirty days of the expiration of the permit. 25 PA. CODE § 78.65.

4. Restoration after drilling – Well owners and operators must restore the well site and remove all unnecessary supplies and equipment within nine months after completion of drilling. Drilling equipment may remain on the site past the nine-month deadline, however, if the surface owner consents in writing. 58 PA. STAT. § 601.206(c). This nine-month restoration deadline can be extended for an additional six months upon a showing of certain conditions. 58 PA. STAT. § 601.206(g)

5. Restoration after plugging – Similar to the requirement for restoration after completion of drilling, well owners and operators must restore the surface estate and remove all equipment within nine months after plugging the well. 58 PA. STAT. § 601.206(d). This restoration also can be extended for an additional six months. 58 PA. STAT. § 601.206(g).

B. Water Supply Restoration Requirements

1. Restoration generally – Well operators are required to restore or replace any public or private water supplies that are affected "by pollution or diminution." 58 PA. STAT. § 601.208(a).

2. DEP investigation of causation – Any landowner with a polluted or diminished water supply that is believed to result from drilling operations can request that DEP investigate the causation of said pollution or diminution. DEP is required to make a determination of causation within 45 days of the request. 58 PA. STAT. § 601.208(b).

- 3. Presumption of responsibility
 - a) A well operator is presumed to be responsible for polluted water supplies that are located less than 1,000 feet from an oil or gas well if the pollution occurs within six months of the completion of drilling. 58 PA. STAT. § 601.208(c)
 - b) The well operator can rebut this presumption of liability by proving that the pollution existed prior to drilling or that the pollution was caused by something other than the drilling activity. 58 PA. STAT. § 601.208(d)(1) and (5).
 - c) The presumption also is rebutted if the landowner refuses to allow a pre-drill test of the water supply. 58 PA. STAT. § 601.208(d)(2).
 - d) NOTE: The statutory presumption of liability does not encompass diminished water supplies.

4. Specific restoration requirements – Where a well operator has the duty to replace or restore the water supply, the operator must provide "plumbing, conveyance, pumping, or auxiliary equipment and facilities necessary" for utilization of the water supply. 25 PA. CODE § 78.51(f). Bottled water or tank trucks can be used only as a temporary measure. 25 PA. CODE § 78.51(g).

5. Additional landowner remedies – Landowners may seek remedies for the pollution or diminution of their water supplies beyond those provided by DEP. 58 PA. STAT. § 601.208(f).

VI. Recent Case Law Addressing Use of Surface Estate

- A. <u>Restrictions Upon Drilling in Oil Creek State Park</u> Belden & Blake Corp. v. Commonwealth Dep't of Conservation and Natural Res., 969 A.2d 528 (Pa. Apr. 29, 2009).
 - 1. Facts and procedural history
 - a) Belden & Blake Corporation (Belden) owned oil and natural gas leases on parcels within Oil Creek State Park and sought to develop gas wells on the parcels.
 - b) The Department of Conservation and Natural Resources (DCNR), however, would not permit surface access unless Belden complied with a "coordination agreement" that provided for a performance bond and double stumpage fees for removed timber.

- c) DCNR cited its status as a trustee for the Commonwealth's public natural resources as a basis for imposing conditions on the use of the surface estate.
- d) Belden filed suit seeking to enjoin DCNR from interfering with its implied easement to enter upon the parcels to exercise its ownership of the natural gas rights.
- e) The Commonwealth Court ruled in Belden's favor on a motion for summary judgment, and DCNR appealed to the Supreme Court.

2. Court ruling – The Supreme Court, in a 4-2 opinion, affirmed the ruling of the Commonwealth Court in holding that DCNR could not require that Belden comply with the "coordination agreement."

- 3. Court reasoning
 - a) In its opinion, the court first addressed the relationship between the owners of the surface estate and the subsurface estate. The court reaffirmed *Chartiers Block Coal Co. v. Mellon*, 25 A. 597 (Pa. 1893) as the governing law on this issue and relied upon *Chartiers* for the proposition that "an owner of an underlying estate, such as Belden & Blake here, has the right to go upon the surface in order to reach the estate below, 'as might be necessary to operate his estate." *Belden* at 532.
 - b) The owner of the subsurface rights is constrained by the fact that his surface use must be reasonable, but the court found that *Chartiers* places the burden on the surface owner, not the subsurface owner, to file a legal action to challenge the reasonableness of the surface use.
 - c) After finding that Belden's use of the surface estate would be reasonable, the court addressed the impact of DCNR's statutory duties to preserve and maintain natural resources. On this issue, the court ruled that "[a] subsurface owner's rights cannot be diminished because the surface comes to be owned by the government." *Belden* at 532.
 - d) DCNR could negotiate a surface use agreement with the energy company just as a private landowner could do so. If a voluntary agreement was not reached, DCNR could impose conditions only through the exercise of eminent domain, and payment of just compensation would then be required for the diminution of the subsurface owner's rights.

4. Dissenting opinion – Justice Saylor opined that DCNR's status as a custodian and trustee of the Commonwealth's natural resources was a relevant factor in the application of *Chartiers*. As such, the proper inquiry should have been whether the conditions required by DCNR were reasonable.

- B. <u>Restrictions on Drilling in Allegheny National Forest</u> *Minard Run Oil Co. v. U.S. Forest Service*, 2009 WL 4937785 (W.D. Pa. Dec. 15, 2009).
 - 1. Facts
 - a) Pursuant to a settlement agreement to resolve prior litigation that had been filed by an environmental advocacy group, the Forest Service had agreed to perform environmental reviews of proposed drilling on split mineral estates within the Allegheny National Forest. *See Forest Service Employees for Environmental Ethics v. U.S. Forest Service*, 2009 WL 1324154 (W.D. Pa. May 12, 2009).
 - b) Minard Run Oil Company and other plaintiffs argued that the Forest Service did not have authority to require such a review for the drilling of wells to access privately held natural gas interests.
 - 2. Ruling
 - a) The court ruled that the Forest Service did not have the authority to assert regulatory authority by requiring environmental review. This ruling was based, in part, upon Pennsylvania law addressing severed estates.
 - b) The court then went on to state that the Forest Service did have some ability to "prevent undue degradation to the surface estate" by using the framework established in *United States v. Minard Run Oil Co.*, 1980 U.S Dist. Lexis 9570 (W.D. Pa. 1980).
 - c) The court also stated that the Forest Service "retains all of the rights of a servient estate holder under Pennsylvania law, including the right to seek appropriate judicial intervention where necessary to protect its interests."
- C. <u>Damages to Surface Estate</u> *Gates v. Exco Resources, Inc.*, 2010 WL 1416740 (W.D. Pa. Apr. 8, 2010).
 - 1. Facts
 - a) Ronald and Catherine Gates executed an oil and gas lease with Exco Resources in 1998, and subsequently granted pipeline right of ways on the property.
 - b) Three gas wells were drilled on the property in 2001.
 - c) In 2002 and 2003, pipelines were installed on the property to service the three wells on the property along with 67 wells located elsewhere.

2. Claims – Among the many claims asserted in the lawsuit, the plaintiffs sought damages for a devaluation of their property due to improper reclamation of the property following the installation of pipelines.

- 3. Court Findings
 - a) The court agreed with plaintiffs that 20 acres of land had been "rendered almost unable to be used again" due to damaged drainage tiles and the presence of rocks near the transmission lines.
 - b) As a result, the court awarded plaintiffs \$16,000 for the diminution in value to their land.
- 4. Analysis
 - a) Although the plaintiffs had executed a lease agreement and pipeline right of ways, the court did not base its award on a contractual theory. Rather, the court relied upon the gas company's obligation, as expressed in the Restatement (Third) of Property, "to repair and maintain the portions of the servient estate and the improvements used in the enjoyment of the servitude that are under the beneficiary's control, to the extent necessary to . . . prevent unreasonable interference with the enjoyment of the servient estate." Restatement (Third) of Property: Servitudes § 4, 13.
 - b) The plaintiffs' appraiser opined that the amount of damage caused to the devalued land was typical of gas production activities. While Exco argued that this meant that recovery was not permissible, the court found "that his opinion lends credence to the accuracy of plaintiff's loss computation."

VII. Selected Case Law Addressing Various Surface Estate Issues

A. <u>Reasonable Use of Surface Estate</u> – *United States v. Minard Run Oil Co.*, 1980 U.S. Dist. LEXIS 9570 (W.D. Pa. 1980).

1. Facts – Minard Run Oil Company owned oil and gas interests within the Allegheny National Forest. The Forest Service was concerned about the surface impacts caused by Minard Run's drilling activities, and thus, filed suit seeking to restrain these activities.

2. Court ruling – The court granted the requested injunction. Accordingly, Minard Run was prohibited from "engaging, directly or indirectly, in the clearing of well sites and/or road or pipeline accesses thereto" unless appropriate notice was provided to the Forest Service.

3. Recitation of general principles – In its ruling, the court reviewed some general principles governing the relationship between a surface owner and the owner of subsurface mineral interests under Pennsylvania law.

a) Under the basic rule, "the parties must each exercise due regard for the rights of the other, that while the owner of the mineral rights has unquestioned right to enter upon the property for the purpose of access and extracting his minerals, he nevertheless must exercise such rights with a recognition of surface rights and taking appropriate action to prevent unnecessary disturbance to the owner of the surface." (citing *Chartiers Block Coal Co. v. Mellon*, 25 A. 597 (Pa. 1893).

- b) The mineral estate holder's right to use of the surface is restricted "to reasonable use justifiable to related activities essential to the orderly removal of the mineral rights. (citing *Babcock Lumber Co. v. Faust*, 39 A.2d 298 (Pa. Super. Ct. 1944).
- c) "The easement which the mineral owner has over the surface is not limitless and has been stated as not conferring a roving commission to subject any part of the surface through occupation. In other words, the parties should attempt to reach a reasonable accommodation so that each may reasonably enjoy his respective property rights. (citing *Pennsylvania Water and Power Co. v. Reigart*, 193 A. 311 (Pa. Super. Ct. 1937), and *Bowers v. Myers*, 85 A. 860 (Pa. 1912).
- d) There are "three tests to measure the extent of surface use by a mineral owner, viz: (1) the necessity for the use, (2) the customs of the country, and (3) the construction put upon the instruments of severance by the parties by long acquiescence." (citing *Dewey v. Great Lakes Coal Co.*, 84 A. 913 (Pa. 1912).
- e) "[W]here two alternative methods of proceeding are available to the mineral operator, neither of which is of detriment to the mineral operation and one of which is detrimental to the surface owner, the mineral operator must select the method which does not act to the detriment of the surface owner." (citing *Gillespie v. American Zinc and Chemical Co.* 93 A. 272 (Pa. 1915).
- f) Based upon the foregoing authorities, the court concluded that "[a] mineral operator cannot presume to be capable of adjudging without reasonable advance notice to the surface owner and therefore, unilaterally, that his operations will not unnecessarily impair the use of the surface." Thus, the surface owner is entitled to reasonable advance notice of drilling.
- g) "Injunctive relief is a long recognized remedy for the unnecessary occupancy of the surface by the owner of the mineral estate." (citing *Chartiers Block Coal Co., supra*).
- B. <u>Measure of Damages</u> *P.G.W. Assocs. v. Lago de Vita, Inc.*, 10 D & C.4th 490 (Westmoreland Co. Ct. Com. Pl. 1991).
 - 1. Facts
 - a) Pursuant to a valid lease agreement, one acre of trees were removed as a necessary part of the drilling operations.
 - b) The lease agreement stated, "Lessee further agrees to pay lessor for any damage to growing crops, trees and fences, caused by lessee in operating this lease."

- c) Lessor sought damages for the replacement value of the trees (\$265,528) while lessee countered that the appropriate measure of damages was the value of timber (\$2,624).
- 2. Ruling The court limited the damages to the value of the timber.
- 3. Reasoning
 - a) The appropriate measure of damages in a tort action is the replacement cost. This action, however, is based in contract, not negligence.
 - b) The intention of the parties, based upon the lease agreement, was to provide compensation solely for the basic value of the trees.
 - c) For the lessor to recover for the aesthetic value of the trees, it would have been necessary for the lease agreement to provide for replacement cost as the appropriate measure of damages.
- C. <u>Recovery of Gas Through Possible Trespass</u> *Hamilton v. Foster*, 116 A. 50 (Pa. 1922).

1. Facts – Plaintiff Hamilton had executed an oil and gas lease to defendant, in an agreement which prohibited drilling within a certain portion of the land subject to the lease. Defendant ultimately drilled a well within this restricted land. Whether defendant had received permission to drill said well on the restricted land was in dispute.

2. Ruling – The court determined that the gas recovered from the well in question belonged to defendant whether or not he had permission to drill the well at the precise location where it had been drilled. In so ruling, the court stated that "we do not have to decide whether or not title can be acquired by trespass, but at most what recovery can be had against one who, by a trespass, obtains possession of his own property; and certainly this cannot be measured by its value."

D. <u>Abandonment</u> – *See Jacobs v. CNG Transmission Corp.*, 332 F. Supp.2d 759 (W.D. Pa. 2004).

VIII. Reunification of Surface Estate with Subsurface Estate

- A. <u>Dormant Mineral Interest Acts</u> Some states provide a statutory remedy to reunite all, or portions, of the mineral estate with the corresponding surface estate upon the satisfaction of specified conditions. Pennsylvania's Dormant Oil and Gas Act, 58 PA. STAT. §§ 701.1 – 701.7, makes no such provision.
- B. Pennsylvania Dormant Oil and Gas Act
 - 1. Statute was enacted on July 11, 2006.

- 2. Statute was enacted on July 11, 2006.
- 3. Statutory purpose 58 PA. STAT. § 701.2
 - a) "to facilitate the development of subsurface properties by reducing the problems caused by fragmented and unknown or unlocatable ownership of oil and gas interests and to protect the interests of unknown or unlocatable owners of oil and gas."
 - b) "It is not the purpose of this act to vest the surface owner with title to oil and gas interests that have been severed from the surface estate."

IX. Statutory Treatment of Treatment of Surface Owner Rights With Respect to Coal Bed Methane – Establishment of Coal Bed Methane Review Board

- A. Enactment House Bill 1847 was enacted into law on February 1, 2010.
- B. <u>Purpose</u> "To establish an alternative procedure to court action for consideration and resolution of objections to the location of certain coal bed methane wells or roads associated with those wells to be constructed on surface lands and to modify the procedure for review of well permit applications to the extent necessary to allow for the procedure for alternative dispute resolution.
- C. <u>Composition of Board</u> The board consists of a three member board appointed by Governor in consultation with the Pennsylvania Farm Bureau, industry associations, and Penn State.

D. General Procedure

1. Notification – Any coal bed methane operator with plans to drill a well or construct an access road must provide the surface owner with written notification.

2. Objections – The surface owner can file written objections to the location within 15 days of receipt of the written notification.

3. Conference – If objections are filed, DEP will convene the Coal Bed Methane Review Board within 10 days of the date that objections are served upon the well operator.

4. Resolution – At the conference, the surface owner and the well operator will attempt to reach an agreement as to an appropriate location for the well or access road. If the parties are unable to agree, the Board will make a determination as to location.

5. Appeal – An aggrieved party can appeal the Board's determination to the appropriate Court of Common Pleas.

X. Statutory Treatment of Surface Owner Rights With Respect to Coal Bed Methane – Establishment of Coal Bed Methane Review Board

- A. Enactment House Bill 1847 was enacted into law on February 1, 2010.
- B. <u>Purpose</u> "To establish an alternative procedure to court action for consideration and resolution of objections to the location of certain coal bed methane wells or roads associated with those wells to be constructed on surface lands and to modify the procedure for review of well permit applications to the extent necessary to allow for the procedure for alternative dispute resolution.
- C. <u>Composition of Board</u> The board consists of a three member board appointed by Governor in consultation with the Pennsylvania Farm Bureau, industry associations, and Penn State.

D. General Procedure

1. Notification – Any coal bed methane operator with plans to drill a well or construct an access road must provide the surface owner with written notification.

2. Objections – The surface owner can file written objections to the location within 15 days of receipt of the written notification.

3. Conference – If objections are filed, DEP will convene the Coal Bed Methane Review Board within 10 days of the date that objections are served upon the well operator.

4. Resolution – At the conference, the surface owner and the well operator will attempt to reach an agreement as to an appropriate location for the well or access road. If the parties are unable to agree, the Board will make a determination as to location.

5. Appeal – An aggrieved party can appeal the Board's determination to the appropriate Court of Common Pleas.

XI. Introduced Legislation – Surface Owners' Protection Act (H.B. 1155)

- A. <u>Purpose</u> The legislation does not contain a stated purpose, but the preamble identifies the bill as "[p]roviding for duties of oil and gas well operators, for notice of operations and surface use and compensation agreement, for entry without surface use compensation agreement, for restriction on issuance of permits for wells, for attorney fees and costs and for emergency situations."
- B. <u>Basic Provisions</u>

1. A well operator would be required to compensate a non-lessor surface owner fully for damages including:

- a) lost agricultural production and income,
- b) lost timber production,
- c) lost land value,
- d) lost use of and access to the surface owner's land or water sources; and
- e) lost value of property improvements caused by operations
- 2. Surface use and compensation agreement
 - a) The well operator would be required to send a proposed surface use and compensation agreement to the surface owner prior to application for the drilling permit.
 - b) The surface owner could agree to the agreement as presented, negotiate for a modified agreement, or reject the agreement.
- 3. Entry without surface use and compensation agreement
 - a) The well operator could file an application for a drilling permit 45 days after sending the proposed agreement to the surface owner regardless of whether or not the agreement has been executed.
 - b) The well operator would be subject to certain bonding requirements.
- 4. Attorney fees, court costs, and treble damages would be authorized under the legislation.
- 5. Enhanced protection of water supply
- C. Status
 - 1. Introduced on March 31, 2009.
 - 2. Not enacted during 2009-2010 Legislative Session.



The Agricultural Law Resource and Reference Center has been established pursuant to Pennsylvania statute, 3 PA. STAT. §§ 2201-2209, as a collaborative enterprise between The Dickinson School of Law and College of Agricultural Sciences at The Pennsylvania State University together with the Pennsylvania Department of Agriculture. The Center provides information and educational programs on agricultural law and policy for producers and agribusinesses, attorneys, government officials, and the general public. The Center does not provide legal advice, nor is its work intended to be a substitute for such advice and counsel.

EC-564

Legal Affairs

Negotiating Oil and Gas Leases on Indiana Farmland

Gerald A. Harrison

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Disclaimer: This paper is intended for educational purposes only. Individuals with legal interests at stake should consult an attorney who is informed on these matters.

Introduction

Besides the discovery of new accumulations, changes in the price of oil and gas, and advances in technology and deregulation are forces that encourage widespread leasing activity in southern Indiana. Landowners in several Indiana counties continue to have an opportunity to lease or convey the rights to oil and gas exploration and production. Granting of rights to test-drill and to produce oil and gas is an important transfer of property rights.

One might say that the oil and gas producer/lessee becomes a "partner" in business. Landowners should control this relationship through the lease. Landowners should also become fully informed about the rights and duties of oil and gas exploration and producing companies. These rights and desired limitations and the landowners' payments for delays and property damages, and for the actual oil and gas produced should be clearly stated in the lease. Lawyers experienced in dealing with both the landowner and lessee relationship and the production of oil and gas may offer many lease drafting suggestions that may benefit a landowner.

Talk to other landowners (lessors) and learn more about their experiences with exploration and production and the royalties they received. Seek legal counsel experienced in these matters before signing an oil and gas lease. A standard form lease offered by a landman may not offer all that can be negotiated by a lawyer experienced in protecting the landowner interests.

A lawyer can clarify your rights, responsibilities, and risks under a gas and oil lease. For example, the landowner should be concerned about the potential for his or her liability for oil and other types of pollution under federal and state law. Individual landowners with small parcels may join together with neighbors in order to pool resources for hiring lawyer with oil and gas lease and production experience.

The property owner must recognize that the lessee and future owners of the leasing rights have a long- term interest in the property similar to a utility with a right-of-way for an electric power line.

Oil and gas leases are defined for a limited period similar to farmland leases. However, if production is initiated and continues at some acceptable commercial rate, the period of the lease is indefinite. In fact, options under the typical lease can extend the period of the lease when there is little or no production.

In order to have a say about the timing and location of exploration and production activity, well sites, pipeline placement (including laying technique and depth), and roads (including specifics for damages to farmland, crops, and improvements), one should have lease provisions to cover these matters.

However, signing an oil and gas lease with the desired provisions may not be an easy decision. For example, individuals may be concerned about the possibility that production may begin on a neighbor's property that draws from your property.

If land is not under a pooling agreement through an oil and gas lease, the owner of the land will not receive a share of the royalty. In a "wildcat" area (where oil and gas reserves have not been proven), experts suggest that if production begins near your property, there will be a chance for leasing on the "second wave" of activity. With a second wave of activity, lease terms may improve compared with an initial leasing opportunity. The amount of signing bonus, delay rental, royalty, other benefits, and damage provisions provided in the lease may be sufficient to convince a landowner to sign a lease rather than to wait for a better deal. Current and alternative uses for the land to be covered by the lease may be a deciding factor.

Considerations Before Signing

Chances of Discovering Oil or Gas

If the landowner has a good estimate of commercially available oil or gas underlying his or her land and the cost of its production, a more informed leasing decision can be made. With present technology, a test drill site is necessary to detect the presence or absence of available oil or gas. However, existing geological information can show the possibilities of oil and gas discovery. Records and maps exist by counties of prior drill sites and information on current and historical production. Geological consultants or petroleum engineers may review records and maps to develop an understanding of production possibilities and the potential for profitable production.

Maps and publications may be obtained from: Indiana Geological Survey, 611 North Walnut Grove, Indiana University, Bloomington, IN 47405. Phone: 812-855-7636; Bulletin 42-N, Petroleum Industry in Indiana (1995) is available for \$4.00. Also Bulletin 42-I, Coal Resources of Indiana (1973) is available for \$1.50. Postage and sales tax are extra. Additional detailed information is available from individual test well records. Information is available from John A. Rupp, Head, Energy Resources Section, Indiana Geological Survey, phone: 812-855-1323.

Protection of Farmland and Improvements

When oil and gas are discovered and produced, cropping can continue, and landowners and tenants will benefit from minimum damage to the soil and farmland improvements. Farmers should learn the physical needs of exploration and production, such as equipment used, nature of well sites, roads, pipelines, and storage tanks. Farmers and landowners may wish to learn about existing Indiana rules and regulations that govern well drilling, production, and restoration activity. Information on Indiana rules and regulations is available from: **Division of Oil and Gas, Indiana Department of Natural Resources, 402 West Washington St., Rm. W-293, Indianapolis, Indiana 46204. Phone: 317-232-4055.**

Investigation of the Leasing Company

In Indiana, companies can engage in oil and gas leasing without a license, bond, or investigation or approval by any Indiana agency. Landowners may want to seek information on the leasing company's reputation and performance. The initial lessee may be a middleman (landman or broker) intending to sell leases to a drilling company. Ask the company agent for information such as several lessor and producer references and other company information that might be investigated. Farmers can save time and cost by pooling their efforts in conducting such an investigation--perhaps with the assistance of an attorney. A farmers' organization might be helpful in this regard.

Oil and gas leases are usually pre-printed forms which are likely to include terms favorable to the lessee. The lessee would prefer to use a standard-form contract to avoid drafting costs. Further, if leases are not similar, there may be difficulty in evaluating leases for subsequent sale or assignment to a drilling company. However, the lessor should know that any lease form can be modified, perhaps with provisions important to the lessor.

Evaluating Your Neighbors' Decisions

Landowners often follow the lead of neighbors on many important matters. Depending upon the nature of the lease and other facts, this may not be wise in the matter of signing a gas and oil lease. While it is possible that a neighbor's well could draw from a reserve that underlies your property, if there is a nearby "strike," the landowners with unleased land will probably obtain a more favorable oil and gas lease than those who sign early or do not bargain for detailed damage clauses or superior bonuses, delay rents, and royalties. A customary royalty is one-eighth (1/8) of the "value of the production."

It would be wise for the landowner to get an explanation of how the value of production is determined, for example, in the case of natural gas production, what costs may be subtracted before the rate of the royalty is applied. In the case of natural gas, the value of the proceeds may be taken at a point remote from the land to which the lease is applicable. In short, processing and transportation or pipeline costs may be subtracted in arriving at the "value of production."

However, do not overlook the time value of money. Money at an early date may be equivalent to or more than a larger sum at a later date. But an outlook of rising oil and gas prices and higher royalties could convince a landowner that a delay could result in a larger sum in the future.

On the other hand, if a single lessee is unable to obtain a large enough area committed to leases, the lessee may not lease any land in a given area. If too few acres are under lease, the lessee may be unwilling to bear the overhead costs of exploration and test drilling. In effect, they may let the leases obtained go into default under the implied covenants of the lessee to explore and produce. This situation is likely to prevail in a "wildcat" area, which may be the appropriate label for much of Indiana.

Seeking Legal Counsel

In some areas of Indiana, oil and gas leasing activity existed during an earlier period when leases were granted for an indefinite period. Therefore, a landowner may need to check to see if his or her property is not already under an oil and gas or mineral lease. It is possible that a lease already exists that has not been recorded. A lawyer can assist in clearing up any doubt about prior oil and gas leases. However, the leasing company may take steps to check the landowner's title once a lease is signed. Provisions exist in Indiana law to help clear a landowner's title of dormant mineral leases.

In evaluating the legal aspects of oil and gas leases, experienced legal counsel may be helpful in drafting and negotiating specific provisions. Many of the ideas shared in this publication were obtained from the writings of lawyers and other professionals experienced in gas and oil leases and especially with the problems that may arise once the lease is in place and production begins. This publication does not discuss all the concerns that a property owner may have and that a lawyer could help alleviate by drafting provisions into an oil and gas lease for a particular situation. Legal counsel may be helpful after drilling and production operations begin, but covering the major issues in the lease is the best way to handle problems that may arise.

Tax and Estate Planning Considerations

Rental (delay or "shut-in") payments, bonuses, and royalties from gas and oil production are included as ordinary income for federal income tax purposes. However, net royalty income from oil and gas production is reduced for federal income tax purposes by the *greater of* a **cost basis deduction** or a **percentage depletion allowance**. Unless a landowner allots some of the purchase price of his land to oil and gas deposits, there is no cost basis assigned to oil and gas that may be produced. For the lessor, the **percentage depletion allowance** is limited to 65 percent of **taxable income** for the year. The **depletion allowance** for oil and gas is 15 percent. The depletion allowance cannot exceed 100% of the **actual taxable income from the property before the depletion deduction**.

For example, a lessor/landowner has \$10,000 of royalties, taxable income from the oil and gas property of \$9,000 and total taxable income of \$30,000. The **tentative depletion allowance** is \$1,500 (15% of \$10,000). The **taxable income limitation** is \$9,000 (100% x \$9,000) and the **overall taxable income limitation** would be \$19,500 (65% x \$30,000). Neither **limitation** is a factor in this example, so the **depletion deduction** would be \$1,500. In this example, there was no cost basis for newly discovered oil and gas, so the cost basis deduction is zero. Thus the depletion allowance, as calculated, would be the applicable deduction--\$1,500 in this example.

Indiana law provides for a severance tax on the value for all oil and gas. The tax is levied at the greater of one percent or \$0.24 per barrel of oil and one percent or \$0.03 per thousand cubic feet of gas.

Also, Indiana law includes a special procedure for assessing oil and gas for real property tax purposes. Landowners should find out how an oil and gas lease may affect their property taxes. Increases in real estate tax due to gas and oil production may be an item the landowner will want to assign to the lessee.

Both income tax and estate planning may suggest shifting the income rights (if not full ownership rights) of oil and gas deposits to lower income family members. Further, special valuation of farmland for federal estate tax purposes does not apply to mineral rights.

Also, if the land is being acquired under an installment contract, it is likely that neither buyer nor seller independently has the right to sign a binding lease. Mortgages may include a provision that limits the landowner/mortgagor's leasing rights.

Landowners must be cognizant of the fact that once a gas and oil lease is signed, the lessee's mineral rights take on a independent nature. The lease will be recorded at the courthouse in the county where the land is located, establishing an ownership interest in the landowner's chain of title.

Provisions That May Be Negotiable

Mineral Rights and Other Rights Granted

It may be in the best interest of the landowner to be sure that the oil and gas lease is limited in its granting clause to oil and gas and associated hydrocarbons. The lessee's standard lease form may include a grant of "other minerals." Royalties and lease provisions for oil and gas exploration and production may be inappropriate for certain other minerals. It is advisable to negotiate each mineral separately. Likewise, underground storage rights for natural gas should be separately negotiated.

Lessees may also attempt to cover the storage of gas in wells or underground formations. Proper compensation should be provided for storage if this is to be permitted. The landowner may demand a separate payment for lessee pipelines running across his or her property--\$10 a rod may be attainable.

Duration of the Lease

Oil and gas leases are drafted with a stated **primary period** (before production begins). As long as **delay rental payments** are offered or made as promised, drilling or production might not have to begin before the primary period ends for the lease to remain valid.

The lessee may suggest a long primary period, perhaps 5 to 10 years, which the landowner may feel is excessive for exploration or speculation. One to 2 years may be a more favorable primary

period. Landowners who are offered a nominal delay rental of \$1 per acre might favor waiting for a better offer. It is important to recognize that the requirement to have proceeded with drilling is satisfied by drilling on land included in a pool arrangement. The lessee need not have drilled or be producing in paying quantities on a specific parcel to keep that parcel owner bound by a lease. **Dry hole provisions** in a lease may require no delay rentals in the primary term once test drilling begins or during specified lapses between dry holes. Landowners can insist upon a clause which stipulates that the test well(s) must be drilled within a short period of time.

Typically, the **secondary term** (starts with beginning of production) may continue indefinitely while there is production of oil, gas, liquid hydrocarbons, or constituent products in paying quantities. Landowners may seek a lease without a secondary term or other delays rather than a long term lease.

Damage to Crops, Farmland, and Improvements

While oil and gas leases commonly provide payment for damages, it is also true that the lessee has considerable freedom to go on the leased land to explore or drill and produce. Further, Indiana has rules and regulations for well drilling, dry holes, and producing wells. Indiana rules require a \$2,000 bond per test hole or well site. Alternatively, there may be a blanket bond of \$30,000 for all wells drilled by the person for the duration of the bond. Indiana regulations require the drilling company to restore the surface as nearly as practicable to the condition it was prior to the drilling of the well after completion and/or plugging.

The bond is subject to forfeiture should an operator of the well fail in adhering to Indiana oil and gas laws. Funds from forfeited bonds are used to clean up sites on an environmental priority basis. It does not cover damages to fences, tile, crops, roads, soil, and buildings away from the dry hole or well site or to livestock. Additions to the Indiana rules should be in the lease. Following is a list of specific provisions a landowner may consider.

a. Reserve the right to approve the location of drill sites, tanks, access roads, and pipelines. You may desire that a drill site to be a minimum distance from buildings and property lines. The reservation of location of a drill site is important to the landowner in order to maintain the value of his or her property. In fact, the landowner may be wise to limit the lessee to one drill site at a time--with consideration of the operator's performance from a preceding location.

b. Require all pipelines to be buried using the "double ditch" method and below tillage depth, or at a specified depth, such as 36 inches--safely below all possible tillage depths.²

c. Require the drilling company to be accountable to the landowner for damages "to the surface of such lands or improvements or growing crops located thereon," unless the lease provides otherwise. The lease should be specific in making the company liable for "all damages to growing crops, trees, fences, buildings, tile lines, drainage ditches, springs, water wells, any other improvements, livestock, and to the surface of the lessor's property." The Indiana law makes the driller liable to the state of Indiana for various damages, but not necessarily to the landowner.

d. Require fences around all drilling equipment to help protect livestock or children and to prevent vandalism.

e. Require the company to indemnify and hold the landowner harmless from all claims, demands, and legal problems and law suits stemming from activities undertaken by the company or its assignees.

f. Require the lessee or drilling company to carry liability insurance as added security from claims by neighbors government entities and others. Examples of problems that may arise include environmental law violations and interference with agricultural drainage systems.

Bonuses, Rents, and Royalties

A **bonus** (a one-time payment) is the term for the money provided to the lessor in return for the landowner's signature on the lease. It may be the initial year's rent and comparable to the **delay rental** mentioned above, or it may be some amount in addition to a first year's rent. If the modern practice followed the historical practice of only a few weeks or months delay before drilling, the bonus might be the only payment before royalties begin if there is a "discovery" or before there is abandonment and termination of the lease.

Modern practice and negotiations anticipate a delay of a few years before drilling and production or termination. Thus, the bonus and delay rentals may be more significant than in the past, because the landowner may have to lease for a primary term of 3 to 10 years or not at all.

Most landowners will feel that the nominal offer of \$1 an acre as a bonus or delay rental is not sufficient to commit their potential oil and gas reserves for an historic one-eighth (1/8) royalty and risk damage to their property. Even if the damage is obvious, the landowner risks not being adequately compensated. Past reports from within Indiana and nearby states are of bonuses ranging from \$2 to \$300 per acre and delay rentals of \$1 to \$45 per acre. Logically, the greater the expectation of a discovery, the more likely a landowner may get a large bonus and a commitment for a substantial delay rental as well as other favorable provisions in the lease. Also, the higher the quality of the land for cropping purposes, the higher the bonus and delay rental ought to be.

"Royalty" has its roots in England, where that was the term for the share of production from mines or quarries reserved by the crown. In the 19th century, the amount for the landowner from oil production was set at 1/8th, and that is the standard offer today. Royalties up to 3/16 have been reported, but again, bargaining power for a higher than standard royalty may depend upon the expectation of a substantial discovery. Lessees who discover a large quantity available for production are in a better position to share a larger than usual percentage.

Rather than engage in lengthy "haggling," a landowner might agree to a bonus, rental payment, and royalty that appears to be the lessee's limit, but only after obtaining a provision in the lease that requires the lessee to provide the same higher bonus, rent, or royalty that any other landowner might receive in a defined area. Landowners may want to require royalty payments on a monthly basis.

Access to Books and Records of the Drilling Company

The landowner should require a reasonable access mechanism to the books and records of the drilling or producing company so that he or she can evaluate the adequacy of the royalties received and obtain further information. This is another area where landowners might benefit from a cooperative effort to provide for an expert to examine books and records on their behalf, because many landowners may not feel competent to audit lessee information. However, the landowner may find that "division orders" from crude buyers and other industry reports may provide satisfactory proof of the volume or quantity of production from his or her land.

Rights to Free Gas and Water

Leases typically contain provisions for free use by the lessor of gas and water found on the premises. The landowner should require that any water use by the company cannot restrict the supply of water for domestic, livestock, or agricultural purpose, and that the company shall not take water from wells, tanks, ponds, or reservoirs of the landowner. Likewise, the landowner may want to consider provisions limiting free use of gas or other hydrocarbons. However, the landowner or a farm tenant may be able to benefit substantially from the use of a supply of gas. However, because of safety issues, lessees may be unwilling to grant a right to a gas supply for a property owner directly from the production on a given parcel of land.

Lessees will likely limit the lessor's free amount to that sufficient for a residence and will not pay for the pipeline from the well to the residence. A farmer may want to negotiate for the right to additional gas for livestock facilities and grain dryers at an economically advantageous rate.

Pooling Provisions

Most leases allow the drilling company to pool or form a drilling unit with lessor's land in combination with the property owned by adjoining landowners. Thus, when oil or gas is produced from any part of a drilling unit, all owners share in the proceeds in proportion to the amount of property they own in the unit.

As indicated above, pooling provisions may also limit the need to pay a delay rental to all members of a pool when drilling is underway on one parcel in a pool, yet keep all parcels bound under their respective leases at least throughout a primary period. Indiana regulations provide 10-acre drilling units for sandstone reservoirs, 20-acre drilling units for all other reservoirs, and a minimum of 40-acre drilling units for commercial production of natural gas from a reservoir deeper than 1,000 feet. Petitions to modify spacing can be filed with the Division of Oil and Gas.

Exercise caution in granting a company the unrestricted right to pool the leased premises, and in any event, be sure that you understand completely the effect of a pooling provision.

If necessary, submit to pooling in the lease only to the extent necessary to meet the requirements of Indiana law. In all cases, try to negotiate the inclusion of a "Pugh" clause in the lease that provides for the severance of the lease into separate tracts whenever less than all of the premises is included in a single pool or drilling unit.

Consent to Assignment of a Lease

Require that the landowner consent to any assignment of the lease or at least that he or she receive written notification of such assignment. The landowner may also wish to reserve a right to consent to the change of an operator.

Warranty Clause

To avoid possible litigation expenses, landowners should seek to delete reference in the lease that infers they will warrant or defend title to the land. The initial lessee is likely to complete some type of title check and prevent payment of any bonus until he or she is satisfied of a lessor's rights in the mineral interest for a specific parcel. But the lessee may miss or ignore a problem. The lessor under a warranty clause could be forced to defend title at a later date.

Termination of the Lease

If the lessee fails to comply with the stipulations in the lease such as payment of a delay rental, a landowner, with the help of legal counsel and a court proceedings, if necessary, may demand a termination of the lease because of breach. The lessee or his or her assignee may simply "give up" and let the lease "automatically" terminate by the provisions of the lease. It may be useful to have a provision in the lease which requires the lessee to record a release from the lease when it is clear that the landowner is entitled to a termination.

Failure of Implied Covenant to Drill

The law provides implied covenants or promises on the part of the lessee. First, there is an implied covenant to drill test wells within a reasonable time so that the purpose of the lease (production of oil and gas) can be fulfilled. If a landowner convinces a court of a lessee's failure under this covenant, there would be grounds for termination of the lease. This covenant may be more important for lease forms used in past years providing for an extended term without payment of a delay rental. However, this covenant may still apply in Indiana even though the lease permits a delay during the primary period.

Failure of Implied Covenant to Develop

Second, there is an implied covenant to develop the leased premises as long as it might be profitable. This covenant suggests that a lessee must limit the delay following a dry hole if there is reason to believe that another test drill could produce a discovery.

Further, even if there is a substantial discovery, the driller may be compelled to drill additional wells unless he can show that more wells could not be profitable. Of course, lease pooling provisions and Indiana regulations limit the duty of the lessee driller under this covenant.

Seeking Legal Counsel Before Termination

Before attempting to terminate an oil and gas lease, the landowner should consult an attorney as to the proper procedure pursuant to Indiana Code Section 32-5-8-1. If the landowner desires to cancel his lease for failure to drill test wells, he or she must not accept delay rental payments or else the lease may remain in force and not be terminated on grounds of failure to develop. Refusing delay rentals may be most effective when the payments are late.

Taking Possession of a Well

After production operations are complete, drilling companies may offer a "non-paying" but producing well for sale or free of charge to the landowner. When the landowner takes possession of the well, the landowner takes responsibility for plugging the well, which may be expensive; and there may be increased exposure to environmental liabilities. Carefully investigate all the costs and benefits before taking possession of the well.

¹ This publication was revised by a co-author of the 1982 version, Gerald A. Harrison, Extension Economist, Agricultural Economics Department, Purdue University. Owen Mohler, deceased, was lead author of the 1982 draft. Mohler was legal consultant to the Indiana Farm Bureau. John A. Rupp, Head, Energy Resources Section, Geological Survey in Bloomington and a staff reviewer, Division of Oil and Gas, Indiana Dept. of Natural Resources provided numerous suggestions for this revision. Others who supplied useful suggestions or were reviewers include: Ray Ballard, Extension Educator, Floyd County; Jay Ritter, Gallagher Drilling, Inc., Evansville, IN; Marian Pearcy, Attorney, Corydon, IN; David Frette, CPA, Washington, IN and Tom Tucker, CPA, New Albany, IN. A special thanks for professional editing by Laura Hoelscher. Gerald Harrison's address is: Agricultural Economics Department, 1145 Krannert, Purdue University, West Lafayette, IN 47907-1145. Phone: 765-494-4216; Fax: 765-494-9176; E-mail: < harrison@agecon.purdue.edu>.

 2 The "double-ditch" method refers to the practice of separating the top soil and subsoil back and replacing it into a trench in the same profile that naturally occurs. The top soil will be placed on the surface above the subsoil when the trench is filled.

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This material may be available in alternative formats.

NEW YORK STATE DEPARTMENT OF AGRICULTURE AND MARKETS

Guidelines for Construction and Restoration at Natural Gas Well Drilling Sites in Agricultural Areas

The following guidelines shall apply to the construction and restoration of natural gas well drilling pads and access roads constructed on agricultural land. The project sponsor should coordinate with the New York State Department of Agriculture and Markets (Ag. and Markets) to develop an appropriate schedule for inspections to assure that the goals of these guidelines are being met. The project sponsor should also hire an Agricultural Monitor to oversee the construction and restoration of well drilling sites in agricultural lands.

Siting Goals

Minimize impacts to normal farming operations by locating well pads along field edges and in nonagricultural areas where possible.

Avoid dividing larger fields into smaller fields, which are more difficult to farm, by locating access roads along the edge of agricultural fields (hedgerows and field boundaries) and in nonagricultural areas where possible.

Locate access roads, which cross agricultural fields, along ridge tops and following field contours, where possible, to eliminate the need for cut and fill and reduce the risk of creating drainage impacts.

The permanent width of access roads in agricultural fields should be no more than 16 feet to minimize the loss of agricultural land.

All existing drainage and erosion control structures such as diversions, ditches, and subsurface drain tile lines shall be avoided or appropriate measures taken to maintain the design and effectiveness of the existing structures. Any structures disturbed during well pad construction shall be repaired to as close to original condition as possible, as soon as possible, unless such structures are to be eliminated based on a new design.

Construction Requirements

The surface of access roads constructed through agricultural fields shall be level with the adjacent field surface.

Culverts and waterbars shall be installed along access roads to maintain natural drainage patterns.

All topsoil must be stripped from agricultural areas used for vehicle and equipment traffic and parking. All vehicle and equipment traffic and parking shall be limited to the access road and/or designated work areas such as well pads. No vehicles or equipment will be allowed outside the work area without prior approval from the landowner and, when applicable, the Environmental Monitor. Topsoil stockpile areas shall be clearly designated in the field and on the on-site "working set" of construction drawings.

A level and stable surface is required for the drilling rig at the well site. Construction of the well pad can require significant grading of the existing surface. Topsoil should be removed from the drilling site and stockpiled separate from subsoil and other material. Topsoil and subsoil graded from the drilling site should not block natural drainage.

Subsurface drainage can be damaged during the grading of the well site. Provisions for drain tile repair should be included in the easement agreement.

During the drilling operation, water with a high salt content may be removed from the hole and pumped into a brine pit. Brine pits should be covered with several feet of subsoil to prevent salt damage to vegetation after reclamation. Original topsoil must be placed over the surface of the brine pit during reclamation.

During the drilling, a slurry of pulverized rock and clay like material is generally removed from the hole and pumped into a pit on site. The landowner should be aware of how this mud or drill cuttings will be disposed of after drilling. Drilling mud should be removed from active agricultural fields. Drilling mud or cuttings cannot be mixed with topsoil.

Farmland soils with an extended seasonal-perched high water table will sustain a chronic state of wetness throughout the mass of buried drill cuttings. The same condition may also lead to the potential leaching of residual salts within the agricultural soil profile resulting in the loss or reduction in soil fertility, and long-term crop loss. When a well pad and associated drilling operations occur on a site that has a shallow depth to the water table, alternative on-site burial techniques shall be employed. These techniques include temporary, raised earthen berm pits with plastic liner to accommodate the removal of both the drilling fluids and the wet drill cuttings from the site before restoration.

In pasture areas, work areas will be fenced to prevent livestock access, consistent with landowner agreements.

Restoration Requirements

Following construction, all agricultural areas temporarily used for the well pad must be regraded to restore the original contours to the extent possible.

After the well pad is regraded, all disturbed agricultural areas will be decompacted to a depth of 18 inches with a deep ripper (subsoiler) or heavy-duty chisel plow. In areas where the topsoil was stripped, soil decompaction shall be conducted prior to topsoil

replacement. Following decompaction, all rocks 4 inches and larger in size will be removed from the surface of the subsoil prior to replacement of the topsoil.

The topsoil will be replaced to original depth and the original contours will be reestablished where possible. All rocks 4 inches and larger shall be removed from the surface of the topsoil. Subsoil decompaction and topsoil replacement should be avoided after October 1, unless approved on a site-specific basis by the landowner in consultation with Ag. and Markets. All parties involved should be cognizant that areas restored after October 1st may not obtain sufficient growth to prevent erosion over the winter months. If areas are to be restored after October 1st, necessary provision should be made to restore any eroded areas in the springtime, to establish proper growth.

Where farmland on a soil with a high water table has been inadvertently used as a disposal pit for the wet drill cuttings and potential residual salts, the site can be rehabilitated for farming by the re-excavation of the pit, removal of the materials, and subsequent backfilling with soil materials that is consistent with the native soil profile.

All access roads will be regraded to allow for farm equipment crossing and to restore original surface drainage patterns, or other drainage pattern incorporated into the design.

Lime and fertilizer shall be applied to restored agricultural areas where necessary and such areas shall be seeded with the seed mix specified by the landowner, in order to maintain consistency with the surrounding areas.

All surface or subsurface drainage structures damaged during construction shall be repaired to as close to preconstruction conditions as possible, unless said structures are to be removed as part of the project design. Any surface or subsurface drainage problems resulting from construction of the well pad will be corrected with the appropriate mitigation as determined by the Agricultural Monitor, The Department and the Landowner.

Following restoration, all construction debris will be removed from the site.

Two Year Monitoring and Remediation

The Project Sponsor will provide a monitoring and remediation period of no less than two years immediately following the completion of initial restoration. The two year period allows for the effects of climatic cycles such as frost action, precipitation and growing seasons to occur, from which various monitoring determinations can be made. The monitoring and remediation phase will be used to identify any remaining agricultural impacts associated with construction that are in need of mitigation and to implement the follow-up restoration.

General conditions to be monitored include topsoil thickness, relative content of rock and large stones, trench settling, crop production, drainage and repair of severed fences, etc.

Impacts will be identified by the Environmental Monitor through on site monitoring of all agricultural areas impacted by construction and through contact with respective farmland operators and the Department of Agriculture and Markets.

Monitoring and follow-up should include any necessary mitigation of residual drainage problems with effective installation of AASHTO M252 subsurface drain line systems along the perimeter of the overall site and "horseshoed" around and slightly upslope from the burial pit.

Topsoil deficiency and settling shall be mitigated with imported topsoil that is consistent with the quality of topsoil on the affected site. Excessive amounts of rock and oversized stone material will be determined by a visual inspection of disturbed areas as compared to portions of the same field located outside the construction area. All excess rocks and large stones will be removed and disposed of by the Project Sponsor.

When the subsequent crop productivity within affected areas is less than that of the adjacent unaffected agricultural land, the Project Sponsor as well as other appropriate parties, will help to determine the appropriate rehabilitation measures to be implemented. Because conditions which require remediation may not be noticeable at or shortly after the completion of construction, the signing of a release form prior to the end of the remediation period will not obviate the Project Sponsor's responsibility to fully redress all project impacts.

Subsoil compaction shall be tested using an appropriate soil penetrometer or other soil compaction measuring device. Compaction tests will be made for each soil type identified on the affected agricultural fields. The subsoil compaction test results within the affected area will be compared with those of the adjacent unaffected portion of the farm field/soil unit. Where representative subsoil density of the affected area exceeds the representative subsoil density of the unaffected areas, additional shattering of the soil profile will be performed using the appropriate equipment. Deep shattering will be applied during periods of relatively low soil moisture to ensure the desired mitigation and to prevent additional subsoil compaction. Oversized stone/rock material which is uplifted to the surface as a result of the deep shattering will be removed.



Maryland Attorney General's Office Douglas F. Gansler, Attorney General

Leasing Your Land for Natural Gas Drilling - Tips for the Landowner

The discovery of Marcellus shale deposits in Maryland offers the potential for landowners to earn income by entering into leases for the right to drill for Marcellus shale gas on their property. This drilling process is known as hydraulic fracturing or "fracking," where a well is drilled and then a high pressure fluid is injected to break the rock, and release the liquid or gas trapped within. However, Maryland landowners need to beware of highpressure sales tactics and ensure they are not being taken advantage of when entering into leases. Before entering into any lease, the landowner needs to evaluate the impact that the lease will have on the landowner's use of the land, whether the



payment represents the true value of the rights that the landowner is signing away, and the potential environmental damage that could occur to the land and surrounding community.

As with any contract, do not sign unless you fully understand the terms of the agreement. If possible, have the lease reviewed by a land use attorney before entering into the leasing contract. You should also consider consulting with your neighbors to find out whether they have entered into leases and what their experiences have been. The following are some of the items you should be aware of when entering into a lease for drilling on your property:

- Investigate what leasing rights are going for in your area do not rely upon what the company is telling you the rights are worth.
- Make sure the lease and royalty payments are only for the gas extracted from the Marcellus shale if other minerals or shale formations are located, separate leases should be written and signed for those rights.
- Are there deductions? There have been reports of drilling companies deducting the cost of bringing the gas to market from royalty payments. A fair contract should not allow for deductions.

- If trees have to be removed as part of the drilling process, you, as the landowner, should receive any proceeds resulting from timber sales. If more than 40,000 square feet is to be cleared, the landowner needs to be aware of his or her obligations under the Forest Conservation Act.
- What is the actual term length for the lease? Although there may be a set term in place, look out for any provisions extending the lease for as long as actual drilling takes place or automatic renewal provisions.
- Be clear that the contract states the company, not the landowner, should be held responsible for any environmental or other problems that occur from the drilling.
- Review the lease to be sure the lease is very specific about what activity can take place on your land.
- Beware of mandatory arbitration clauses in the lease they can prevent you from taking the company to court in the event problems arise.
- Consider the potential that the drilling and gas extraction process may cause damage to the surface of the land or underground water supplies that may serve as a source of drinking water for you or your neighbors. Additionally, the process will result in increased truck traffic in the community.
- If you have an agricultural or other land preservation easement, or any other property restriction that limits the use of some or all of your property, you should consult with the holder of that restriction before entering into a lease agreement. If you do not know whether your property is restricted or the extent of any restrictions, you should seek competent legal counsel.
- Make certain that the lease provides that the company will record a termination of the lease upon expiration of its term.
- Check to see if the lease provides that the landowner will be notified in writing of the assignment of the lease and will be provided contact information for any assignee. The landowner should know who has rights under the lease and how to contact them.

Governor O'Malley issued an Executive Order on June 6, 2011 establishing an Advisory Commission and requiring a study of drilling for natural gas in the Marcellus Shale in Western Maryland. The purpose of the study is to make sure public health, safety, the environment and natural resources are protected in Maryland. The study has three parts –

- Recommendations for revenue sources and standards for liability for damages, due December 31, 2011.
- Recommendations for best practices for all aspects of natural gas exploration and production in the Marcellus Shale in Maryland, due August 1, 2012.
- A Final Report including environmental, natural resources, safety and economic impacts, due August 1, 2014.

For more information regarding Executive Order 01.01.2011.11 The Marcellus Shale Safe Drilling Initiative, see http://www.mde.state. md.us/programs/PressRoom/Pages/060611.aspx and http://www. governor.maryland.gov/executiveorders/01.01.2011.11.pdf for the Executive Order.

For more information regarding Marcellus shale drilling, please visit the Maryland Geological Survey website at http://www.mgs.md.gov/geo/pub/MarcellusShaleGeology.pdf.



Attorney General Douglas F. Gansler Warns Landowners: Before Signing a Mineral Rights Lease, Check Your Mortgage

Your bank/mortgage lender may need to approve the lease. Latest twist in Marcellus Shale gas leases could put homes and farms at risk

BALTIMORE, MD (Oct. 20, 2011) - Attorney General Douglas F. Gansler is warning landowners that signing a mineral rights lease could conflict with some requirements of their federally-approved home or farm mortgage. To ensure their homes and farms remain safe from legal entanglements, landowners should always check with their bank or mortgage lender before entering into a mineral rights lease.

"Marylanders need to protect themselves from unintentionally putting their homes and farms at risk," said Attorney General Gansler. "If a mineral rights lease is on the table, take it to your bank or mortgage lender first and have them sign off on it."

Landowners in Western Maryland, whose properties sit above the gas-rich Marcellus Shale formation, may be particularly vulnerable. High-pressure sales tactics and a lack of knowledge may lead a landowner to neglect checking with their mortgage lender to make sure a mineral rights lease does not conflict with their mortgage. Over 90 percent of all mortgages in the United States are federally backed by government or government-sponsored entities such as the Federal Housing Administration (FHA), the Federal Agricultural Mortgage Corporation (Farmer Mac), the Federal Home Loan Mortgage Corporation (Freddie Mac), Veteran's Affairs(VA), the Rural Housing Service or Federal National Mortgage Association (Fannie Mae).

According to a <u>New York Times</u> article entitled "<u>Rush to Drill for Natural Gas Creates Conflicts</u> <u>With Mortgages</u>" published today, this little known and previously unexplored issue with mineral rights leases could be exploited by investors interested in shedding so-called "toxic" assets from their portfolios. In so doing, the investors may attempt to return any mortgage investment found to be in conflict with a mineral rights lease. Potentially, such mortgages could ultimately be returned to the original mortgage lender or local bank to be resolved with the landowner.

This warning to landowners is being issued as Maryland works to determine if permitting natural gas drill sites that use the extraction process known as hydrofracturing or "fracking" can be done without adverse impacts to public health, safety, the environment and natural resources. In June, Governor Martin O'Malley created the <u>Marcellus Shale Safe-drilling Initiative Advisory</u> <u>Commission</u> to study the risks and benefits of drilling for natural gas within the Marcellus Shale

formation of Western Maryland over the next two years. The commission is being assisted by the Office of the Attorney General.

In the meantime, the Maryland Attorney General's Office created and distributed two landowner educational publications entitled, *Leasing Your Land for Natural Gas Drilling - Tips for the Landowner* and *Dormant Minerals Interest Act - Questions and Answers*. A third publication addressing mineral-rights leases and mortgage issues is in development. That publication will address the risky and complex relationship between mineral rights leases and federally regulated mortgages, to include:

How a mineral rights lease could breach the terms of an existing mortgage or affect the refinance or sale of property

Most lenders/banks must follow the guidelines established by the major federal loan guarantors (Fannie Mae, Freddie Mac, Farmer Mac, FHA, etc...). Federal regulations and/or provisions of such mortgage contracts may prohibit:

- Transferring any interest (including mineral rights) in the property without the written consent of your bank or mortgage lender;
- Storage, use, disposal, discharge or release of environmentally hazardous substances, specifically gas, on the mortgaged property;
- Locating any existing dwelling within 300 feet of an active or planned drilling site boundary;
- In some cases, leasing surface or mineral rights located within 200 feet of a residential structure.

Title Insurance issues

Title insurance often contains the following restrictions that, if violated, would make it difficult to get title insurance and thus, difficult to get a mortgage or refinance:

- No structures exceeding 3 stories or 35 feet in height shall be erected on the premises;
- Premises shall not be used for storage of any material, machinery, equipment or supplies of any kind;
- Premises shall not be used for any commercial purpose of any kind.

Landowners who have questions may contact the Office of the Attorney General at 410-576-6300.

Attorney General of Maryland 1 (888) 743-0023 toll-free / TDD: (410) 576-6372 Home | Site Map | Privacy Policy | Contact Us

The standard Fannie Mae/Freddie Mac Deed of Trust document recorded for most real estate liens prohibits the homeowner from selling or transferring any part of the property during the term of the loan without obtaining prior written approval from an official of the financial institution holding the mortgage. This includes the oil, gas and minerals found on the property. Any property financed with a State Employees' Credit Union mortgage falls under the aforementioned restriction. Approval of exceptions from State Employees' Credit Union would not be granted due to heightened risk concerns associated with extraction of these natural resources, including hydraulic fracturing technology (otherwise known as fracking or horizontal drilling). Specific, specialty real estate lending laws for North Carolina dealing with these types of transactions should be considered. Any questions relative to this position should be directed to SECU Loan Administration at 1-800-438-1105.

State Employees' Credit Union®



Gas and Oil Leases as they relate to Residential Lending

By Tompkins County Council Of Governments (TCCOG) - Task Force on Gas Drilling Assessment and Land Valuation Subcommittee Primary Contact: Carol Chock, Tompkins County Legislator and Subcommittee Chair Principal author: Greg May, VP, Tompkins Trust Company Residential Lending Collaborators include realtors, appraisers, real estate attorneys and lenders

<u>NOTICE</u>

The information in this presentation relates to the impact of gas and/or oil leases on residential mortgage lending. Consult with a Real Estate Attorney to address specific issues as they relate to a specific property or lease.

No opinion is being expressed or implied on the practice of leasing mineral rights, environmental impact or regulations surrounding gas and/or oil leases (referred to as gas leases or leases hereafter) by the members or presenters of these findings. The issues listed are summarized to highlight potential conflicts for residential mortgage lending in an effort to facilitate consideration of these issues.

Any use of this document or summary points must include the above notice.

- Surface or sub surface rights within 200 feet of a residential structure would not be acceptable for conventional financing in the secondary market per Fannie Mae and Freddie Mac requirements published in their manuals. (Freddie Mac manual section 39.4, various subsections)
- 2) Title insurance is a standard requirement for residential mortgage loans and the secondary mortgage market. In a standard NYS title insurance policy, Schedule B specifically states that it does <u>not</u> insure against loss or damage for a number of reasons. Specific exceptions from coverage include:
 - a. if any structure on the property exists that is over 35 feet tall,
 - b. if the property is used to store any material, machinery or supplies of any nature except during the course of construction,
 - c. if the property is used for any commercial purpose except a professional office in the home.

If standard title insurance is relied upon to secure traditional mortgage financing for a property with a gas lease, the coverage is ineffective to protect against these and other activities authorized and commonly undertaken pursuant to a gas lease.

3) There is not a cost effective or reliable way to determine if a residential property has a gas lease to allow an Appraiser to establish an appraised value based on comparable sales of similar properties. To determine if a property (a comparable) has a gas lease, a title examination of each property would be necessary and add significant cost to each transaction.

- 4) Since there is limited historical data on sales of properties with leases, NYS licensed Appraisers are not able to determine or consider the impact on value or marketability if a gas lease exists as noted it item #3 above. Since the impact on value and marketability can not be determined, the Appraisal would not meet traditional secondary market requirements or commonly accepted lender requirements.
- 5) Section 18 of the standard Fannie Mae/Freddie Mac Mortgage prohibits transfer or sale of any portion of, or rights in, a mortgaged property without prior written consent of the lender and/or Fannie Mae/Freddie Mac. Grant of a gas lease is the transfer of rights in the mortgaged property. This mortgage security document is the commonly accepted and used document for lenders.
- 6) Section 21 of the standard Fannie Mae/Freddie Mac Mortgage prohibits environmental hazardous substances, specifically naming gas, from being stored, used, disposed of, discharged or released on the mortgaged property. The borrower also agrees to not allow another entity to do any of these prohibited actions on the mortgaged property. This mortgage security document is the commonly accepted and used document for lenders.
- 7) Traditional home owners insurance (fire insurance) generally would exclude coverage if a property has active commercial operations occurring on the property. In addition, some companies are now adding "pollution exclusion" language that would not cover seepage or leakage damage coverage as a result of commercial activities.
- Surface or sub surface rights within 300 feet of a residential structure OR within 300 feet of <u>property boundary lines</u> would not be acceptable for FHA (Department of HUD) financing. HUD Minimum Property Standards, section 4150.2.
- 9) Standard gas leases provide the gas company with permanent easements on the property to drill, maintain, operate, plug, use roads, electric, construct pipelines...etc. Such rights survive the term of the lease and would impact the ability for potential future owners to secure traditional financing for the reasons noted above.
- 10)Gas leases are, at times, pledged by the holder of the lease, to secure financing for the company with a lien being placed on the property's sub-surface rights. These liens may impact the ability for a homeowner to sell or use the property as security for traditional financing since many municipalities and title companies are not able to separate surface and sub-surface ownership and liens in an effective way. A standard title search that shows such liens would create confusion or delay in distinguishing between the homeowners and gas companies rights in the property.
- 11)Lenders are responsible to warrant that loans they sell in the secondary mortgage market meet investor requirements. If a lease exists on a property, it would be difficult for a lender to warrant the loan meets all investor requirements.



Lease Extensions and Force Majeure

By Brett Chedzoy (bjc226@cornell.edu)

After an enjoyable lull in correspondences related to natural gas issues, it has come to my attention that there are two new issues in Southern Tier relating to lease extensions. Some landowners with EOG leases have recently received notification that the company is choosing to exercise their option to renew the lease for five more years under the original conditions. If your lease contains this option clause, then it will likely be renewed. However, before cashing the check that comes with the letter (an act that "seals the deal"), it would be prudent to consult an attorney and have them review the fine print in your lease to see if you are in fact obligated to grant the extension. If not, then now would be the right time to re-negotiate your lease, or make sure that it has expired if you choose not to release.

And speaking of lease expiration, other landowners have recently received letters stating that their leases with Chesapeake will be extended for one year due to "force majeure". Force majeure ("Act of God") is a common lease clause that allows a gas company to extend the agreement due to delays beyond their control. Chesapeake's position is that New York State's effective moratorium on shale drilling practices has prohibited them from acting on leases. Landowners coalitions, on the other hand, contend that regulatory delays are not force majeure and that companies have had uninterrupted opportunity to act on leases by drilling in other non-shale gas formations or by drilling "conventional" vertical wells.

The state Attorney General's office is currently negotiating with Chesapeake over this practice, and I care not to guess which viewpoint will prevail. But if you receive a letter exerting force majeure, do not automatically assume that you are obligated to accept the extension. The Tioga (www.tiogagaslease.org), Schuyler (www.schuylerloc.org), and Steuben (www.scloc.com) landowner coalition websites offer specific legal advice on addressing force majeure letters and steps to ensure that a lease has expired. Most importantly, don't cash a check that you receive in the mail from your leaseholder until you know why you have received a payment. Doing so may unintentionally commit you to an unwelcomed extension.



ATTORNEY GENERAL

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August 15, 2008 FOR IMMEDIATE RELEASE

CONSUMER ALERT

MINERAL OWNERS MAY BE TARGETS OF MISLEADING INFORMATION THAT CAN COST THEM THEIR MINERAL RIGHTS

(BATON ROUGE, LA)—The Louisiana Attorney General's Office is warning consumers about misleading documents that can cost mineral owners their mineral rights.

If you are a mineral owner and receive a letter in the mail, with a check included, requesting that you sign a document that appears to be a mineral lease, you should be *extremely cautious* because you may be permanently signing away valuable mineral rights without realizing it.

The document you are asked to sign may actually be a mineral deed with a general Power of Attorney. If you sign the document, the Power of Attorney might be used to amend the document, after you sign it, to reflect that all mineral assets, even those already in production, are turned over for very little money.

The Attorney General's Consumer Protection Section urges any consumer who receives such documents in the mail to check the offer out with an attorney *before* signing anything.

This is just one example of the type of issue that can come up during a mineral lease or sale transaction. The Attorney General encourages all property owners in
Louisiana to seek legal advice before signing any documents relating to the sale or lease mineral rights.

If you believe you may be the victim of a mineral lease scam, please contact the

Attorney General's Consumer Protection Hotline at 1-800-351-4889.

-END-

MARCELLUS EDUCATION FACT SHEET



Avoiding and Mitigating Soil Compaction Associated with Natural Gas Development

Atural gas well development is an increasingly common sight across Pennsylvania's farms and forests. While the landowner may receive potentially lucrative financial returns in terms of lease and royalty payments, understanding the short- and long-term impact of well drilling and pipeline installation activities on your soils and their future productivity is important.

Compaction, the Invisible Thief

Soil compaction is the reduction of soil volume due to external factors; this reduction lowers soil productivity and environmental quality. While Pennsylvania farmers have long understood the impact of increasingly heavier agricultural field equipment, this pales in comparison to the magnitude of size and weight of equipment commonly used by the natural gas industry. Complicating factors related to soil compaction include differences in soil types and their associated drainage characteristics, the volume of topsoil and subsoil disturbed in the drilling and reclamation process, and weather conditions (i.e., soil moisture during development activities). Distinguishing between topsoil and subsoil compaction is important. Topsoil compaction is likely to severely reduce plant productivity in the short term, whereas subsoil compaction is likely to

modestly reduce productivity for decades in the future. Surface compaction is caused by the contact pressure (determined by tire pressure) while subsoil compaction is caused by axle load (very high in gas drilling operations). Topsoils are subject to freeze-thaw and wettingdrying cycles and biological forces such as root growth and macro- and microbial activity that can alleviate the effects of soil compaction over time. However, this is not the case for subsoils. Research shows that subsoil compaction is not alleviated by freeze-thaw and wettingdrying cycles on any soil type and can lead to potential environmental degradation caused by decreased water percolation. This will cause increased periods of saturated conditions in the soil and increased surface runoff. Due to lack of aeration, root growth and biological activity will be inhibited in saturated soils. Runoff will cause increased erosion and nutrient and pesticide losses to surface waters. Refer to the publications listed at the end of this fact sheet for a more extensive discussion and understanding of these issues and the soil properties involved.

Soil Compaction and Your Gas Lease

Only you can decide if signing a natural gas lease is right for you. Undoubtedly, many things will affect your decision, and it is im-



portant to carefully consider how a lease may affect your personal finances, the value of your remaining property rights, and the future productivity of your land. While topsoil compaction can have an effect lasting from one year on sandy soils to five years on clay soils, deep subsoil compaction is virtually permanent on all soil types and should be avoided at all costs.

If you decide to lease, there are a number of important addenda that you should try to negotiate into your lease agreement to minimize the extent of soil compaction and alleviate it as much as possible where it does occur. These addenda should be clearly stated in the lease agreement before you sign it. Utilizing the services of an attorney familiar with natural gas lease agreements can be valuable in ensuring that you have the best lease agreement for your specific concerns.

Suggested addenda include:

- Clear owner input and approval of well sites, access roads, pipelines, and associated tanks, compressors, etc., limiting the area affected by drilling and pipelinelaying activities; limit drilling activities to periods of expected drier soil conditions—remember that late winter/early spring is usually the time with the highest soil moisture conditions
- Clearly defined terms for repairs on damages to existing tile drainage and the potential need for new tile systems
- Restoration of soil surface to original or improved contour
- Alleviation of severe compaction by subsoiling (done by the lessee prior to replacing topsoil); subsoiling operation should be as deep as compaction depth

Strategies for Dealing with Previously Compacted Areas on Existing Well and Pipeline Sites

For many, preventative measures to limit soil compaction are no longer an option and the only course of action is attempting to alleviate existing compaction. This generally involves identifying where and how deep the layer(s) of compacted subsoil are using a penetrometer or test pit, determining the most appropriate deep tillage tool to attempt fracturing those layers, and designing a management plan to use appropriate vegetation and/or cropping strategies to prevent future compaction.

It is important to remember that alleviation and fracturing of deep subsoil compaction involves the use of heavy equipment and the horsepower required to pull it. Subsoiling will also bring up rocks and may not be desirable in excessively rocky soils. Choices of tillage shanks include straight and parabolic shanks capable of reaching the compacted layer. In the case of soil that has been severely compacted and disturbed, using parabolic or straight shanks with wide tips is recommended.

Surface disturbance by subsoilers needs to be limited in normal agricultural operations, but this is not a concern on disturbed sites that need to be leveled. Parabolic shanks take less power to pull and cause more disturbance of the soil, which in this case is the desired effect. To cause fracturing, the subsoiling operation should be done at optimal soil moisture conditions, which is neither too wet (no shattering would be caused) nor too dry (to avoid pulling up big blocks of soil that need to be pulverized by secondary tillage). These deep tillage treatments should not exceed 30 inches apart. Remember that there is no justification for attempting to fracture below the compaction layer. To avoid deep tillage efforts under wet conditions, the best time to subsoil is in summer or fall.

Reestablishing vegetation on disturbed sites is critical for minimizing erosion, developing new macro channels resulting from roots and their decay, and rebuilding soil organic matter. Remember that the effects of subsoiling are



temporary-the pore space created by subsoiling operations needs to be occupied by living roots and biological organisms to remain in effect. Cropland options will vary with the time of year; perennial forage vegetation is appropriate for spring and early summer. Forage radish also shows potential for establishing deep, short-lived taproots. Fall grains are best suited for autumn planting. Reforestation efforts and perennial grass plantings should be discussed with a qualified professional forester, biologist, or extension educator.

In some cases, landowners have deliberately decided that certain affected areas are not worth the cost of restoration and are better utilized as temporary storage sites for round bales or silage bales/bags. In other cases, these areas have been left to revert or developed for wildlife habitat. Depending on the location and accessibility of the affected site, this is often the most economical and logical use of these sites.



Additional recommended sources of information are available through the Penn State Cooperative Extension office in your county or on the Penn State College of Agricultural Sciences Publications Web Site (**pubs.cas.psu.edu**). The following extension publications may also be helpful:

- Effects of Soil Compaction
- Avoiding Soil Compaction
- Diagnosing Soil Compaction Using a Penetrometer (Soil Compaction Tester)

Prepared by Sjoerd W. Duiker, associate professor of soil management and applied soil physics, and Gary W. Micsky, associate extension educator in sustainable agriculture and natural resources.

Put Our Experience to Work for Your Community

The Penn State Cooperative Extension Marcellus Education Team strives to bring you accurate, up-to-date information on natural gas exploration and drilling in Pennsylvania. Learn about your rights and choices as a landowner, a businessperson, a local official, or a concerned citizen. Discover the resources available to you.

Visit naturalgas.psu.edu.

Penn State Cooperative Extension

Penn State Cooperative Extension has a special mission-to enable individuals, families, communities, agriculture, businesses, industries, and organizations to make informed decisions. Through a system of county-based offices, we extend technical expertise and practical, how-to education based on land-grant university research to help Pennsylvanians address important issues, solve problems, and create a better quality of life. From improving agriculture and building stronger communities, to developing skills with today's youth, we are dedicated to giving Pennsylvanians the means to grow, achieve, compete, go farther, and do more. Learn what extension can do for you. Contact your county cooperative extension office or visit www.extension.psu.edu.

The Agricultural Law Resource and Reference Center

The Agricultural Law Resource and Reference Center is a collaboration between Penn State's Dickinson School of Law and Penn State's College of Agricultural Sciences. Located at both the University Park and Carlisle facilities and funded in part by the Pennsylvania Department of Agriculture, the center is designed to provide the highest-quality educational programs, information, and materials to those involved or interested in agricultural law and policy.





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MARCELLUS EDUCATION FACT SHEET



Forest Landowners and Natural Gas Development: Timber Resources

ennsylvania's forests are an D important renewable natural resource and include some of the nation's most commercially valuable hardwood species. However, they are more than just an economic resource. Pennsylvania's forests provide, among many things, recreational opportunities, wildlife habitat, quality water, and clean air. Forests cover approximately 17 million acres, or nearly 60 percent of the state. Most of this is in hardwood species, including oak, cherry, maple, birch, ash, hickory, and poplar.

The largest share of Pennsylvania's forests are in private ownership, with more than 700,000 owners accounting for almost 70 percent of the forested acreage (12.5 million acres). Private forest landowners provide the bulk of the wood and other raw material needed for the state's forest products industries, which have a presence in every county. This industry leads the nation in the production of high-quality hardwood lumber used in furniture, cabinets, interior furnishings, and flooring.

Taking into consideration the values and benefits of the timber resource is important when negotiating a natural gas development lease. This is especially important if the landowner wishes to maintain some control over surface activities. Road construction, compensation for timber removal, and site restoration are all factors to address before signing a lease.

Natural gas development will require constructing or widening roads, developing openings for well pads, and clearing for pipeline rights-of-way. On forested land these activities will involve tree removal. Ensuring fair compensation for timber is an important consideration to address in the lease before any development occurs. If it is not in the lease, landowners will have little to say in how the developer treats their timber resource.

Compensation for Timber Removals

How does a landowner ensure fair compensation for trees removed during normal natural gas development clearing operations?

Timber is a landowner asset. Tree removal is necessary to allow drilling equipment access and placement. Trees removed for road, well site, and pipeline construction should yield the owner fair compensation.

To protect the landowner's interests, all roads, pipelines, and drilling locations should require landowner approval prior to beginning construction. Ensuring this through the lease allows the landowner to protect important areas. Landowners should work with the gas companies to establish locations that meet both parties' goals. A consulting forester working for

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the landowner can assist in making these decisions.

The lease should stipulate that the landowner receive adequate advance notice before the developer removes any timber. This allows the landowner time to review proposed locations and negotiate adjustments if needed. Require that all areas designated for timber removal be clearly marked and designated on the ground. When individual trees are designated for removal they should be marked with paint at eye level and with a mark near the ground that will remain on the stump following harvest. This includes all trees to be removed during road construction, well site, and pipeline right-of-way clearing. Doing this ensures that only timber that is absolutely unavoidable for gas development operations are taken.

After agreeing on and marking trees for removal, it is time to determine their value. Their value is best determined by an experienced third party, such as a consulting forester, using fair market value based on current standing timber prices. Timber values vary by species, size, quality, current markets, and location. There are two options at this point. The owner may choose to submit this estimate to the lessee for payment before cutting, or market the timber through competitive bidding.

Upon payment to the landowner, the trees are the lessee's property. The harvest agreement should specify that the timber be cut and removed within a set time frame, or ownership reverts back to the landowner. Generally, one year is sufficient for the lessee to remove trees. If the trees are not removed within that time period, the landowner will have the option of marketing the trees to other potential buyers.

The second option is to sell these trees using a competitive bidding process where multiple buyers compete. This approach may yield a higher return since an outside buyer, other than the lessee, is purchasing the timber. In this case, sufficient time for the buyer to cut and remove the trees is absolutely necessary. It is not uncommon for the bidding and harvesting process to involve a one- or two-year contract. It is essential to work with the developer to define required clearing needs well in advance of any clearing operations.

Damaged Timber

How does a landowner address timber damaged beyond designated areas?

Careless removal of designated timber may cause excessive damage to trees outside the agreed-on removal areas. Damage includes bark damage and top breakage to standing trees as well as taking trees not designated for removal. Severe root damage due to pipeline and road construction activities is also likely and may be included. The lease should specifically explain damage assessment and compensation rates.

A minimal amount of damage to trees standing outside the designated areas is to be expected during gas exploration and timber harvesting operations. However, careless or negligent operations can cause excessive damage or destroy residual trees. Determining the extent of damage and the value of trees outside designated areas will generally require a professional forester and may involve arbitration. A common approach is to require double- or triple-value payment for trees excessively damaged outside the designated removal areas. For merchantable and nonmerchantable trees valued at less than \$5.00, a minimum charge of \$5.00 is commonly applied.

Trees removed from outside agreed-on areas pose another situation. In these cases, timber trespass rules may apply. Pennsylvania's timber trespass law provides guidelines in these situations. The timber trespass law provides for single-, double-, or triple-value payments depending on the intent of the person who removed the trees.

During pipeline and road construction top soil is often disturbed, compacted, or removed. Tree root damage is common with these operations and should be considered in the lease. Root damage is not always immediately apparent. The landowner should consider negotiating payment for trees with severe root damage and clearly specifying this in the lease. One approach is to negotiate payment for and removal of every tree lying within a specified distance of the designated rights-of-way. This will increase the size of the clearing but minimize the amount of root damage to trees standing along edges. Generally, few trees will be affected by increasing the rights-of-way width.

Disposal of Woody Materials Not Sold or Utilized

How does a landowner address logging slash and other woody debris disposal resulting from normal clearing operations?

Again, natural gas development operations involve creating or widening roads, clearing well sites, and installing pipelines. These operations will produce large amounts of debris, including large rocks, stumps, tree tops, limbs, brush, and other forest growth. Landowners may want to have control over the disposal of this material. Most nonmerchantable material is simply pushed off the low side of the road or clearing and left to decompose naturally. Alternatives may include burying debris on site, chipping and scattering the material, burning, pushing debris into wind rows and brush piles for wildlife, or requiring the lessee to haul debris off site. Restrictive and costly debris disposal requirements will affect payments received under the lease agreement.



Upon expiration/termination of the timber sale agreement all woody debris not sold, utilized, or moved off site by the lessee becomes the landowner's property. This may provide the landowner an opportunity to process or sell any merchantable material left on site. Often this material is suitable for firewood or other low-value products.

Precommercial Stands

What if the timber slated for removal is not yet commercial size?

Generally, the fair compensation for precommercial-sized trees equates to their replacement value. To establish this value:

- 1. Determine the number of years invested in establishing and growing those trees. Understand that more years invested should yield a higher value.
- 2. Account for expenses in planting, herbicide treatments to control competing vegetation, or fencing to keep deer out.
- 3. Consider the tree species involved, as this will influence their value.
- 4. Find out whether incentive payments must be paid back if you received government cost-share assistance to establish or manage these areas.

Protection

If a landowner wants to protect rare or unique timber stands, how must these areas be recognized?

Landowners can often recognize rare and unique timber stands. These areas might include a stand of eastern hemlock along a stream or a patch of ridge-top white oak. In other cases, a landowner might want a natural resources management professional to evaluate a property for special places to protect. These areas might include old growth or rare combinations of species providing habitat for endangered plant and wildlife species. To protect these areas a landowner must plan ahead and identify them before negotiating a natural gas development lease. The best way to identify these areas is to have a qualified natural resources professional develop a forest management plan for the property. A good forest management plan will identify, describe, and map rare and unique timber stands as well as do a search on the Pennsylvania Natural Diversity Inventory for any threatened and endangered plant and animal species. A listing of qualified forest management plan writers is available from your Pennsylvania Bureau of Forestry county service forester.

Using your forest management plan as a guide, create an addendum to the lease agreement ensuring that these areas are left undeveloped. The landowner may also wish to define buffer areas around these rare or unique timber stands to provide them further protection. For example, the landowner might specify a 50- or 100-foot buffer where no disturbance can take place. With this information written into the lease agreement, the lessee is better able to decide on appropriate locations for natural gas development activities.

Conclusion

Landowners need to address many factors before signing a natural gas lease. A natural resources management professional or a consulting forester can provide advice on how to sell timber designated for removal, protect rare plant and animal species, and minimize disturbance to unique areas during the exploration and development process. These professionals can help limit detrimental environmental impacts on a property. Before signing any lease, see an attorney experienced in gas leases. For more information related to natural gas development, visit the Penn State Extension Natural Gas Web site at naturalgas.extension .psu.edu.

Additional Resources

Many sources of additional information about forest resources are available. Some are listed below.

Penn State Cooperative Extension

- Natural Resources Extension: rnrext.cas.psu.edu
- Natural Resources Publications: rnrext.cas.psu.edu/publications .htm
- Timber Market Report: www.sfr .cas.psu.edu/TMR/TMR.htm
- PA Forests Web Seminar Center: rnrext.cas.psu.edu/PAForestWeb
- Water Resources: water.cas.psu.edu
- Natural Gas Resource Program: naturalgas.extension.psu.edu

Pennsylvania DCNR Bureau of Forestry

• Private Forest Landowners: www .dcnr.state.pa.us/forestry/privatelands.aspx

Pennsylvania Department of Environmental Protection

 Bureau of Oil and Gas Development: www.dep.state.pa.us/dep/ deputate/minres/OILGAS/oilgas .htm

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Put Our Experience to Work for Your Community

The Penn State Cooperative Extension Marcellus Education Team strives to bring you accurate, up-to-date information on natural gas exploration and drilling in Pennsylvania. Learn about your rights and choices as a landowner, a businessperson, a local official, or a concerned citizen. Discover the resources available to you.

Visit naturalgas.psu.edu.

Penn State Cooperative Extension

Penn State Cooperative Extension has a special mission-to enable individuals, families, communities, agriculture, businesses, industries, and organizations to make informed decisions. Through a system of county-based offices, we extend technical expertise and practical, how-to education based on land-grant university research to help Pennsylvanians address important issues, solve problems, and create a better quality of life. From improving agriculture and building stronger communities, to developing skills with today's youth, we are dedicated to giving Pennsylvanians the means to grow, achieve, compete, go farther, and do more. Learn what extension can do for you. Contact your county cooperative extension office or visit www.extension.psu.edu.

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MARCELLUS EDUCATION FACT SHEET



Questions Citizens and Local Leaders Should Be Asking

t is difficult to predict the specific long-term social, economic, environmental, and policy impacts of natural gas drilling and development associated with the Marcellus shale deposit. However, experience in other regions of the United States suggests the issues and impacts from such developments can be far reaching and profound for people and places. Because of these potentially broad and widespread impacts, it is essential for local leaders and citizens of affected communities to consider as many of these issues as possible-both negative and positive. While some impacts and consequences may be problematic, the Marcellus shale development also affords opportunities for communities to positively shape their long-term development, sustainability, and quality of life.

The following issues and questions highlight concerns local leaders and citizens should consider, based on the impacts experienced by communities across the United States with natural gas and other energy-related development, particularly in Texas, Wyoming, and Colorado. How communities within the Marcellus shale region will be affected is yet to be seen, but the lessons learned from other regions provide a valuable starting point for identifying areas in which local leaders and citizens can anticipate and begin planning for potential changes resulting from the development and extraction of Marcellus shale gas.

Because this list seems daunting, the end of this publication provides ideas and steps to take that will help local leaders and citizens take action. These steps can provide a foundation for taking actions that will assist with assessing, monitoring, and planning for potentially positive and negative impacts of natural gas development.

Population Changes

Communities experiencing natural gas development and extraction are likely to experience population increases associated with both shortand long-term labor migration. Most labor increases occur in the early phases of development (the predrilling or exploration phase and in the drilling phase). The laborers associated with these initial phases are a combination of temporary and resident workers. The majority of workers will be transient crews skilled in specific stages of exploration or drilling (including drilling, hydraulic fracturing, and pipeline construction) and include engineers, landmen, and roughnecks on the drilling rigs. These crews travel around the country as assigned by the operator for whom they work and typically rotate on and off the jobsite weekly. These workers tend to be male, between the ages of twenty and forty, and represent a mix of ethnic backgrounds. The number of local work-



ers hired depends on the presence of the needed skills (such as mechanics, construction workers, heavy equipment operators, etc.) within the local labor force.

The population is likely to fluctuate; initially, there will be a large spike as transient, temporary, and permanent workers arrive to work in the industry. Over time, transient and temporary workers will leave, but an overall increase in population related to permanent settlement and economic growth stemming from the energy industry can be expected. The implications of these population changes can affect the provision of services, labor force availability and skills, and local infrastructure. Below are some questions local officials and citizens need to ask.

Housing Considerations

Will the increase in temporary and permanent population create a strain on the availability and affordability of housing? Are there sufficient temporary housing facilities, such as hotels/motels, trailer parks, campgrounds and RV parks, and rental units? Are there sufficient permanent housing options for workers who want to settle into the community? How can the community prepare to meet the needs of those families and individuals who will not be able to find or afford a home? If additional housing is needed, how will the community absorb unoccupied units when temporary workers leave? Are there effective land-use planning procedures in place to manage the potentially rapid addition of housing developments?

Physical Infrastructure Considerations

Will the increase in population and/ or housing development increase demands on water, sewer, roads, telecommunication, and other physical infrastructure? What can be done to prepare for such increased demand? Are current facilities at a stage where such increases could push equipment and structures past their capacity, requiring investment in additional facilities? How can counties and townships prepare for the increase in traffic associated with the drilling and extraction activities (particularly heavy truck traffic) and short- and long-term economic growth?

Emergency and Community Service Considerations

How will local municipalities handle increased demand for emergency services such as police, fire, medical, and hazardous materials teams? How can first responders prepare for a new set of potential injuries associated with drilling and pipeline construction? What additional training or information is needed by first responders to be prepared for the types of situations they might encounter related to natural gas drilling and extraction (including hazardous materials and injuries)? Do first responders have the communication operations necessary to find and get to well and pipeline sites in the event of an emergency? Do emergency services personnel have enough of the right equipment for gas-related situations? How can emergency-preparedness committees and organizations plan for the potential increase in service runs and equipment needs? How can police services and the judicial system prepare for a potential increase in criminal activity, particularly that related to substance abuse? How can medical providers prepare for increased demand for both emergent and preventative services? Could some of the costs associated with this increased demand for specialized emergency service be compensated with funding from the natural gas industry?

Considerations for Schools, Community Agencies, and Organizations

How will local schools respond to potential population and enrollment increases with regard to both personnel and infrastructure? Does the school system have the capacity to address new children's needs, especially the particular needs of children whose families are temporary residents? How can the school systems and other organizations prepare for the possibility of a more diverse ethnic and socioeconomic community? How can local service agencies plan for increases in the number of preschool-aged children (such as day care, preschools, early intervention, and special needs)? How can community leaders take advantage of the growth in the energy industry to create economic and social opportunities for young adults that will keep them in the community?

Considerations about Community Dynamics and Relationships

How can local leaders and community residents prepare for the increase in number of people and the change in the composition of the local population? How can new residents be integrated effectively into the community? Can community organizations create opportunities for engaging new and long-term residents? How will community organizations and local governments assess and address the needs of both long-term and new residents (transient, temporary, and permanent)? What planning should be done to address needs of populations that may be particularly at risk in times of financial change and uncertainty, such as the elderly, poor, and youth?

Economic and Fiscal Changes

With an estimated \$500 billion in recoverable natural gas from the Marcellus shale, the economic impacts of its development are expected to be extensive. The influx of income is expected to generate thousands of new jobs, spur population growth, and boost gross state product and real disposable personal income, particularly for those working within the industry and those with leased land.

Because of current Pennsylvania tax law, however, any direct increases in tax revenue are unlikely to be realized by the local jurisdictions (municipalities, counties, and school districts) where the largest impact on local services are likely to be felt. In addition, local businesses whose employees have similar skills to those used in natural gas production and extraction (such as diesel repair and welding) are likely to face worker turnover, difficulty finding employees, and increased payroll costs. Inflation, increased cost of living, and lack of services are problems confronting communities with natural gas development in other parts of the country.

Issues for Landowners

How can those who receive income from lease payments and royalties be prepared to manage this income? What systems can be put in place to encourage wealth management and succession planning? How will Pennsylvanians who receive lease payments and royalties be encouraged to spend and invest locally, capturing more of the income for local growth and development? How will those who own forested or agricultural land be able to incorporate the natural gas development into their long-term plans for the land? Can those benefiting from this newfound wealth be encouraged to be philanthropic within their communities?

Considerations for Existing and New Businesses

How can local businesses compete for the new business opportunities arising from natural gas? How will local entrepreneurs meet increased demand for goods and services? How will businesses in other economic sectors compete for key resources, such as land and skilled workers, that are in demand for natural gas development? How can these other businesses position themselves to be attractive for investment and growth stemming from new local wealth? How can the tourism industry-very important in some regions of the Marcellus shale-mitigate the impact of natural gas development on potential tourists' perception of the region as well as availability of key resources (such as hotel space and campgrounds)? How can economic development efforts both build on growth in the natural gas industry and foster other local businesses to create strong, diverse local economies that will be sustained after the drilling is completed?

Considerations for Workers and Workforce Development Programs How can Pennsylvania's workforce position itself to be the first choice of employers to fill gas-related jobs? How can school districts, community colleges, technical schools, and workforce development corporations rapidly train the number of workers needed within the natural gas industry? How will workers in other industries-particularly in low-wage jobs in the retail and service sectors-adjust to potential increased inflation and cost of living caused by worker demand within the natural gas industry? Will the relatively high wages paid by the gas industry make competing for high-quality labor harder for local business?

Considerations for Local Government Officials

How can local governments (counties, townships, boroughs) plan for the potential increase in demand for local services, particularly with little or no additional revenue? How can local governments that own land maximize their return on the leasing of the gas rights? How can local governments manage the revenue in a way that will increase the fiscal health of township, borough, or county and protect the interests of its citizens, both now and in the future? Do local governments have the capacity and planning mechanisms in place to anticipate and respond to land use and subsequent municipal service costs?

The impacts of Marcellus shale development will most likely be felt longer than the term of a specific governmental official. How can a particular agency, organization, or officeholder be designated to assume responsibility for coordination of natural gas issues within the municipality or county?

Environmental Changes

The exploration, drilling, and extraction processes, as well as the infrastructure needed to transport the natural gas, all have potential impacts on the natural environment. Exploration and drilling require access roads-either existing or new-as well as clearing and preparation for well pad sites. The natural gas extraction process uses high-pressure injections of water, sand, and other liquids to fracture the shale. This process is referred to as hydrofracturing. Once the wells are drilled, the well pads are reclaimed, meaning they are returned to their predrilling use, with the exception of a smaller area required for well maintenance. The details of reclamation (such as vegetation type and amount) can be detailed in the leasing contract. When a well has ceased producing, it is generally the responsibility of the gas company to cap the well and fully restore the site. The wastewaters (brine) that are generated from the process require treatment before they can be discharged to the environment.

Much of the environmental aspects of these processes are regulated by the Susquehanna River Basin Commission, the Delaware River Basic Commission, and the Department of Environmental Protection. During the permitting process, gas companies have to account for any environmental impacts they have on Pennsylvania's forests, wildlife, surface and groundwater, air, and soils.

Water Quality and Quantity

How can communities plan for water withdrawals by gas companies? How can water providers sell water to gas companies and balance the needs of other residents and industrial users? How can landowners with private wells and/or septic systems be prepared for the potential impacts, rights, and responsibilities they have related to water quality and monitoring? How can communities encourage the development of local businesses that will offer environmental services, such as those related to safe brine disposal? How can environmental and other community organizations access and gather data related to the monitoring of water quality and quantity?

Noise and Air Pollution

How can communities influence the location and construction specifications of compressors and other facilities needed for natural gas extraction and transport to minimize noise? How can community leaders influence the location of roads to minimize noise and emissions from trucks and other vehicles? How can environmental and other community organizations access and gather data related to the monitoring of noise and air quality?

Forest and Wildlife Habitat

How can local leaders and citizens influence the natural gas development, extraction, and transportation structures and processes to minimize impact on wildlife habitat and forest fragmentation? Are there efforts to monitor the impact on forest and wildlife? If not, can one be created (potentially through volunteer groups, such as sportsmen's, conservation, or watershed organizations)?

Land Use

How will the development of access roads and well sites affect future land uses, including agriculture, forestry, residential, commercial, and recreation? How will the natural gas infrastructure particularly affect development of land previously thought not suitable for development, such as those with large slopes? Will new pipeline easements be aligned with current rights-of-way and not preclude the future development of the property? Does the municipality have adequate comprehensive plans and regulatory ordinances for such potential development?

Environmental Literacy

Can schools incorporate more targeted educational programs that will ensure that the school-aged population is receiving the training necessary to recognize environmental impacts and to improve management of natural resources as this group evolves into the community's leaders and citizenry?

Policy

Legislative policy and regulations will be important in determining the actual effects of the drilling process and its influence on the distribution of benefits and costs from the Marcellus gas play. Important state policy decisions include the following.

Local control over drilling activity The amount of local control over drilling activity in Pennsylvania is somewhat unclear even with recent court litigation. Until early 2009, Pennsylvania courts had been interpreting Pennsylvania's Oil and Gas Act of 1984 as preventing municipalities from establishing local standards and controls for oil and gas drilling, such as where drilling may occur and whether and how locally identified important assets or resources could be protected. In February 2009, the state Supreme Court ruled on two cases that challenged this interpretation, and in one case (Huntley & Huntley v. Borough Council of the Borough of Oakmont) upheld a zoning ordinance that regulated the location of oil and gas wells. But in the second case (Frederick v. Range Resources—Appalachia, LLC) they struck down a general ordinance that regulated several aspects of oil and gas well operations. At the time of this writing, solicitors were still trying to interpret which types of local control should be permissible and under what conditions.

The cost of local infrastructure

Few would argue that drilling and natural gas production could have significant impacts on the services that local governments and school districts provide. Experience in other states suggests that development of the Marcellus may affect the size of the population, housing, emergency services, roads and other physical infrastructure, and the local economy. Under Pennsylvania's current local tax structure, local governments and school districts will receive few new revenues to pay for any such increases in local services. Should tax rates be increased for everyone rather than just those directly benefiting from the play? This is a result of natural gas being exempt from the local property tax (unlike coal, limestone, sand, and other natural resources extracted from beneath the surface), and that leasing and royalty income is exempt from the local earned income tax.

How can local government officials and citizens work together to influence state legislation and policies that affect the potential social, economic, and environmental impacts of natural gas production? How can local governments address the immediate need stemming from increased demand for local services with state policies that create longterm revenue-collection processes? How can local government officials access revenues collected at the state level for local needs?

Beginning to Answer Questions about the Impacts of Natural Gas Development

This list of questions and considerations is overwhelming, and the task of addressing them daunting. Because there are long-term consequences of natural gas development, however, it is crucial to begin the process of identifying issues of concern and exploring options to manage the positive and negative impacts.

Action Steps for Local Leaders and Officials

Become educated about:

- The natural gas development process and timeframes
 - Leasing: 4–6 months
 - Exploration/seismic testing: 4 months
- Site preparation and drilling: 4–8 weeks
- Site reclamation: 2 weeks
- Extraction and transport: 5–40 years
- Maintenance over the life of the well: 5–40 years
- Closure
- Potential impacts (positive and negative)
 - Environmental
 - Economic
 - Cultural
 - Municipal services and infrastructure
 - Land use
 - Community
 - Educational services
- Regulatory agencies and their areas of authority
 - Pennsylvania Department of Environmental Protection
 - Pennsylvania Department of Transportation
 - County Conservation Districts
 - River Basin Commissions (Susquehanna, Delaware)
- Gas industry representatives/contacts

Look internally and assess ability to take action:

- Know regulatory authority under the Oil and Natural Gas Act (check with your solicitor before acting)
- Inventory existing plans and regulations; determine need to update or create new
 - Land use
 - Comprehensive plan and official maps
 - Zoning, subdivision, and landdevelopment ordinances (especially roads and driveways)
 - Open space and recreation plan
 - Capital improvements plan
 - Road posting and bonding
 - Business and economic development plans
 - Workforce training, education forecasts
 - Long-range plans for school districts, human service agencies
 - Municipal and organizational financial planning
- Identify position or entity to monitor natural gas issues
 - Elected official (chair, vice chair, etc.)
 - Municipal planning commission
 - Environmental advisory committee
 - Task force
- Assess (and improve, as necessary) facilitation and communication skills of key personnel

Identify stakeholders:

- Landowners
- Local natural-gas-related businesses
 and subcontractors
- Educational institutions
- Chambers of commerce
- Governmental officials and agencies
- Conservancies and land trusts
- Environmental and sportsmen's groups
- Natural gas industry
- Regulatory agencies
- Emergency management agencies

Establish good communication and relationships relative to natural gas issues:

- Identify community issues with high priority
- Determine how priority issues might be affected
- Identify specific action steps to protect/enhance priority issues
- Develop monitoring systems to assess change in these priority issues
- Where needed, identify regulatory authority and actions available

One part of this process is to become informed about the natural gas industry and the drilling process. It is also important to seek information about the types of impacts the industry could have on your community. It will also be important to learn about the regulatory structure—who regulates what component of the process, how that regulation occurs, and how concerns and complaints can be handled.

A second part of this process is to look internally. Consider the role that municipal and county officials, community groups, and individuals

can play in monitoring and shaping community and environmental impacts. Municipal authority is limited in the types of direct control it can have over the location of drilling sites due to the Oil and Gas Act. However, municipal and county authorities do control related areas that may be affected, including planning for land use, municipal finances, capital improvement, open space and recreation, business development, education and workforce training, emergency management, and human services. All affected agencies should consider examining existing plans and regulatory tools to determine how they will be affected by or affect natural gas development and to determine the need to update or create new plans and regulations.

Similarly, municipal officials should consider creating a way to monitor natural gas issues. The development of natural gas resources will likely surpass the terms of elected officials and the employment of agency personnel. Identifying a position or entity with this responsibility will provide a means to keep on top of the issue, follow up on issues that arise, and track priorities identified, plans developed, and decisions made over time.

If individuals or organizations are going to be tasked with this issue, do they have skills related to facilitation, conflict management, negotiation, and communication? If not, developing those skills can increase the ability of local officials and community leaders to act proactively as well as respond to new issues.

A third action would be to reach out to community members. Who are the stakeholders, those individuals and groups who are likely to be affected by natural gas development? These stakeholders may have different and competing interests, which will need to be managed. It will be important to establish effective means of communication among these stakeholders to encourage productive discussions and planning efforts.

It is also essential to create community dialogue about what is important in the community and how these high-priority issues can be protected and/or enhanced by natural gas development. Some counties are developing task forces to do just this. The members of these task forces include all key stakeholders, such as local elected officials, representatives of county and regional agencies, environmental and community organizations, and the natural gas industry locally. Each task force has goals specific to their own issues, but generally task forces develop and implement plans that will take advantage of opportunities presented by the natural gas industry, monitor change, and plan for potential negative impacts. For more information about developing a natural gas task force, see Penn State Cooperative Extension publication Marcellus Education Fact Sheet: Marcellus Shale Exploration and Development—Organizing a Community Task Force.

Concluding Comments

While the development of natural gas resources in the Marcellus shale presents significant opportunities for Pennsylvania communities and residents, there are a number of potential changes to the social, economic, and environmental conditions of these communities. Community leaders and elected officials need to take advantage of these opportunities to influence the future of their communities by raising these and other questions and pursuing local and statewide efforts to address their concerns. These questions and processes provide a starting point to addressing these issues. We suggest that community leaders and elected officials work with citizens to address these concerns and seek assistance from Penn State Cooperative Extension and other resources in these efforts.

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*Members of Penn State's Department of Agricultural Economics and Rural Sociology Marcellus Shale Working Group

Put Our Experience to Work for Your Community

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MARCELLUS EDUCATION FACT SHEET



Gas Leasing Scams and Rip–Offs: Ways to Separate You from Your Property Rights and Money

Who is knocking on your door asking you to lease them your gas rights?

t is important to understand who is trying to lease your natural gas rights. A land broker (also called a land man) will not be drilling the gas well on your property. In all likelihood, the land broker will sell your lease to a gas company that will conduct the drilling. If you sign a lease with a land broker, you should understand that you may not be working with this person through very much of the drilling process. In fact, you may not deal with this person at all after the lease is signed. Land brokers are not regulated by the state, so you should ask for references and be careful to investigate them before you sign the lease. The names of gas companies and their contact information can be found at naturalgas .psu.edu.

What is the term of your lease? Is it the number of years stated or is it as long as there is a producing well?

The length of your lease can vary, so it is important that you read carefully and understand your lease before signing. Many leases have an initial term of five years, but the lease may also provide for the initial term to be shorter or longer than five years. Beware of the "right to extend," which could then tie up your oil and gas rights for longer than the initial stated period at the same amount of money. Beware of a production clause such as "or as long as there is a viable well." This can extend the lease almost indefinitely without additional compensation to the landowner.

What if you sign a contract to lease your land, but the deadline passes and they do not pay you for the right to explore for natural gas on your property?

The terms of the lease agreement will state whether or not, and under what terms, a gas company can back out of the deal. Since the gas companies generally write the agreements, you can expect the terms of the agreement to grant them some protections. If the agreement does not provide the gas company with the legal ability to terminate the agreement, then the landowner may want to consider filing suit to enforce the agreement (to receive payment). The landowner also may decide that the best course of action is to walk away. In all cases of nonpayment, however. the landowner needs to consider whether any action must be taken to terminate the agreement. In most cases, the lease will not termi-



nate solely because of nonpayment. To terminate the agreement, the landowner must comply with any notice requirements specified in the lease agreement. In some situations, the gas company may agree to execute a release or similar document. Additionally, it may be advisable for the landowner to record some type of document demonstrating that the agreement has been terminated.

Leasing

It is important that you understand all the terms in the lease agreement. Standard lease agreements are written to favor the gas companies and are difficult to understand. Addendums (changes) are added to protect the landowner. Many leases have over thirty addendums or changes. Consult an attorney with knowledge of natural gas leases. You will need to pay for this service, but beware of attorneys who want a percentage of your royalties (payment for your gas taken from a well on your property).

Separate Compensation

The up-front payment received for the right to explore for natural gas is one amount. A second amount is the royalty, a percentage paid to you for any gas that is extracted from the land. The required royalty payment is 12.5 percent. A higher royalty percentage is negotiable. Also, additional compensation can be negotiated if the land will be used for storage or pipelines. Look out for companies that try to include use of your land for pipelines and storage in your lease for oil and gas rights without providing you additional money for them.

Don't Be Hurried

Those interested in your oil and gas rights will try to get you to hurry and give you short time deadlines to make a decision. In reality if the gas companies have just come to your area, the price will normally go up. Take time to learn about gas leasing and how to protect your interests. Prepared by Jeannine Richlin, extension educator, Sullivan County; and Cathy Bowen, associate professor, Agricultural and Extension Education.

Put Our Experience to Work for Your Community

The Penn State Cooperative Extension Marcellus Education Team strives to bring you accurate, up-to-date information on natural gas exploration and drilling in Pennsylvania. Learn about your rights and choices as a landowner, a businessperson, a local official, or a concerned citizen. Discover the resources available to you.

Visit naturalgas.psu.edu.

Penn State Cooperative Extension

Penn State Cooperative Extension has a special mission-to enable individuals, families, communities, agriculture, businesses, industries, and organizations to make informed decisions. Through a system of county-based offices, we extend technical expertise and practical, how-to education based on land-grant university research to help Pennsylvanians address important issues, solve problems, and create a better quality of life. From improving agriculture and building stronger communities, to developing skills with today's youth, we are dedicated to giving Pennsylvanians the means to grow, achieve, compete, go farther, and do more. Learn what extension can do for you. Contact your county cooperative extension office or visit www.extension.psu.edu.

The Agricultural Law Resource and Reference Center

The Agricultural Law Resource and Reference Center is a collaboration between Penn State's Dickinson School of Law and Penn State's College of Agricultural Sciences. Located at both the University Park and Carlisle facilities and funded in part by the Pennsylvania Department of Agriculture, the center is designed to provide the highest-quality educational programs, information, and materials to those involved or interested in agricultural law and policy.

FACT-BASED INFORMATION **Natural gas** Marcellus Education Team w ww.naturalgas.psu.edu

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Should You Join a Landowner Group?

Many Pennsylvania landowners are joining landowner groups and coalitions driven by news reports of very high lease rates and a strong desire to maximize profits. Many landowners also fear the complex lease process and find some comfort in being with a group. While the benefits of joining a group are often compelling, many landowners are unaware of the pitfalls and the long term costs that they may incur by their actions. However, with a little knowledge about groups, and help from their attorney, many landowners can make an informed decision about the best way to market their leasehold.

Gas Royalties



We can define three types of loosely defined landowner groups for the sake of discussion. Your group may vary!.

- <u>Landowner Information Sharing Group</u> is a group that bands together to simply share information about what companies are leasing in their area, what the current rates may be and the potential for special terms and sample addendums. No attempt is made to market the group acreage. Group leaders are all volunteers. Landowners can individually benefit from their leaseholds market value. Timely information to the group may allow energy companies to loosely gather larger blocks of land, but each lease still needs to be negotiated separately. This organization has the weakest bargaining power.
- <u>Landowner Coalition</u> is a group that works together to become informed, maximize contiguous acres, and <u>market</u> their combined leasehold. They may have a voluntary or paid leader or consultant to make the bid proposals to the energy companies. Payment to consultant is only made IF the landowners lease to the selected company. While landowners are strongly encouraged to sign with the group, there is no binding legal document to compel them to do so. Landowners can benefit from their leaseholds market value, or choose to sign with the coalition if the terms are more favorable. The

drawback is that the energy company may offer less to a coalition since the members are not legally bound and many may not sign. This leaves the job of filling in the holes to the landmen.

Landowner Bargaining Unit - is where all parties • have signed pre-agreements or pledged that they will accept the lease terms agreed upon by the majority. This guarantees to the energy company that the "negotiations" are binding to the entire group and eliminates individual negotiations. This group has the strongest negotiating position with energy companies since it eliminates thousands of hours of negotiations and lease preparations with perhaps hundreds of landowners. Since all landowners will sign for the exact same rental fees and royalties, landowners in the bargaining unit will receive the average market value of group. Leaseholds with superior market value may receive less, but marginal acres will receive more than that what they would individually on the open market. Hence these groups may tend to attract more leaseholds with marginal market positions. Generally there is a fee associated with this group. It could be an up-front fee per acre or a percentage of the royalty, or both.

What are other considerations?

Many landowners feel that joining a group will give them greater bargaining power with the landman because of the larger block of land being negotiated. It is true that by grouping together, landowners offer companies more acreage, faster, and with less expense in making contacts and negotiating separate leases. However, landowners need to take into consideration that:

•Energy companies are looking <u>for contiguous</u> blocks of land to form drilling units. Land that is not contiguous, or blocks that are full of holes (acreage not in group) reduce the value of the group leasehold. Groups with poor organization or density may be poor choices.

•Landowner groups can become too large and magnify perceived shortcomings which can reduce the leasehold value to you

Continued on BACK



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• Make sure the group has a well defined leadership structure and written policies concerning: who decides what the final terms or lease proposal will be accepted; how will that group or individual make that decision; do you have any chance at giving input to that decision. These are important considerations if you are going to be bound by their decision

Landowners may also feel they lack the basic knowledge to effectively negotiate a lease and find comfort in negotiating within a group. This was especially true a year ago when information about lease rates and terms was very sparse. Today there are several good informational web-sites to help become informed and newspaper coverage has been keeping most landowners informed of the trends in rates and terms. However landowners need to understand that several factors may make signing a group lease a less desirable option. One is financial strength. A financially secure landowner may walk away from a lease of tens of thousands of dollars, whereas a retiree living on social security may vote to sign at a much lower rate. An absentee landowner may sign a lease without protection for the land, but a third generation owner may find the lack of environmental protection in the lease a deal breaker. The list goes on and on. But the main caution is that if you join a group:

- Be sure that other landowners in the group have similar goals and values as you and that you can have some input into the decision making process. That can be very difficult, especially in larger groups.
- Understand that the more a group deviates from the "standard" lease, the more they move out of a companies comfort zone, the greater the risk of rejection or diminished lease rates. Larger groups trying to be everything to everybody can sprawl into undesirable locations, or "over-addendum" the value of their acreage and leave their members with a poor lease or without any lease at all.
- Make sure you can "take or leave" the group or coalition lease without cost or obligation.

Working with a consultant

Many landowners feel that hiring a "consultant" to lead the group through the decision-making process is a winwin situation. However, before you do it's important that you check their references . Get a few names to call, go on-line and search the internet for articles or ask the energy companies about the consultant. Be sure you understand what the consultant will do for you. Will they simply negotiate the lease and get you to a signing by the highest bidder? Or will they be there when the trucks show up to start drilling and represent you in any "discrepancy" between what you thought you signed and what you actually signed?

How much is it going to cost you for the consultant's services? Always know exactly what your cost will be. A "fee per acre" is easily calculated. A percentage in royalty is not. A one percent royalty fee may not sound like much but understand that it may easily be a <u>half a million dol-lars on one well over a twenty year period!</u> If there could be several production units on the group leasehold, multiply by the number of possible units. Now figure that each production <u>unit</u> could have over twenty(20) wells on it, so multiply that number by 20. The final figure could be millions per year!

Enter into a contract with the consultant that specifies the terms and the payment for services. Make sure that the consultant cannot charge other parties for the same thing you are paying them for. For example, the consultant may not collect a percentage or fee from the energy companies in addition to what you are paying him/her, without your consent. All costs of the deal must be visible to all parties and all bidding must be open and fully transparent to the group. Be sure the consultant is a viable business entity in the Commonwealth of Pa.

Finally, understand that the Marcellus play is just getting started. As the play matures, lease rates will continue to go up in some areas, and down in others. Those leasing five years from now may well find lease rates in excess of \$8,000 per acre or more in some locations. No landowner group or consultant has a crystal ball that can tell where those areas may be with certainty. However understanding the workings of different groups can help you choose how you market your leasehold wisely. Remember, keeping your leasehold at the shortest primary term possible will allow you to maximize your total returns and minimize your risk.

Good Luck!.....Ken Balliet Natural gas Resource Development

Where can you get more information?

Penn State Extension maintains an informational website at <u>http://naturalgaslease.pbwiki.com</u> or call your local extension office.



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Market Your Natural Gas Lease







How can I get the most for my gas lease?

It's important to understand that lease rates vary greatly from company to company, area to area, and even day to day! Where one company considers their prime lease area, others companies may not even have an interest. When you look at a map of the Marcellus Shale, the initial area of interest is well outlined; BUT, I am amazed to hear landowners from outside that area call me, and have 4 or 5 quotes from gas companies! So the best advice is, no matter where you are, market your leasehold <u>properly</u>, and you should sleep easier at night knowing you did your best.

Let everyone know you are marketing your leasehold. Contact as many energy companies that actually drill wells as you can. The end result of your efforts is to have a well drilled on your property. Dealing with a company that is not pulling drilling permits usually means they will flip your lease to one that will, and pick up a nice profit. Why deal with a middleman? A list of companies can be found right here at: <u>http://naturalgas.psu.edu</u>

Compare the terms that matter most to you. Don't just compare dollars. Many other provisions that deal with road and pipeline locations, seeding and planting, gates and privacy will minimize the impact on your property and is worth money. Many times it's the unquantifiable factors which make the basis of a good decision.



Evaluate your terms realistically. Many times your rental rate may not come up to those you've read about. Are they trying to scam you? Usually not. The amount of dollars a gas company will offer is based on many factors. Areas that are unproven or geologically less desirable will command less of a price. As the play matures, meaning "time marches on", the characteristics and production potential of geographical areas will increase and risk will decrease, so rental rates will trend up for some areas and down for others.

Keep the length of the primary term as short as possible Avoid extensions, they are never in your favor. Why? Because when it comes time for renewal, the energy company is holding all the cards. If the rental rates are higher, they renew at the old low rate and gain; if the rental rate is lower, they just exercise their option to NOT renew the lease. In either case, you lose.

Plan for a well or the next lease negotiation now. If you are still in the Play, you will need good information to deal with these two events at some point in the future. If you have a well drilled, great! You are now a royalty owner. With only a couple dozen of drilling rigs in PA, most of the tens of thousands of leases currently in existence will not be drilled in the next 5 or even 10 years. That means that those folks can market their lease again. The other good news is that as the play matures, the price per acre should continue to go up, IF the play unfolds as predicted. So when you re-negotiate your next lease, it could be much higher than those you see today.

Bottom line! Expand your knowledge about the industry. Keep up-to-date on issues, especially severance taxes, wellhead taxes, and a host of regulations and assessments that will impact the profitability of the play; and hence, your royalty position. Most of all, look at this play in the scope of the long term, not one isolated event. Good Luck!

From: "The Wellbore Log".....by Ken Balliet

http://www.personal.psu.edu/klb26/blogs/the_wellbore_log/

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Section 3: Oil and Gas Rights Leasing Guides



MARCELLUS SHALE LEASE GUIDE



PRINCIPLES FOR THE CONSERVATION-MINDED LANDOWNER

June 2011

Marcellus Shale Lease Guide Version 1.0 (June 2011)

Pennsylvania Environmental Council, Inc.

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INTRODUCTION

The current boom in natural gas leasing and production from the Marcellus Shale formation affects all residents of Pennsylvania in one way or another. Residents are concerned about potential impacts from drilling operations to water supplies, soil, air quality, wildlife populations, forests, and other natural resources, as well as to the communities hosting Marcellus Shale gas development. Many residents are considering leasing their property for Marcellus Shale development, or have already decided to do so, but want to protect environmental values associated with their property and community.

Property owners (landowners or mineral owners) who choose to lease their land for Marcellus Shale gas production can minimize adverse impacts from gas operations by negotiating environmentally protective provisions in the lease they sign. Pennsylvania has laws and regulations that apply to Marcellus Shale gas development; but these laws and regulations are best viewed as a floor, not a ceiling, for protecting environment values. The property owner who wishes to require a higher level of environmental protection for gas operations on their property should seek to negotiate heightened protection into the terms of the lease itself.

This Lease Guide is intended as a resource for Pennsylvania residents who are considering leasing their property for Marcellus Shale gas production, or who have decided to lease and are beginning the negotiating process. It identifies some of the key environmental issues that can be addressed in a lease; summarizes the types of approaches that have been used to address these issues in Marcellus Shale gas leases in Pennsylvania; and offers options for handling these issues in a more protective Marcellus Shale gas lease, using best management practices employed in oil and gas leasing in Pennsylvania and nationwide.

The "perfect" Marcellus Shale gas lease does not exist; each lease should be designed to meet the unique features of the property proposed for lease. Moreover, the technology and best management practices associated with Marcellus Shale gas recovery are constantly evolving. As a result, this Lease Guide does not attempt to identify every environmental issue to be addressed in a lease or to prescribe exact language for lease provisions. Instead, it suggests a menu of approaches for the property owner, together with his or her attorney, to consider in crafting lease language for certain key environmental issues that best suits individual circumstances. In many cases the options suggested below are paraphrased substantially; actual lease terms will be more detailed and precise.

This Lease Guide is just one tool a property owner may want to use when considering whether to lease or in negotiating the terms of a lease. Several other valuable tools are available, and ideally a conservation-minded property owner will use all of them. These tools include:

- **Consult a qualified oil and gas attorney and other professionals**. This Lease Guide is not intended to provide legal advice or to substitute for the advice of a qualified Pennsylvania oil and gas attorney. Any property owner contemplating leasing their property for Marcellus Shale gas development should consult an attorney to educate them about the law and, if they decide to lease, guide them through the leasing process. The property owner may also wish to obtain technical advice from one or more experts in areas such as engineering and technology, hydrogeology, forestry, wildlife, and botany.
- Learn from others who have considered leasing. The property owner should do his or her own research to learn what terms others in the community and region have been able to work into their leases. Property owners can do this by joining, or communicating with, a property owner group in their area, as well as other property owner groups throughout the Commonwealth of Pennsylvania (and the State of New York) that have already negotiated and signed Marcellus Shale gas leases. Property owner groups can be found online at http://gomarcellusshale.com/page/marcellus-landowner-groups.
- Review best management practices. Numerous academic, government, and public interest groups have published best management practices ("BMPs") for shale gas operations. Some of the BMPs address all environmental aspects of leasing, while others concentrate on protection of a specific resource. The property owner can review the BMPs and decide which topics or specific provisions to attempt to negotiate into his or her lease. Some examples of recently published BMPs include:
 - Penn State College of Agricultural Sciences, *Water Facts #28: Gas Well Drilling and Your Private Water Supply* (Rev. March 2, 2010).
 - Pinchot Institute for Conservation, *The Marcellus Shale: Resources for Stakeholders in the Upper Delaware Watershed Region* (Dec. 15, 2010).
 - Pennsylvania Department of Conservation and Natural Resources, *Guidelines for Administering Oil and Gas Activity on State Forest Lands* (April 26, 2011).
 - Penn State College of Agricultural Sciences Cooperative Extension, *Forest Landowners and Natural Gas Development: Timber Resources* (2009).

- Penn State College of Agricultural Sciences Cooperative Extension, *Forest Landowners and Natural Gas Development* (2009).
- Cornell Cooperative Extension, *Gas Rights and Right-of-Way Leasing Pointers for Forest Owners* (Dec. 12, 2008).
- Western Pennsylvania Conservancy, *Conservation Guidelines for Landowners on Natural Gas Development* (June 2010).
- U.S. Bureau of Land Management and U.S. Forest Service, *Oil and Gas Exploration and Development: The Gold Book* (Rev. 2007).
- Environmental Defense Fund, Emissions from Natural Gas Production in the Barnett Shale Area and Opportunities for Cost-Effective Improvements (January 26, 2009).
- Pennsylvania Department of Environmental Protection, Bureau of Oil and Gas Management, *Oil and Gas Operators Manual* (Oct. 30, 2001).
- Use other available research tools. An abundance of information is readily available relating to the geology of the Marcellus Shale formation, the mechanics of the oil and gas production process, potential environmental impacts from shale gas production, and other topics of interest to property owners considering entering into a lease. The following resources can be a good place to start.
 - Pennsylvania Environmental Council, *The Marcellus Shale Amendments: A Proposal for Reforming the Pennsylvania Oil & Gas Act* (May 2011).
 - Pennsylvania Environmental Council, *Developing the Marcellus Shale:* Environmental Policy and Planning Recommendations for the Development of the Marcellus Shale Play in Pennsylvania (July 2010).
 - National Sea Grant Law Center and Pennsylvania Sea Grant, *Citizens' Guide to Marcellus Shale in Pennsylvania* (December 2010).
 - The League of Women Voters of Pennsylvania, *Marcellus Shale Natural Gas Extraction Study 2009-2010: Marcellus Shale Natural Gas: From the Ground to the Customer* (2009).
 - U.S. Department of Energy Office of Fossil Energy and the National Energy Technology Laboratory, *Modern Shale Gas Development in the United States: A Primer* (April 2009).
 - PennState websites:
 - College of Agricultural Sciences Cooperative Extension Natural Gas website: http://extension.psu.edu/naturalgas
 - Marcellus Center for Outreach & Research website: http://marcellus.psu.edu/
 - Marcellus Shale Education & Training Center website: http://www.msetc.org/

 Pennsylvania Department of Environmental Protection Marcellus Shale website: http://www.dep.state.pa.us/dep/deputate/minres/oilgas/new_forms/marcell us/marcellus.htm

SECTION ONE: OPERATIONAL STANDARDS FOR OIL AND GAS ACTIVITIES

Background:

While Pennsylvania laws and regulations provide standards covering oil and gas activities, they do not address all operational aspects of Marcellus shale gas well siting, development, production, and reclamation.

Why These Issues Matter to the Property Owner:

Marcellus Shale gas operations pose two types of impacts: short-term impacts that may last only as long as a particular phase of development is occurring, or up to a few years; and long-term impacts that may last for decades. Short-term impacts may include noise from activities associated with well development, and surface disturbances relating to well drilling. Long-term impacts may include water or soil contamination and deforestation. Property owners considering leasing their land for Marcellus Shale gas development may be able to lessen both types of impacts by including appropriate protective provisions in their lease.

How Existing Leases Approach these Issues:

Many leases seek to supplement existing laws and regulations by including additional requirements aimed at minimizing the impact of oil and gas operations on the leased property, the property owner, and the surrounding community. The leases vary as to what issues they address through additional lease terms; each lease is tailored to the specific leased property, property owner, and oil and gas company. However, a growing number of leases address most or all of the following issues.

Possible Lease Terms Based on Best Management Practices:

1.1 Adaptive Management

• Require the oil and gas company to commit to employ current best management practices in all aspects of oil and gas operations. As technology develops and

best management practices evolve along with technological and policy changes, require the oil and gas company to implement updated best management practices.

- Specify that when new laws or regulations are enacted regarding environmental impact or controls or technical aspects of oil and gas operations, oil and gas operations on the leased property must immediately comply with their terms.
- Require the oil and gas company to meet formally with the property owner at least once annually to investigate current laws and regulations, current technology applicable to Marcellus Shale gas operations, current best management practices, and environmental performance of oil and gas operations on the leased property since the last meeting.
- Require that current best management practices identified in the annual investigation be implemented immediately on the leased property.

1.2 Crops

- Require the oil and gas company to use the highest degree of care and all reasonable safeguards to prevent injury to growing crops, timber, native or cultivated grasses, fruit or nut trees, or pastures.
- Require the oil and gas company to pay for any damage to growing crops, calculated as the current market value over all of the affected growing seasons. Require the oil and gas company to retain an independent expert mutually agreed to by the oil and gas company and the property owner to value the crops prior to any earth disturbance on the leased property and ultimately to determine the amount of damages.

1.3 Emergency Response Plan

• Require the oil and gas company to provide a copy of the emergency response plan to the property owner as well as the local emergency (police, fire, and rescue) services, and to keep a copy of the plan on the leased property.

1.4 Erosion and Sediment Control

- Prohibit the oil and gas company from causing or contributing to soil erosion or sedimentation, or to injury to terraces, grades, or other soil-conserving structures on the leased premises.
- Before any earthmoving or disturbance activities take place, require the oil and gas company to obtain the property owner's approval of the soil erosion and sedimentation control plan. Require the oil and gas company to provide a copy of the erosion and sedimentation control plan to the property owner and to keep a copy on the leased property.
- Require the oil and gas company to minimize soil erosion in connection with construction, drilling, and other activities.
- Require the oil and gas company to re-grade cleared areas immediately, reseed with temporary or permanent native, noninvasive grasses, and perform any other necessary work to prevent erosion in these areas.
- Require the oil and gas company, immediately after completion of construction of each drilling site, to restore all high walls and reseed high walls and the down slope embankment of each drilling site with native, noninvasive species.
- Prohibit the oil and gas company from constructing an earthen dam across any stream to obtain a water supply for its operations.
- Require the oil and gas company to construct water bars or similar diversion channels on pipeline rights-of-way and access roads to carry surface runoff away from these areas and prevent siltation of streams. Require the oil and gas company, during construction, to build a settling basin at the base of each pipeline right-of-way or access road to impound runoff and capture sediment.
- Require the oil and gas company to maintain and repair, when necessary, all erosion and sedimentation control facilities and devices.
- Require the oil and gas company to retain an independent expert mutually agreed to by the oil and gas company and the property owner to conduct periodic monitoring of its compliance with the soil erosion and sedimentation plan. For example: after initial clearing and grading; after any subsequent substantial grading work; after installation or alteration of any roadways or

pipeline; after installation of the well pad or other facilities or equipment; after any interim reclamation/revegation; after removal of the well pad, other facilities or equipment, or any roadway or pipeline; and after final reclamation of the leased property. Require that monitoring results be reported in writing and a copy of the monitoring results be provided to the property owner.

1.5 Existing Structures and Features

- Require the oil and gas company to use reasonable safeguards to prevent injury to buildings, roads, structures, ensilage pits, improvements, farm implements and fences on the leased property.
- Prohibit removal from the leased property of any artifacts, shrubs, rocks (including Bluestone) or other natural features.
- Require the oil and gas company to repair any improvements to the land that are damaged by its operations. If repair is not possible, require the oil and gas company to replace the improvements or, at the property owner's election, compensate the property owner for the damage.
- Require the oil and gas company to immediately cease operations and notify the property owner if it encounters any historical or archaeological sites on the leased property.

1.6 Fencing

- Require the oil and gas company to install fences with gates, locks, or cattle guards (at the property owner's discretion) around well sites and other dangerous structures and equipment.
- Require the oil and gas company to fence and gate all well access roads.
- Specify a minimum height for fences and gates.
- Require the oil and gas company to maintain all fences and gates in good repair and keep gates closed when not in active use.
- Prohibit the installation of fences in rights of way.

1.7 Fire

- Require the oil and gas company to prevent or suppress fires on the leased property.
- Prohibit the oil and gas company from burning of refuse, brush or other materials on the leased property.
- Specify that the oil and gas company is liable for any damages resulting from fires caused by oil and gas operations on the leased property.
- Require the suspension of drilling and other operations during periods of unusually high fire danger.

1.8 Noise Control

Most of the following possible lease terms derive from the Pinchot Institute for Conservation's publication *The Marcellus Shale: Resources for Stakeholders in the Upper Delaware Watershed Region* (Dec. 15, 2010).

- Require use of mufflers on drill rig engines.
- Require use of quieter electric motors rather than diesel or gas engines.
- Use engineered sound barriers and sound insulated buildings when well sites are within close proximity of residential or other buildings.
- Require planting of trees or construction of berms to mitigate noise.
- Require use of automated well monitoring systems after well completion. This has the additional benefit of reducing vehicle traffic for monitoring purposes.
- Limit operational hours to prevent excessive noise during night time hours.
- Prohibit the siting of compressor stations on the leased property or require them to be placed in sound-insulated buildings.

1.9 Noxious Weeds and Invasive Species Control

- Require the oil and gas company to obtain a pre-construction inventory by a professional biologist of planned areas of disturbance to determine appropriate methods for preventing introduction of invasive species.
- Minimize areas of soil disturbance by collocating equipment and facilities to the greatest extent possible.
- Require the oil and gas company to properly clean all equipment prior to bringing it onto the leased property.
- Require the oil and gas company to arrange for an annual survey of disturbed areas to identify invasive species.
- Require the oil and gas company to clear disturbed areas of new invasive species.

1.10 Pollution Prevention

- Require the oil and gas company to perform a site assessment of the property to determine if there are any abandoned oil or gas wells located on the property. If any abandoned wells are identified, require proper plugging of the abandoned well prior to any new drilling or extraction activity.
- Require the oil and gas company to use alternative, less-toxic materials to the greatest extent practicable.
- Prohibit the oil and gas company from allowing waste oil, fracking fluids, flowback water, produced water, or any other liquids or wastes used in or produced by oil and gas operations to flow onto the surface of the leased property, or into any drains, creeks, or ravines located on the leased property. Require the oil and gas company to dispose of all liquids and wastes outside the boundaries of the leased property at an approved facility and in compliance with the rules and regulations of the Pennsylvania Department of Environmental Protection or other governmental authority.
- Prohibit storage of any liquids or wastes in pits, ponds or impoundments (collectively, "pits") on the leased property. Require storage in closed tanks that meet the requirements discussed in Section 5.3 of this Lease Guide.

- Alternatively, require written permission from the landowner prior to construction of any pond, impoundment or pit. If written permission is granted, include requirements for location, construction, and reclamation of these structures, as discussed in Section 4.1 of this Lease Guide.
- Require the oil and gas company to fill pits (if allowed), regrade the area to approximate original contours, and revegetate to the surface owner's specifications on completion of the related well.
- Prohibit the oil and gas company from burying pit liners (if pits are allowed) or any other waste material, whether liquid or solid, on the leased property.
- Require the oil and gas company to immediately notify the property owner and the Pennsylvania Department of Environmental Protection of any contamination of soil or water on or under the leased property.
- Require the oil and gas company to clean up, remove, remediate, and repair any soil or surface or ground water contamination or damage caused by its presence or release of any contaminant in, on, under or about the leased property, whether or not caused by the negligence of the oil and gas company, its agents, representatives, invitees, contractors or subcontractors, or their employees.
- Require the oil and gas company to reimburse the property owner for any actions taken by, or paid for by, the property owner to clean up, remove, remediate, and repair any soil or surface or ground water contamination or damage caused by the presence of the oil and gas operations or the presence or release by the oil and gas company or its agents, representatives, invitees, contractors or subcontractors, or their employees, of any contaminant in, on, under or about the leased property.

1.11 Reclamation

- Require the oil and gas company to obtain a pre-construction baseline inventory of the leased property condition in order to have a benchmark for restoring the property to its original conditions, contour, and drainage. Require the oil and gas company to provide a copy of the inventory to the property owner.
- Require the oil and gas company to remove topsoil separately from subsoil when creating any surface disturbance or constructing any pad, pipeline, or other

service facility, stockpile at least 12 inches of top soil separately, and at reclamation replace the subsoil first, with topsoil replaced last.

- Require the oil and gas company to clean up each well site as soon as practicable after each well is drilled.
- Require the oil and gas company, within 30 days after completion of a well (or the final well of a continuous drilling operation) to reclaim that part of the well site not used for production related activities as nearly as possible to the predrilling conditions, contour and drainage. Require the oil and gas company to follow recommendations for interim restoration listed in Pennsylvania Department of Conservation and Natural Resources' *Guidelines for Administering Oil and Gas Activity on State Forest Lands* (April 26, 2011).
- Require the oil and gas company, within 30 days after a dry hole is drilled or after plugging and abandonment of a producing well, to restore the surface of the leased property to pre-operation conditions, contour and drainage.
- When reclaiming a portion or the entirety of the leased property, require the oil and gas company to:
 - Fill in all ruts, holes, and depressions caused by its operations, remove gravel or similar materials, restore the contours and drainage of the ground to its original condition, and spread stockpiled topsoil over disturbed areas.
 - Use low compaction grading techniques to minimize compacting soils.
 - Fertilize and plant graded areas with native noninvasive seeding approved by the Pennsylvania Department of Environmental Protection, and install appropriate erosion controls to protect newly graded areas.
 - Remove all drilling fluids and solids from the property, and restore any area where any fluids or solids were temporarily placed.
 - Remove from the leased property gravel, stone, or other materials and debris introduced by the oil and gas company to the property. Require the oil and gas company to replace any fences, stone walls, or barriers previously removed by the oil and gas company.
- When reclaiming a portion of the leased property, require the operator to maintain the reclaimed portion of the site until the lease is terminated.
- Require the oil and gas company to plug the wellbore in compliance with all applicable laws and regulations, and install casing in such a way as to fully and completely protect all ground water.
- Require the oil and gas operator to comply with all recommendations for soil erosion and reclamation contained in the Pennsylvania Oil and Gas Operators Manual.

1.12 Recreational and Other Uses by Personnel

- Prohibit hunting, fishing, swimming, camping, boating, and other personal or recreational uses of the leased property by the oil and gas company, its agents, representatives, invitees, contractors and subcontractors, and their employees.
- Prohibit employees of the oil and gas company, its agents, representatives, invitees, contractors and subcontractors, and their employees from bringing any animal onto the leased property.
- Unless necessary for safety purposes, prohibit overnight housing of employees on the leased property. If housing is necessary for safety purposes, include restrictions regarding surface disturbance for employee housing, source of water, sanitary facilities, et cetera.

1.13 Seismic Testing

- Require that, prior to any seismic work being conducted on the leased property, the oil and gas company must submit to the landowner for approval a document describing any seismic work proposed for the property and a map showing the proposed location of all seismic lines.
- Specify what types of seismic testing are authorized on the leased property.
 - If 3D seismic testing is authorized in the lease:
 - Require the oil and gas company to provide the property owner with a map showing the location of each shot hole; and

- Require that each shot hole be filled immediately to prevent ground water contamination.
- Require 24 hour notice to the property owner prior to conducting any seismic testing.
- Require use of vibroseis trucks and helicopters rather than drill buggies to conduct seismic surveys.
- Prohibit seismic testing during wet seasons and periods of wet weather.
- Require seismic testing to comply with setbacks for all oil and gas-related activities on the property.
- Require the oil and gas company to compensate the property owner for any damage to the property that results from seismic work.

1.14 Timber

- Prohibit the oil and gas company from cutting or injuring forest growth except that which is necessary to enable oil and gas company to carry out operations under the lease. Require the oil and gas company to indicate on the Site Plan any timber that is to be removed. On leased properties subject to a sustainable timber management plan, require any timber cutting or handling to comply with the plan.
- Require the oil and gas company to give the property owner prior notice of timber removal, mark the timber to be removed, and secure an appraisal of the timber by an independent certified professional forester mutually agreed to by the oil and gas company and the property owner. Specify that this appraisal shall be final and conclusive as to the value of the timber.
- Allow the property owner to choose whether to take the timber or payment for the timber at the appraised value.
- If the property owner chooses not to harvest the timber:
 - Require the oil and gas company to pay the property owner the appraised value of the timber prior to harvesting the timber.

- Require the oil and gas company to cut and set aside logs using due care, and remove uprooted stumps from the property or grind them on-site at the discretion of the property owner.
- Require the oil and gas company to plant and maintain grasses and/or trees or shrubs at the property owner's discretion in cleared areas.
- If the oil and gas company damages or harvests timber that was not marked and indicated on the Site Plan, require the oil and gas company to secure an appraisal of the additional damaged or harvested timber by an independent certified professional forester mutually agreed to by the oil and gas company and the property owner. Require the oil and gas company to pay the property owner an amount equal to twice the market rate for the additional damaged or harvested timber.

1.15 Visual

- Select locations for well site and other facilities, equipment, and infrastructure that minimize visual impact and maximize topographic screening.
- Modify the shape or size of the well pad, facilities, and equipment to allow less visible placement on the leased property.
- Require the oil and gas company to install vegetative, topographic and/or fenced screening to mitigate the visual impact of facilities, equipment, and infrastructure from the property owner's dwelling and other specified locations on the leased property, as well as from specified locations outside the leased property.
- Require the oil and gas company to limit the amount of disturbed area on the leased property to the bare minimum necessary for oil and gas operations as authorized by the lease.
- Require the oil and gas company to use drilling rigs with fully shielded lighting consistent with Occupational Safety and Health Administration (OSHA) regulations.
- Prohibit the oil and gas company from creating a visual nuisance to the property owner or neighboring properties.

- Require the oil and gas company to maintain the leased property in a neat and presentable manner, removing all rubbish and debris as it accumulates and disposing of it offsite.
- Prohibit parking or storage on the leased property of vehicles or equipment not currently engaged in operations on the leased property.

1.16 Wildlife

- Prohibit the oil and gas company from harming or in any way injuring wildlife or any animals, poultry, fish or livestock owned by the property owner or its tenant and kept or pastured on the leased property. Require the oil and gas company to use reasonable safeguards to prevent injury to animals, poultry, fish or livestock, including fencing, netting, and other measures to keep wildlife out of pits (if pits are allowed).
- Require the oil and gas company to obtain a survey of wildlife resources and habitat on the leased property prior to any earthmoving or disturbance to characterize wildlife populations and identify any threatened or endangered species or critical habitat. The survey should be conducted by an independent expert wildlife biologist mutually agreed to by the oil and gas company and the property owner.
- Require the oil and gas company to report to the Department of Conservation and Natural Resources, Fish & Boat Commission, and/or Game Commission observation of any threatened or endangered species or critical habitat on the leased property and cease operations pending consultation with DCNR and implementation of measures to protect the species or habitat.
- Require the oil and gas company to share roads on the leased property to the greatest extent possible to minimize surface damage and habitat fragmentation.
- If any forest clearing is conducted, require the oil and gas company to feather the edges of cleared areas to create wildlife habitat.
- Require the oil and gas company to follow best management practices for restoration/habitat enhancement listed in the Pennsylvania Department of Conservation and Natural Resources' *Guidelines for Administering Oil and Gas Activity on State Forest Lands* (April 26, 2011).

SECTION TWO: AIR QUALITY AND DUST

Background:

The property owner, as well as other nearby residents, can be subject to fumes, dust, and other forms of air pollution from all stages of Marcellus gas recovery operations. Gas recovery operations generate air pollution from construction activities, truck traffic, drilling, equipment operations, and off-gas flaring.

Why This Issue Matters to the Property Owner:

Air pollution created by oil and gas activities on the leased property could pose an inconvenience to the property owner and the surrounding community (for example, by impairing visibility and producing unpleasant smells and fumes), a health risk (due to emissions of dangerous pollutants), or both. In a broader context, there are concerns that state and federal regulators are not adequately assessing the cumulative impacts of the numerous pollution sources at Marcellus Shale gas operations state- and region-wide.

How Existing Leases Approach the Issue:

Several leases include controls on truck traffic and require dust suppression. Most leases we reviewed did not otherwise address other air quality concerns in any significant way.

Possible Lease Terms Based on Best Management Practices:

Most of the following possible lease terms derive from the Pinchot Institute for Conservation's publication *The Marcellus Shale: Resources for Stakeholders in the Upper Delaware Watershed Region* (Dec. 15, 2010).

- Require the company to implement procedures and equipment designed to reduce truck and other vehicle traffic, including use of centralized production and liquids gathering systems, and use of automated well monitoring equipment.
- Prohibit the burning of refuse or brush on the leased property.
- Require the oil and gas company to abate any dust from roads or any oil and gasrelated equipment using environmentally sensitive methods. The company

should select dust suppressants from the "Approved Products List" or similar document published by the Penn State Center for Dirt and Gravel Road Studies.

- Require the oil and gas company to disperse foam if operations are conducted with air, gas, or airfoam.
- Require the use of better control valves for separator units and compressors (for example, replace wet seals with dry seals in centrifugal compressors).
- Require the use of electric motors or air or nitrogen driven pumps, rather than diesel or gasoline engines.
- Require the use of proper catalytic converters on exhaust pipes from pumps and other engines.
- Require use of emission controls on glycol dehydrators and vapor recovery on tanks.
- Require that the oil and gas company recapture methane gas, rather than releasing or flaring it, and return it to the collection system.
- Require the use of other applicable techniques designed to reduce methane emissions listed as "Recommended Technologies and Practices" by the U.S. Environmental Protection Agency Natural Gas STAR Program (http://www.epa.gov/gasstar/tools/recommended.html).

SECTION THREE: WATER MANAGEMENT ISSUES

Background:

Each Marcellus Shale Gas well uses an average of 2 to 7 million gallons of water during the hydraulic fracturing ("fracking") process to stimulate the extraction of gas from the shale formation. The water, along with chemical additives and sand (so-called "fracking fluid") is injected underground at high pressure. Some of this solution returns fairly quickly to the surface as "flowback water," while some returns to the surface over a longer period of time as a component of "produced water."

Numerous significant concerns exist regarding the use of water in connection with a Marcellus Shale gas well. If the oil and gas company uses water from the leased

premises – either from springs, watercourses (including streams and rivers), bodies of water (including natural or artificial lakes, ponds, reservoirs, swamps, marshes, or wetlands), or from existing or new water wells – it may negatively affect the quantity or flow rate of the property owner's water supply or of bodies of water and watercourses in the area.

Another major concern is the potential for contamination to water supplies, bodies of water, and watercourses from liquids used or produced in drilling operations, hydraulic fracturing, and gas production. Fracking fluids can include a host of chemicals, including acids, diesel fuel, foams, and lubricants. In addition to the chemicals in the fracking fluids, flowback and produced water can also pick up high levels of salts and minerals, including naturally occurring radioactive elements, as they flow through underground strata. There have been instances of these liquids contaminating water supplies, bodies of water, and watercourses in Pennsylvania.

3.1 Use of Existing On-Site Water Sources

Do you, as the property owner, want to allow the oil and gas company to use water from existing wells or other water sources on your property in their operations?

Why This Issue Matters to the Property Owner:

The oil and gas company is not necessarily prohibited by regulation from using surface or subsurface water from your property for hydraulic fracturing or other uses relating to gas drilling or operations; although withdrawals may require the approval of the Department of Environmental Protection or the Susquehanna or Delaware River Basin Commission.

An oil and gas company's use of large amounts of surface or subsurface water on your property could interfere with your source of water for drinking, agricultural operations, recreation, scenic, and other uses, and could reduce or even halt stream flows.

How Existing Leases Approach the Issue:

Some existing leases prohibit the oil and gas company from using surface water or subsurface water on the property for any purpose. Other leases require the property owner's written consent prior to use of any on-site water. Some leases that allow the oil and gas company to use water from the leased premises with prior written consent nonetheless prohibit the use of fresh water from the property for certain purposes.

Some leases that otherwise prohibit the oil and gas company from using water from the property or that require prior written consent include an exception to allow the oil and gas company to reuse/recycle flowback and produced water.

- Prohibit the oil and gas company from using surface water or subsurface water on the property (including water from existing springs and watercourses), bodies of water (including natural or artificial lakes, ponds, reservoirs, swamps, marshes, or wetlands), or other water sources or facilities for any purpose.
- Alternatively, require the property owner's written consent prior to use of any on-site water. Specify that the consent will take the form of a separate written agreement between the property owner and the oil and gas company, may contain limitations on the source, amount, and use of the water, and will require separate compensation for the oil and gas company's use of the water.
- If the oil and gas company is authorized to use water from the property under a separate written agreement, include the following types of requirements in the agreement:
 - Determine what uses the water can be put to. Consider prohibiting use of the water for hydraulic fracturing, stimulation or completion processes, or secondary recovery operations.
 - Require best management practices for centralization of infrastructure.
 - For surface water withdrawals, include:
 - Limitations on location of withdrawal points (for example, downstream from headwater areas).
 - A requirement to consult with county conservation districts, local and county governments, river basin authorities, and existing water users to determine the best location for water withdrawals.
 - A limitation on timing of withdrawals (for example, avoid large withdrawals during dry periods, when stream flow is low).

- Requirements for intake structures (for example, the use of dry hydrants, design of structures to protect aquatic life and avoid altering the stream, provision of adequate surface stabilization to support truck traffic).
- Require a comprehensive Pollution Prevention and Contingency Plan to cover the water withdrawal locations.
- For ground water withdrawals, include a requirement to consult with existing groundwater users in the area prior to accessing ground water, in order to ensure that an adequate ground water supply exists to support the proposed activities without negatively impacting existing users.
- Clarify that any prohibition or limitation on the oil and gas company's authority to use water from the leased property does not affect its ability to reuse/recycle water and drilling fluids.

3.2 Drilling of Water Wells for Site Use

Do you, as the property owner, want to allow the oil and gas company to drill or operate a water well on your property and use that water for oil and gas operations?

Why This Issue Matters to the Property Owner:

The oil and gas company is not necessarily prohibited by regulation from drilling or operating a water well on the leased premises and using water from the well for hydraulic fracturing or other uses relating to gas drilling or operations.

An oil and gas company's use of large amounts of well water on the leased property could interfere with the property owner's source of water for drinking, agricultural or commercial operations, recreation, wildlife, scenic, and other uses.

How Existing Leases Approach the Issue:

Some leases either prohibit the oil and gas company from drilling any new water well on the property or allow the drilling of one or more new wells under certain conditions. The leases attempt to provide protection to the property owner's existing wells and, in cases where the oil and gas company is allowed to drill one or more new water wells, to clarify what happens to those wells at the end of the lease.

- Prohibit the oil and gas company from drilling or operating any water well on the property.
- Alternatively, require the property owner's written consent prior to drilling or operating any water well on the property.
 - Provide that any written consent by the property owner is subject to specific standards and limitations relating to, at a minimum, the following areas:
 - Location:
 - The property owner has authority to approve or disapprove the location of the well.
 - Require any new well on the property to comply with the setback requirements contained in Section Six of this Lease Guide.
 - The water well shall not interfere with the property owner's water supply or injure any water supply.
 - The oil and gas company shall notify the property owner of any waterbearing formations encountered during drilling.
 - Well Drilling Standards:
 - The water well shall be fully cased.
 - Use of the well:
 - Any water well drilled or operated by the oil and gas company shall not do injury to any other water supply.
 - Any water well drilled or operated by the oil and gas company shall not interfere with or restrict the supply of water to the property owner or his/her tenants for domestic, livestock, agricultural, irrigation, commercial, recreational, or other purposes.

- Who owns the well after operations cease and whether/how it is to be plugged:
 - Any well drilled reverts to the property owner after termination of the lease; or
 - The oil and gas company must plug the water well from the bottom to the top with clay, cement or other impervious materials, consistent with current standards.

3.3 Testing of Water Supplies

Do you, as the property owner, want to have your water supply tested to help detect any potential pollution or diminution of your water supply caused by oil and gas operations?

Why This Issue Matters to the Property Owner:

A major concern related to shale gas development is potential contamination to bodies of water bodies, water courses, and water supplies from the chemicals in fracking fluids, flowback water, and produced water, as well as the mobilization of naturally occurring elements such as salts and radioactive isotopes in the flowback water and produced water.

Concerns also exist about the potential for shale gas development to diminish water supplies, bodies of water, or watercourses (for example, by diminishing well flow), or in extreme cases to result in a total loss of the water supply.

Current laws and regulations do not require the oil and gas company to test or monitor water quality or quantity on the leased property.

How Existing Leases Approach the Issue:

Many existing leases require the oil and gas company to test the quantity and quality of the property owner's water supply before and after drilling, and some leases require testing at additional points in the well development and operation process. Some leases enlarge on the oil and gas company's duty to conduct testing by requiring, for example, testing of all watercourses, bodies of water, and water supplies on the property, and specifying what water quality parameters to test for.

- Require testing of the quality and quantity of all wells, watercourses, bodies of water, and water supplies on the property.
- Require water quality and quantity testing at key stages of the drilling and recovery process, including:
 - Before conducting any seismic work;
 - Before and after any well is drilled on the leased premises or an adjacent parcel;
 - After hydraulic fracturing;
 - After re-stimulation; and
 - When reasonably requested by the property owner.
- Include specific requirements for water quality and quantity testing:
 - Require measurement of water quality to be performed by a state-certified water testing laboratory, with payment provided by the oil and gas company. Specify that water be tested for a comprehensive set of specified water quality constituents, at a minimum those identified by Penn State University as Tier 1 through 3 pollutants.¹
 - Require the oil and gas company to obtain measurement of watercourse and body of water quantity and flow by an independent professional hydrogeologist mutually agreeable to the oil and gas company and the property owner.
 - Require documentation of water supply conditions to be conducted by a professional water well contractor certified by the National Ground Water Association, with payment provided by the oil and gas company. Require

¹ At press date, these included: **Tier 1** – total dissolved solids (TDS), pH, barium, chloride, methane ; **Tier 2** – total suspended solids (turbidity), iron manganese, hardness (calcium & magnesium), sodium, total organic carbon, strontium, oil and grease, detergents (MBAS), lead, arsenic, alkalinity, coliform bacteria, sulfate, nitrate; **Tier 3** – volatile organic compounds (VOCs) (TCL or BTEX), radionuclides (gross alpha, radium and radon).

documentation of water supply conditions to include measurement of water flow from wells and springs and characterization of underground aquifers including a determination of direction of ground water flow.

- Require testing to comply with all procedures specified in 25 Pa. Code Section 78.52 for all water testing.
- Require that initial water quality and quantity testing form the basis of a comprehensive baseline site characterization, which describes and quantifies all water supplies, bodies of water, and water courses on the property, and includes a plan for ongoing monitoring of water quality and quantity.
- Require the oil and gas company to drill one or more water quality monitoring wells in the vicinity of gas wells, impoundments/pits (if allowed), storage areas, et cetera, to increase the likelihood of early detection of water quality or quantity problems – before they affect the property owner's water supply. One or more monitoring wells should be located downgradient of any planned gas well.
- Require the results of all water quality and quantity tests, including ongoing monitoring and a copy of the baseline site characterization, to be provided to the property owner.

3.4 Restoration of Water Supplies

What level of responsibility do you, as the property owner, want to place on the oil and gas company to clean up your water supply if their operations pollute it, or restore the existing quantity of your water supply if their operations reduce it?

Why This Issue Matters to the Property Owner:

Existing laws and regulations contain a limited requirement for the oil and gas company to restore or replace a private water supply if drilling, alteration, or operation of an oil and gas well adversely affects the water supply. Under certain circumstances, the oil and gas company must restore or replace the water supply with an alternate source of water adequate in quantity or quality for the purposes served by the supply. To trigger this requirement the property owner must notify the Department of Environmental Protection of adverse effects to their water supply; within 45 days the Department makes a determination and may order the oil and gas company to restore (and, in the short term, replace) the water supply.

Currently, contamination of a domestic water supply is presumed to be a result of drilling or alteration of a gas well if the well is located within 1,000 feet of the contaminated supply, and if the contamination occurs within 6 months after operations cease. There is growing concern about whether this 1,000 feet/6 month limitation is stringent enough to protect the property owner's water supply.

The existing presumption that contamination of the domestic water supply is due to oil and gas operations is rebuttable – that is, the oil and gas company has the opportunity to show that factually the contamination has some other source or is not linked to oil and gas operations.

There is no corresponding presumption for impact to the *quantity* of the property owner's water supply, so under existing law the property owner must prove that the oil and gas company is responsible for diminution to the property owner's water supply.

How Existing Leases Approach the Issue:

Some leases extend the presumption of impact to include the quantity of the property owner's water supply, to include other water sources on the property, or by extending the regulatory 6-month time period within which the impact can occur. Some leases require the oil and gas company to furnish a replacement supply immediately (rather than the possibility of DEP ordering replacement after a 45-day decision period), require restoration to pre-existing conditions (not just to a level sufficient for the type of use), and require replacement and restoration of the water supply regardless of cause.

- Extend the oil and gas company's responsibility for damage to any body of water, water course or water supply on the property, rather than just the property owner's current domestic water supply. (This would help protect all waters on or under the property, including water supplies used for agricultural, commercial, industrial, or other legitimate beneficial uses.)
- Clarify that the oil and gas company is responsible for damage to water quality or quantity resulting from any aspect of seismic, oil and gas, construction, land clearing, storage, processing, disposal, or other activities on the leased property, rather than just damage from drilling, alteration, or operation of an oil and gas well.

- Require the oil and gas company to take immediate action to replace/restore water quality or quantity when testing indicates deterioration of water quality or diminution of water quantity or flow.
- Require the oil and gas company to restore the water quality and quantity regardless of its cause. That is, replace the presumption of a duty to replace/restore with an unqualified duty to replace/restore. Expand the area of the oil and gas company's duty to replace/restore to 2,500 feet from the well and extend the time period for discovery to 12 months.
 - Alternatively, expand the area of presumption of injury to water quality and quantity to 2,500 feet / 12 months.
- Require restoration of the water supply quantity and quality to its pre-existing condition, rather than simply to an adequate quality for the purposes served by the supply.
- Restoration to pre-existing condition can be specified to mean: matching the baseline water quality levels or better on a parameter-by-parameter basis. Alternatively, restoration of water quality can be defined as restoration of the water supply to standards contained in the Pennsylvania and Federal Safe Drinking Water Acts and implementing regulations.
 - Restoration of water quantity to its pre-existing condition can be defined as achieving the quantity, flow rate, and other conditions reflected in the baseline site characterization.
 - Restoration to pre-existing condition also means utilizing the same means of dispensing water on the premises (i.e. replacing in-house tap supply with an external water tank or bottled water supply is not sufficient.)

SECTION FOUR: STORAGE AND DISPOSAL ISSUES

Background:

A key issue relating to Marcellus Shale gas production is how to most safely store and dispose of materials used in and produced from the construction, drilling, hydraulic fracturing, and operation of gas wells and associated equipment.

Shale gas production involves large amounts of fresh water, fracking fluids, flowback water, and produced water, as well as drilling muds and drill cuttings; storage and disposal of these materials presents practical and technical challenges. In the past, large amounts of fracking fluids, flowback water, produced water, and drilling muds were routinely stored in uncovered (and sometimes unlined) pits, and were disposed on- or off-site in a variety of ways, and drill cuttings were stored and disposed in an on-site pit or through land application. The current best management approach is to minimize the amount of these materials on site, contain the materials as fully as possible, reuse or recycle them to the extent feasible, and dispose of the remainder offsite.

Questions also arise about whether an oil and gas company can store gas or other materials underground on the leased property, and whether and how the oil and gas company may dispose of other materials, such as pit liners and trash, on-site.

4.1 On-Site Storage of Treated and Industrial Fluids

How do you, as the property owner, want the oil and gas company to store fracking fluids on your property prior to using them for hydraulic fracturing? How do you want the oil and gas company to store the flowback and produced water on your property, prior to disposing of it?

Why This Issue Matters to the Property Owner:

Storage of fracking fluids, flowback water, and produced water on the leased property poses a risk of contamination to surface and underground water, as well as to soils. Pits, ponds or impoundments (again for reference, collectively "pits") can leak or overflow, allowing the chemical-laden liquids to spill or leak onto the leased property. Migration of the liquids into water sources could contaminate those sources to the extent that they could no longer be used for drinking water or other purposes.

How Existing Leases Approach the Issue:

Many leases prohibit the use of storage pits on the leased property. Some leases that allow this method of storage place restrictions on the location and construction of the pit.

Possible Lease Terms Based on Best Management Practices:

• Prohibit storage of chemicals, fracking fluids, flowback water, and produced water in pits. Require storage in closed tanks that meet requirements discussed in Section 5.3 of this Lease Guide.

- Require use of a "closed loop" system, in which liquids and solids are separated, liquids are combined with fresh make-up water and reused at the well site or at an off-site well, and solids are disposed of off-site in approved facilities.
 - Alternatively, require written permission from the landowner prior to construction of any pond, impoundment or pit. If written permission is granted, include requirements for location, construction, and reclamation of these structures, including:
 - Prohibition against siting pits in a floodplain area.
 - Requirement to install a double liner under any pit with adequate "freeboard" between the expected surface level of the fluid or other material and the top of the pit.
 - Requirement to install fencing and netting around and over pits for safety.
 - Requirement that the oil and gas company fill the pits on completion of the related well, regrade the area to approximate original contours and revegetate to the surface owner's specifications.
 - Prohibit the oil and gas company from burying pit liners or any other waste material, whether liquid or solid, on the leased property.

4.2 Disposal of Treated and Industrial Fluids

Do you, as the property owner, want to allow the oil and gas company to dispose of wastes associated with oil and gas operations, including flowback water, produced water, drill cuttings, and residual waste on or under your property?

Why This Issue Matters to the Property Owner:

On-site disposal of liquids and wastes containing chemical additives, potentially high levels of naturally occurring radioactive materials, and high levels of salts that could contaminate water and soil on the leased property. This is true whether disposal is by injection into an underground well located on the leased property or, for some wastes, by land application or disposal in pits.

How Existing Leases Approach the Issue:

Numerous leases prohibit on-site disposal of flowback water, produced water, or other liquids or wastes on or under the leased property. Some leases prohibit drilling or operating water or gas disposal wells on the leased property, and prohibit the conversion of existing wells into injection or disposal wells. Some leases broadly prohibit disposal, discharge, or burial of any substance on the leased property.

Possible Lease Terms Based on Best Management Practices:

- Require the oil and gas company to reuse/recycle as much flowback and produced water as possible, either on-site or at off-site wells.
- Prohibit underground injection of the flowback or produced water on the leased property.
- Prohibit the use of flowback or produced water for dust control or stabilization of unpaved secondary roads on the leased property.
- Prohibit the disposal of any waste, including residual waste, in an on-site pit or by land application.
- Prohibit the disposal, discharge, or burial of any substance on the leased property, including but not limited to trash, pits, pit liners, water, fracking fluids, flowback water, produced water, drill cuttings, drilling muds, and residual wastes.
- Prohibit the on-site storage or use of hazardous materials, toxic substances, or solid wastes.

4.3 On-Site Storage of Other Materials

Do you, as the property owner, want to allow the oil and gas company to store gas or any other substance under your property?

Why This Issue Matters to the Property Owner:

Oil and gas oil companies may wish to inject and store gas in underground formations such as depleted gas reservoirs or aquifers. Underground storage of gas on the leased property could result in water and soil contamination. The oil and gas company may also wish to store or "sequester" carbon dioxide under the property to prevent it escaping into the atmosphere and contributing to global warming.

How Existing Leases Approach the Issue:

Some leases prohibit underground storage of gas on the leased property. Some also prohibit storage or sequestration of carbon dioxide under the property.

Possible Lease Terms Based on Best Management Practices:

- Prohibit underground storage of gas or any other substance on the leased property.
- Prohibit underground storage/sequestration of carbon dioxide on the leased property.

4.4 Safeguards for Transport and Storage of Materials

What safeguards do you, as the property owner, want the oil and gas company to use when transporting or handling materials that could potentially contaminate water sources or soil on your property?

Why This Issue Matters to the Property Owner:

Water and soil contamination can result from spills of fracking fluids, flowback water, produced water, or other liquids or wastes relating to Marcellus Shale gas operations.

How Existing Leases Approach the Issue:

Leases reviewed for this Lease Guide did not emphasize safety in transporting and handling potential contaminants.

- Require secondary containment when chemicals or liquids are being transported to, on, or from the leased property.
- Require periodic inspection by independent, certified inspectors of pipes, couplings, valves, tanks and other containment structures to detect leaks.

SECTION FIVE: WELL SITES

In our review of existing leases for Marcellus Shale development, we found numerous instances where leases limited the size or number of well pads, or facilities and infrastructure associated with those well pads, on the leased property. This suite of provisions is likely to be of great significance to individual landowners, and we do not intend to diminish their importance in lease negotiation. However, we have opted not to include them in this Lease Guide for the following reasons.

The Pennsylvania Environmental Council and many other conservation-minded organizations consider consolidation of well facilities and infrastructure as a vital means of reducing adverse and cumulative impacts – particularly to natural and community resources. In some instances this could result in greater concentration of well activities or structures on certain properties, rightfully subject of course to the restrictions of individual lease arrangements between the oil and gas companies and the particular landowner. While we respect and support the landowner's right to determine what is in their own best interests through lease negotiation, we do not wish to characterize lease practices that would potentially further distribute well facilities and infrastructure across a broader landscape as a "conservation principle". Therefore they are not included here.

Conversely, there may be some instances where conservation-minded landowners would be receptive to greater development on their own property if it allowed for reduction of ecological or surface impacts on a regional scale. In these instances landowners should consider what additional consideration may be necessary or appropriate to accommodate concentrated development.

Background:

A typical well pad for Marcellus Shale gas recovery is 3 to 7 acres in size and may be the location for numerous wells. The pad is created by flattening the area, removing the topsoil, installing a liner, and covering the area with compacted stone. The well pad must be large and strong enough to support and contain tanks to store liquids (and/or pits if pits are allowed), well drilling machinery, and other machinery and equipment.

Preventing soil and water contamination is less expensive and more effective than trying to clean it up after the fact. Implementation of best practices in siting, design, and construction of the well pad can help protect the leased property from spills and contaminated stormwater runoff, minimize erosion, and protect forested areas. It can also lessen visual impact of the oil and gas operations.

5.1 Associated Facilities

Do you, as the property owner, want to allow placement of any facilities on the surface of your property, or to allow access to your property?

Why This Issue Matters to the Property Owner:

In some instances it is possible for the property owner to negotiate a "no surface use" lease, which gives the oil and gas company the right to access the subsurface of the property to recover underground gas, but prohibits construction of any facilities or infrastructure on the property. This type of lease can be difficult to negotiate with an oil and gas company, but it can afford the property owner far greater protection than a lease that allows placement of wells and other equipment, facilities or infrastructure on the property.

How Existing Leases Approach the Issue:

Some leases prohibit surface access or occupancy, while others prohibit drilling a well on the leased property unless it contains a minimum acreage.

Possible Lease Terms Based on Best Management Practices:

- Prohibit the oil and gas company from accessing or disturbing the surface of the leased property.
- Prohibit drilling of any well on the leased property unless the property is a set minimum acreage (some leases establish 10 acres as the minimum) and substantially all of the drilling location will be on the leased property.

5.2 Site Selection Standards

What standards do you, as the property owner, want the oil and gas company to follow when selecting a well site?

Why This Issue Matters to the Property Owner:

Careful selection of the well site (or sites) on the leased property can reduce the potential for contamination of soil and water on the property, minimize erosion, and lessen visual impact as well as impact to the landscape.

How Existing Leases Approach the Issue:

Existing leases require minimum setbacks from existing structures or features on the leased property and typically include a few additional well location standards.

Possible Lease Terms Based on Best Management Practices:

- Select a well site that:
 - Avoids or minimally affects forested areas.
 - Avoids steep slopes and minimizes the need to cut and fill.
 - Is visually screened to the extent possible by vegetation or topography.
 - Avoids areas of highly erodible soils, prime agricultural soils, and areas prone to severe erosion.
 - Avoids water bodies and wetlands areas.
 - Avoids floodways and floodplain areas.
 - Minimizes the need for truck traffic to and from the site.
- Require location of the well pad or any clearing related to construction of the pad to meet minimum setbacks from key structures or features on the leased property. Setbacks are addressed in Section Six of this Lease Guide.

5.3 Site Design and Constructions Standards

What design and construction standards do you want the oil and gas company to follow for each well site?

Why This Issue Matters to the Property Owner:

All Marcellus Shale gas well sites are not created equal. Management practices exist that can greatly reduce the likelihood of contamination of soil and water by liquids and other materials used or produced at the well site.

How Existing Leases Approach the Issue:

Most leases include only minimal standards for well site design and construction. However, practical best management practices can and should be required.

Possible Lease Terms Based on Best Management Practices:

- Require the oil and gas company to install an impervious liner under the entire well pad, underlain with composite decking to prevent punctures of the liner.
- Prohibit the use of any pit, impoundment or pond for storage or disposal of fracking fluids, flowback water, produced water, or other liquids or wastes used in, or produced by, oil and gas activities. Instead, require all chemicals, liquids, and wastes to be stored in closed, double-walled tanks in storage trailers placed on the well pad. For liquids that must be stored in a well ventilated environment, require secondary containment around tanks, separators, and other receptacles in the form of a dike, berm, firewall or other structure designed to catch any leakage or overflow from the tanks.
- Require construction of a berm around the well pad to prevent runoff from the pad site.
- Require the well pad to be sloped so as to collect all liquids for disposal or reuse/recycling.

SECTION SIX: COMPREHENSIVE PLANNING

Background:

Pennsylvania law and regulations currently do not require or provide incentives for oil and gas companies to conduct comprehensive planning for Marcellus Shale gas operations. In some other states, regulations have been adopted to promote planning for well sites and infrastructure on a large geographic scale.

Why This Issue Matters to the Property Owner:

Comprehensive planning can result in reduced surface impacts and more economical gas recovery by maximizing the efficiency of well site spacing and encouraging

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collocation of infrastructure. Collocation of infrastructure can also minimize the risk of soil, water, and air pollution from oil and gas activities.

Planning at a landscape scale , however, may result in one or more individual property owners being requested to host equipment, facilities, or infrastructure on their property that are not directly related to production from their individual property, or even the unitized area. This arrangement may, however, suit property owners who negotiate economically favorable lease terms reflecting the additional burden to their property.

At a leasehold scale, planning can help to protect important features of the leased property and minimize pollution risk.

How Existing Leases Approach the Issue:

Most leases contain provisions requiring the oil and gas company to engage in some level of planning at the parcel scale, rather than on a larger, comprehensive planning, scale. Most leases reviewed included setbacks from key features of the leased property and the requirement to use existing roads where possible, and several included a requirement for the oil and gas company to complete a Site Plan for review by the property owner.

Possible Lease Terms Based on Best Management Practices:

Most of the following possible lease terms derive from the Pinchot Institute for Conservation's publication *The Marcellus Shale: Resources for Stakeholders in the Upper Delaware Watershed Region* (Dec. 15, 2010).

- Require the oil and gas company to aggregate all leased properties in the immediate area when engaging in well site selection and planning where to locate infrastructure such as pipelines, water withdrawal points, and roads.
- Require the oil and gas company to create a comprehensive plan for gas development over all leased properties in the immediate area. Include in this plan identification of environmental constraints on development such as waterways, floodways and floodplains, wetlands and vernal pools, forested areas, steep slopes, occupied dwellings, public buildings, drinking water supplies, significant wildlife habitats, soil conditions, and viewscapes. Require the oil and gas company to provide a copy of the comprehensive plan to the property owner prior to engaging in any site selection activities on the leased property.

- Require the oil and gas company to collocate infrastructure on the leased property and with other properties in the immediate area to the extent possible, including:
 - Use existing roads where possible.
 - Run pipelines along road right of ways.
 - Share pipelines with other companies.
 - Use existing water withdrawal points or construct access points strategically considering future use. Consider traffic impacts and site stability when selecting and designing water withdrawal points.
- Require the oil and gas company, prior to engaging in any earth disturbance on the leased property, to submit a Site Plan to the property owner for approval.
 - Require that the Site Plan specify:
 - All existing improvements or uses within 2,500 feet of the proposed well pad and any related facilities or improvements.
 - Topographic surface contour information.
 - Information available from existing databases, county records, local municipality records and/or surface property owners concerning prior surface and subsurface uses or other potentially limiting conditions within the proposed well pad site.
 - Identification of designated post-well development surface use(s).
 - Location of surface waters and riparian areas, private water sources, and public water supply sources.
 - Pennsylvania Natural Diversity Index (PNDI) and other ecological baseline information.
 - Location of pre-existing, permanent infrastructure (*e.g.*, gathering lines, compressor stations, metering and processing facilities) within 2,500 feet distance of the proposed well pad site.

- The locations of all surface facilities proposed for the leased property, including well sites, flow lines, pipelines, tank batteries, compressor stations, access roads, and any other surface facility or equipment.
- Require equipment and facilities to be located so as to take advantage of natural topography and increase distances from dwellings, habitable structures, bodies of water, watercourse, and water supplies.
- Prohibit the oil and gas company from engaging in any earth disturbance, cutting any vegetation, or installing any roads, equipment or structures except in the location and manner specified in the approved Site Plan.
- Require all surface disturbance, clearing, operations, facilities, equipment, and infrastructure to meet minimum horizontal setbacks from key features of the leased property. Example of minimum setbacks:
 - 300 feet from any body of water (defined as a natural or artificial lake, pond, reservoir, swamp, marsh or wetland), watercourse (defined as a channel or conveyance of surface water having defined beds and banks, whether natural or artificial, with perennial or intermittent flow), or septic system; or 500 feet from any high quality or exceptional value waters.
 - 500 feet from any water supply (defined as a supply of water for human consumption or use, or for agricultural, commercial, industrial or other legitimate beneficial use; water supply includes a water well).
 - 500 feet from any existing building.
 - 300 feet from the boundary line of the leased property.

SECTION SEVEN: ROAD CONSTRUCTION AND USE

Background:

Marcellus Shale gas operations are large industrial uses that generate substantial truck and other traffic to and on the leased property. Trucks and other vehicles may be used in construction activities on the property, transporting equipment to and from the property, hauling water and wastes, operating and monitoring equipment and operations on the property, and other purposes. Each well site will require a road of sufficient width and strength to withstand the intense road use associated with Marcellus Shale gas production.

Why This Issue Matters to the Property Owner:

New roads can claim large areas of the leased property, but this area can be minimized with proper planning and limitations on road construction. Roads improperly constructed can contribute to erosion, sedimentation, and pollution of soils and waters.

How Existing Leases Approach the Issue:

Many leases address road construction and use standards, but most do not include substantial detail.

- Limit the oil and gas company's access to, and travel on, the leased property to improved roads only. Require the oil and gas company to specify in a Site Plan which road(s) it will use on the leased property.
- Include lease provisions designed to minimize road construction on the leased property:
 - Require the oil and gas company to keep road construction to a minimum on the leased property.
 - Require the oil and gas company to use existing roads where possible to reduce surface impacts and habitat fragmentation.
 - If it is necessary for the oil and gas company to build a new road, limit to one the number of roads to each well site and require the road to be placed in or near already disturbed areas.
 - Establish a maximum width for any roadways on the property.
 - At the termination of the lease, provide that all new roads belong to the property owner. For all new roads that are not needed by the property owner, require the oil and gas company to remove the road surface and reclaim the roadbed and surrounding area. For roads the property owner

wishes to remain on the leased property, require the oil and gas company to repair the road prior to lease termination.

- Include provisions for road construction and maintenance that minimize erosion and the potential for soil and water contamination from roadways:
 - Require the oil and gas company to maintain all roads used in connection with oil and gas operations.
 - Require road construction and maintenance to comply with recommendations of the Penn State Center for Dirt and Gravel Road Studies.
 - Require roads to be designed and maintained for good drainage and require installation and maintenance of erosion control measures.
 - Require road construction material to be clean and not contaminated material.
 - Require roads in poor condition to be improved by being built up, not widened.
 - Require roads to be in sloped, out sloped, or crowned as specified in a Site Plan.
 - Require ditches and culverts to be installed for all roads.
 - Require dirt and gravel roads to be graded not less than once per year.
 - Require the oil and gas company to control dust from roadways if necessary using environmentally sensitive methods. The company should select dust suppressants from the "Approved Products List" or similar document published by the Penn State Center for Dirt and Gravel Road Studies.

SECTION EIGHT: PIPELINES

Background:

Pipelines are used in Marcellus Shale gas operations to transport gas through and off the leased property, through compression and processing facilities, and ultimately to market. Each well site will require installation of a pipeline on the leased property, along with related equipment and facilities.

Why This Issue Matters to the Property Owner:

Pipeline corridors can claim large areas of the leased property, but this area can be minimized with proper planning and limitations on the types of pipelines that can be place on the property. As with any surface disturbance activity, placement of pipelines can contribute to erosion and sedimentation if adequate erosion control and reclamation measures are not implemented.

How Existing Leases Approach the Issue:

Many leases limit the types of pipelines that can be placed on the property, and include standards for pipeline construction such as minimum depths.

- Require the placement of pipelines along existing or proposed roads where possible.
- Require the collocation of electric, water, and gas transmission lines where possible.
- Prohibit, absent a separate written agreement, the placement of any pipelines or related equipment or facilities on the leased property except those related to development and production of oil or gas from the leased property.
 - Alternatively, prohibit pipelines, equipment, or facilities other than those related to development and production of oil or gas from the leased property or the unitized area.
 - Require the oil and gas company to attempt to avoid pipeline stream crossings; where stream crossings are necessary, require the oil and gas company to minimize disturbance to the stream using best management practices enumerated in the Pennsylvania Department of Environmental Protection, Bureau of Oil and Gas Management's *Oil and Gas Operators Manual* (Oct. 30, 2001).

- Prohibit the oil and gas company from assigning to a utility or pipeline company or any other third party the right to any pipelines or related equipment or facilities placed on the leased property.
- Provide that the oil and gas company's right to use any pipelines placed on the leased property terminates when all wells on the leased property are plugged and abandoned. Provide that any pipelines placed on the property will be deemed abandoned after 24 months of disuse, and require the oil and gas company to remove the pipeline and related facilities and equipment in compliance with environmental laws and reclaim all disturbed areas.
- Include requirements for pipeline construction and maintenance:
 - Require the oil and gas company to bury all pipelines and related utility lines to a specific depth (for example, below plow depth, or 36 inches).
 - Require the use of the "double ditch" method for laying pipeline (that is, stockpiling the topsoil and subsoil separately and replacing the subsoil first so topsoil is replaced on top).
 - Require the oil and gas company immediately after laying pipeline or installing related facilities or equipment to refill excavations, fertilize, and seed or replant all disturbed areas, and take any measures necessary to control erosion or sedimentation and restore the natural and aesthetic values of any disturbed areas.
 - Specify a maximum width for pipeline right-of-way.
 - Require the oil and gas company to maintain and repair all pipelines and related equipment and facilities, and to maintain and keep in good appearance all pipeline rights-of-way.

SECTION NINE: GENERAL PROVISIONS

Background:

Leases include general terms relating to the legal relationship and obligations of the parties that are not limited to environmental aspects of oil and gas operations. Certain

terms come into play when an environmental harm has occurred, and help to sort out who must take what steps to remedy the harm.

Why This Issue Matters to the Property Owner:

The cost of remedying environmental contamination or other harms can be extremely high. Unless the lease clearly establishes who is responsible for such harms, the property owner runs the risk of being burdened with some or all of the cost, and the property runs the risk of long-term, unremediated contamination. Property owners should include in the lease strong provisions placing responsibility on the oil and gas company for harms and claims resulting from oil and gas operations on the property.

How Existing Leases Approach the Issue:

Most leases reviewed include detailed provisions relating to limitations on the oil and gas company's rights to use the leased property, compliance with laws and regulations, liability and indemnification, financial security, and insurance.

Possible Lease Terms Based on Best Management Practices:

9.1 Oil and Gas Company's Use of Leased Property

- Limit the oil and gas company's use of the leased property to uses authorized in the lease.
- Limit the oil and gas company's use of the surface of the leased property to specified operations directly related to a gas well on the leased property or a unit in which the leased property is incorporated (for example, well drilling, installation of pipelines, installation of equipment and facilities directly related to the gas well). Require a separate written agreement for any other surface uses.
- Limit the oil and gas company's access to the property to that necessary to enable it to carry out the purposes of the lease.
- Specify the depth of minerals covered by the lease. The Marcellus Shale is just one of numerous strata from which an oil and gas company might ultimately wish to recover gas. Any attempt to develop other strata should be the subject of a subsequent lease.

- Prohibit the oil and gas company from interfering with the valid rights of other users/uses of the leased property, including the property owner.
- Enumerate other existing or likely future uses of the property.
- Require the oil and gas company to use the highest degree of care in operations on the leased property and to employ all reasonable safeguards to prevent soil erosion, environmental damage or contamination, or any other harm to the leased property or soil, water, and air in and around the leased property.
- Require the oil and gas company to pay damages to the property owner or the appropriate lessee for any damage caused to the surface or subsurface of the property.
- Require the oil and gas company to conduct all operations in accordance with good industry practice and consistent with the Pennsylvania Department of Environmental Protection, Bureau of Oil and Gas Management's *Oil and Gas Operators Manual*, and/or other specified best management practices.
- Specify that all of the oil and gas company's employees, agents, representatives, invitees, contractors, and subcontractors are bound by the terms of the lease, and that any reference in the lease to the oil and gas company includes these additional persons and entities. Require the oil and gas company to provide a copy of the lease to each of these groups.

9.2 Compliance with Permits, Regulations, and Laws

- Require the oil and gas company to obtain and comply with all local, state, and federal permits.
- Require the oil and gas company to comply with all local, state, and federal laws and regulations, policies, and agency or court orders.
- Specify that any failure by the oil and gas company to comply with laws, regulations, agency or court orders, or permit terms is a default of the lease.
- Specify that when laws, regulations, policies, permit terms, or agency or court orders applicable to oil and gas activities on the leased property differ regarding environmental controls, protection, or clean up, the most stringent version applies.

- Require the oil and gas company to comply with all recommendations in the Pennsylvania Department of Environmental Protection, Bureau of Oil and Gas Management's *Oil and Gas Operators Manual.*
- Require the oil and gas company to comply with all recommendations in the U.S. Bureau of Land Management and U.S. Forest Service, *Oil and Gas Exploration and Development: The Gold Book*.
- Require the oil and gas company to immediately notify the property owner of any violation of any environmental law, regulation, policy or agency or court order, or any environmental impact at or from the leased property or any breach of any of the terms of the lease relating to environmental impact or controls. Require the oil and gas company to provide the property owner with all documentation relating to the event requiring notification.

9.3 Liability and Indemnification

- Specify that the oil and gas company alone is liable for any contamination of air, water, or soil resulting from the oil and gas company's operations on the leased property.
- Require the oil and gas company to indemnify and hold harmless the property owner, and pay any judgment against the property owner, resulting from all claims relating to oil and gas operations on the leased property, including claims of injury or death to any person, damage to real or personal property, or any violation of environmental laws or regulations. Require the oil and gas company to pay attorneys fees and costs relating to such claims.

9.4 Financial Security

- Require the oil and gas company to post a financial security of a specified amount (in addition to the financial security required by state government) to ensure its performance under the lease. Require an additional financial security of a specified amount for each well drilled to cover plugging, abandonment, and reclamation of the well site.
- Specify that the security can be used by the property owner to remedy any breach by the oil and gas company of any term of the lease.

• Specify that the property owner and the oil and gas company must reconsider the security amount every 5 years, and if it is no longer adequate the bond is to be increased.

9.5 Insurance

- Require the oil and gas company to provide specified types of insurance in specified amounts including, for example, comprehensive (covering specified hazards and activities), excess umbrella liability (covering specified hazards and activities), workers compensation and disability, well drilling insurance, well control insurance, and pollution liability insurance.
- Require that the property owner is a named insured on all insurance policies.
- Require insurer to waive right of subrogation against property owner.

9.6 Assignment

• Require the property owner's written approval prior to the transfer of the lease to another oil and gas company.

AN OHIO LANDOWNER'S GUIDE TO HYDRAULIC FRACTURING

ADDRESSING ENVIRONMENTAL AND HEALTH ISSUES IN NATURAL GAS LEASES

Harvard Law School Emmett Environmental Law and Policy Clinic Cambridge, MA May 2011 Note: It is strongly recommended that you consult a lawyer before signing a lease or engaging in lease negotiations. This document is not meant to be definitive legal advice, nor is it intended to serve as a substitute for consulting with a lawyer. The authors assume no liability for the actions taken (or not taken) by any party in reliance on this guide.

Getting Started

This guide is a source of information for you: a landowner in Ohio who is considering signing a lease with a natural gas company ("Company") for the extraction of natural gas from your land by a process commonly referred to as hydraulic fracturing ("fracking"). Fracking is the process of drilling and extracting natural gas from layers of underground shale by injecting a mixture of water, sand, and chemicals to create horizontal and vertical fractures beneath the surface of the earth. This process allows otherwise unreachable gas to be extracted. You may want to sign a lease for a financial opportunity—but it's important to realize that fracking is an industrial process that can have a big impact on your property and family. It's very important to make sure that proper protections are included in any lease that you do sign.

When you sign a natural gas lease, you (then known as the "Lessor") are not only agreeing to allow the Company (then known as the "Lessee") to extract the natural gas from below your land, but you are also agreeing to allow the Company to engage in various related activities, such as drilling and storage of chemicals and waste products on the surface of your land. Because of the invasive nature of the fracking process, as well as the toxic chemicals used, these operations could lead to serious environmental and health risks for you, your family, your water sources, your land, your crops, your livestock, and your neighbors if not managed properly. As described in additional detail
below, these risks can include polluted drinking water, polluted soil, increased air and noise pollution, land scarring, and increased radon and hydrogen sulfide levels, all of which could adversely affect your health.

Once signed, a lease is the law between you and the Company. Negotiating terms that deal with the issues covered by this guide, and including them in your lease, can be an effective and important way to protect you, your family and your property.

Specifically, this guide:

- highlights some of the key environmental and health issues associated with various aspects of fracking; and
- + provides recommendations for how you can protect yourself, your family, and your property by incorporating suggested language into any lease that you sign with a Company.

This guide has been prepared with current Ohio laws and regulations in mind (as of May 2011).¹ These laws served as a starting point from which the more protective suggestions have been developed. It is important to keep in mind, however, that the Ohio Department of Natural Resources is currently reviewing its natural gas regulations and Best Management Practices ("BMPs") and expects to modify them significantly in the coming months. Thus, before beginning any lease negotiations, you should have your attorney check the most recent version of the laws and regulations to ensure that your lease conforms to them and includes the most protective language available to you.

¹ Specifically, these include Chapter 1509 of the Ohio Revised Code and Chapter 1501:9 of the Ohio Administrative Code. Note that the regulations are more stringent for "urbanized" areas than they are for "non-urbanized" areas.

It is also important to note that this guide only deals with environmental and health issues (it does not address financial issues, for instance, which have been adequately covered by other guides). Moreover, while this guide attempts to provide specific lease language that you can use, you and your attorney should ensure that each provision is adapted to suit your particular needs.²

While this guide will hopefully be helpful in providing a concise overview of specific environmental and health risks and ways of mitigating those risks, there are other guides that you may also want to consult. Some particularly useful materials include:

- + Earthworks, Oil & Gas Accountability Project, Oil and Gas at Your Door: A Landowner's Guide to Oil and Gas Development, Second Edition (2005), available at http://www.earthworksaction.org/LOguidechapt ers.cfm
- + Northeast Ohio Gas Accountability Project, General Information and Fact Sheets, *available at* <u>http://www.neogap.org/educate-yourself.php</u>
- + David McMahon, Information about Oil and Gas Leasing for Surface Owners Who Also Own Their Minerals, May 16, 2008, available at http://www.wvagriculture.org/images/Executive /LeasingAdviceWVa2008-05-16.pdf

 $^{^2}$ To this end, where sample lease provisions call for specific numbers, this guide has adopted the convention of using "[xx]" – implying that you or your attorney should fill in whatever number is most appropriate to your particular situation.

On Fracking

Shale gas drilling and production is a multi-year process involving several distinct stages of operations. The following outline provides a brief overview of the process. First, the Company will engage in seismic testing to determine where natural gas deposits are found in large quantities. Second, the Company will begin constructing various facilities on your land to enable it to extract the natural gas. These facilities often include, but are not limited to:

- + the well site (where the drilling occurs);
- + roads leading to the site;
- + pipelines (to carry the natural gas from the site);
- + pits (to store wastewater or other waste on the site);
- + fences (to protect facilities);
- + compressors (to compress the natural gas for transport); and
- + separators (to purify the natural gas for transport).

Third, the Company will drill the well and fracture the shale to allow the natural gas to be extracted. Fourth, the Company will extract the natural gas, a process which can last for years. Finally, when the well no longer produces enough natural gas for the Company to earn profits, the Company abandons and plugs it. Per current Ohio law, this is followed by reclamation of the abandoned site. This reclamation should entail, to the extent practicable, restoring the site to as close to its original condition as possible.

Each aspect of the drilling and production operations presents environmental or health risks. You may therefore want to incorporate language like the examples provided in the remainder of this guide into your lease to protect against each of the particular risks.

Environmental and Health Issues

The following sections list the risks associated with each aspect of shale gas operations, identify possible ways that you can protect yourself, and provide examples of specific lease terms in green boxes that you can incorporate into a lease to legally secure these protections. In case it is useful to you or your attorney, an Appendix at the end of this guide provides a cohesive lease addendum that includes all of the sample lease provisions suggested in the individual sections below. This addendum may need to be revised to meet your unique circumstances.

1. Acquisition of Baseline Information

Description of Activity: Before the Company begins its operations, you want to get information about the condition of your land. This information will provide a yardstick by which you can monitor any impact of the Company's activities on your land. Having this baseline information will help deter the Company from neglecting its environmental duties under the lease as well as under applicable laws and regulations. Baseline information will make it easier for you to prove that the Company's operations harmed your property.

Risks: If you do not have baseline data regarding the state of your groundwater, the air you breathe, the quality of your soil, and the condition of your property, it will be difficult to show later on that the Company's actions have harmed you or your property.

How to Protect Yourself:

+ You can require that the Company hire an independent environmental engineering or consulting firm to conduct a baseline study—before starting its activities—to ascertain the

condition of your soil, water, air, roads, livestock, crops, vegetation, buildings, structures, and other properties.

Note: You can obtain the help of experts, such as a county soil and water district employee, in identifying sensitive areas where drilling should be avoided.

+ You can require that the Company give you a written plan of its stage-by-stage activities, the adverse impacts expected, and how each of these impacts will be mitigated.

Prior to the commencement of any activity under this Lease, Lessee shall perform studies to ascertain the baseline condition of Lessor's environment. The baseline information collected shall include, but shall not be limited to: a) an inventory of crops, native or cultivated grasses, trees, pastures, and animals, whether domestic or wild, on the Leased Premises, and b) results of soil, water, and air quality testing performed by an independent company of Lessor's choosing that is certified by the Ohio Environmental Protection Agency and/or the Ohio Department of Health. Lessee shall pay all costs of such studies and testing. Lessor shall be provided complete copies of any and all studies and testing results and data, and shall have full rights to independently contact the testing laboratory for inquiry and information.

Lessee shall also provide Lessor with a plan describing each stage of Lessee's proposed activities, identifying the likely effects that said activities will have on all aspects of the Leased Premises, and setting out in detail what steps Lessee shall take to mitigate the adverse effects on the Leased Premises.

2. Limiting the Location and Scope of the Company's Operations

Description of Activity: If you do not limit where the Company conducts its operations, it might choose to locate them on parts of your land that are environmentally sensitive or where you might not want them. Additionally,

the Company's operations can interfere with your use of the land as well as that of your neighbors.

Risks: If natural gas operations are conducted in certain areas, they could cause ecological damage, could ruin areas of your property that have special significance for you, or could interfere with your everyday enjoyment of your land. Examples include areas near: your house, lakes, ponds, or streams, historical sites, and habitat of wildlife and endangered species. Additionally, the Company's operations could interfere with other activities on your land, such as farming, fishing, or hunting.

How to Protect Yourself:

- + You can designate certain areas as off-limits for the Company.
- + You can limit the Company's operations to certain areas of your property.
- + You can require that the operations be grouped together to leave the majority of your land free.
- + You can require that pre-disturbed land (e.g. farmland) should be used before undisturbed land (e.g. woodlands).
- + You can specify that you have the right to build additional structures on your land.
- + You can require the Company to conduct its activities in a manner that will not interfere with your use of the property.
- + You can prohibit the Company from taking or using any resources (other than natural gas) on the leased premises without your consent.
- + You can prohibit the Company's employees from engaging in activities that might be harmful to your use of the land (such as hunting, fishing, etc.).
- + You can specify that you have the right to the proceeds from the sale of any timber harvested on your land.

Before Lessee commences any operations on the Leased Premises, Lessee and Lessor shall mutually agree in writing on the location of all Seismic Testing Activities, Well Sites, wells, tanks, tank batteries, pits, roads, pipelines, pipes, pump stations, compressors, dryers, separators, gates, and other equipment and facilities so as to avoid disruption of Lessor's use of the Leased Premises. Lessor's consent shall not be unreasonably withheld.

Lessee shall also, to the degree practicable:

design and lay out its operations to be concentrated in a single area of the Leased Premises so as to avoid unnecessary utilization of surface areas; locate all pipelines and roadways within a single corridor; and conduct operations on pre-disturbed land prior to using undisturbed land.

Lessor reserves the right to construct any structure or other improvements, at any location selected by Lessor, anywhere on the Leased Premises. If Lessor commences construction of a structure or other improvement on the Leased Premises, Lessee will not locate any equipment, nor conduct any operations, within [xx] feet of the proposed structure or improvement without Lessor's written permission.

Lessee hereby agrees that it shall conduct its activities in such a manner that shall not render Lessor or any other person rightfully in close proximity to the site incapable of continuing to enjoy the use of his or her land. Lessee will plan and conduct its surface operations in a manner that will avoid or minimize intrusion into crop fields. In the event such an intrusion cannot be avoided, Lessee shall compensate Lessor for the damage or loss of growing crops at current market value.

Employees, agents, and independent contractors of Lessee shall have no right to and are prohibited from firing any firearms, hunting, and fishing on the Leased Premises. Lessor has the right to deny access to the Leased Premises to any person found to have violated this provision. Furthermore, Lessor retains the right for Lessor, its successors, assigns, and invitees to fish and hunt anywhere on the Leased Premises.

Lessee shall notify Lessor in writing at least [xx] calendar days prior to any removal of marketable timber (marketability to be within the discretion of Lessor). At Lessor's option, Lessor may choose to harvest timber, or Lessor may require an appraisal of the timber by a qualified independent appraiser, and Lessee shall pay Lessor the appraised value for the timber identified prior to its removal by Lessee.

3. Maintenance of Water, Soil, and Air Quality

Description of Activity: Various aspects of the Company's operations can lead to contamination of well water, ponds, streams or other water sources on your land. These operations can also contaminate your soil and/or pollute your air.

Risks: Water contamination is extremely serious and can be dangerous to your health and the health of those around you. In addition, if your water were to become contaminated, it would reduce the value of your property. Additionally, soil contamination and increased air pollution can also lead to increased health hazards to you, your family, and your livestock.

How to Protect Yourself:

- + You can require the Company to conduct periodic tests to detect any changes in the smell, color, taste, or quality of your water and provide the test results to you.
- + If the testing reveals any negative change to your water sources compared to the baseline, you can require the Company to take steps to remedy the problem.
- + You can also require the Company to conduct periodic tests of the quality of your soil and air and provide those test results to you.

Lessee shall maintain or improve the baseline quality and quantity of all water sources on the Leased Premises, including, but not limited to, streams, ponds, lakes, springs, aquifers, and wells. To this end, in addition to the required studies and testing that take place prior to operations, Lessee shall also test all water sources on the Leased Premises at the completion of operations, at least every [xx] months during operations, and as deemed necessary by Lessor in Lessor's sole discretion due to changes in flow or quality, including but not limited to color, smell, or taste. This testing shall be performed by an independent company of Lessor's choosing that is certified by the Ohio Environmental Protection Agency and/or the Ohio Department of Health. Lessee shall pay all costs of testing and shall provide Lessor with complete copies of any and all testing results and data. Lessor shall have full rights to independently contact the testing laboratory for inquiry and information.

Should any of these water sources be compromised, tainted, chemically altered, infiltrated, polluted, or reduced as a result of Lessee's operations, Lessee shall promptly take any and all steps necessary to restore water quality and quantity to its baseline condition. During the period of such remediation, Lessee shall provide Lessor with an adequate supply of potable water consistent with the baseline condition of the water source prior to Lessee's operations. Any pollution or reduction of any water source after any operations commence will be presumed to be the result of Lessee's operations unless Lessee can prove otherwise, with Lessee having the burden of proof by a preponderance of the evidence. Until Lessee can prove otherwise as to cause, Lessee shall provide the required replacement supply beginning immediately upon Lessor's providing evidence to Lessee of the water quality and/or quantity condition causing concern.

Lessee shall also maintain or improve the baseline soil quality and air quality on the Leased Premises. To this end, in addition to the required studies and testing that take place prior to operations, Lessee shall also conduct air quality and soil quality testing on the Leased Premises at the completion of operations, at least every [xx] months during operations, and as deemed necessary by Lessor in Lessor's sole discretion due to noticeable changes in quality. This testing shall be performed by an independent company of Lessor's choosing that is certified by the Ohio Environmental Protection Agency and/or the Ohio Department of Health. Any pollution of the air or soil on the Leased Premises after any operations commence will be presumed to be the result of Lessee's operations unless Lessee can prove otherwise, with Lessee having the burden of proof by a preponderance of the evidence. Lessee shall pay all costs of testing. Lessor shall be provided complete copies of any and all testing results and data, and shall have full rights to independently contact the testing laboratory for inquiry and information. In the event that, during the term of this Lease, a local government or government agency having jurisdiction over the Leased Premises develops a plan for testing or other analysis of water, soil, and/or air quality that involves formation of a fund for specific or random tests of water quality in areas subject to oil and gas exploration, including the Leased Premises, Lessee agrees to participate in such a plan to the same extent as if that plan had been in existence at the time of inception of this Lease.

4. Roads

Description of Activity: Fracking and development involve the transportation of large amounts of water, chemicals, and supplies by truck. To support its operations, a Company might widen existing roads and/or build new roads to access various parts of its work sites. A Company may also wish to build roads where you prefer they not be built, such as close to your house or through a crop field.

Risks: Roads create additional "scars" on the land and can lead to more traffic if other people decide to use the new or improved road. Roads and traffic can interfere with your daily life and activities, and result in continuous noise and dust pollution.

How to Protect Yourself:

+ You can limit the Company's ability to widen existing roads and/or build new roads.

Note: You should check with the local fire department, county engineer, and/or planning commission to determine that the road will be constructed with sufficient turnaround space for emergency vehicles.

+ You can also require that the Company install and maintain a gate on any new road it builds to help limit access by other people who might seek to use the newly-built road.

+ You can require that roads be placed in specific areas (or not in specific areas), especially avoiding areas that are environmentally sensitive.

Note: This issue is covered by the lease language provided in the section above on limiting the location and scope of the Company's activities.

Lessee agrees to locate and grade not more than one (1) road to each major work area necessary for its operations and to confine travel to such road. Any road constructed by Lessee shall not exceed [xx] feet in width, or a minimum width required to perform required operations. Any road constructed by Lessee shall be constructed such that there is sufficient turnaround space for emergency vehicles.

At Lessor's request, Lessee shall install and diligently maintain fences, gates, closures, and/or cattle guards on all roads built by Lessee. Lessor will be allowed free use thereof. At Lessor's request, such fences, gates, closures, and cattle guards will become Lessor's property on termination of this Lease. At Lessor's request, Lessee shall keep all gates closed when not in use.

Risks: The increased truck traffic from all aspects of the operations can tear up existing roads.

How to Protect Yourself:

+ You can require that the Company repair and maintain certain roads periodically, especially after certain activities that are known to be very damaging to roads, such as seismic testing with "thumper" trucks and/or after the fracking process.

Note: Improving local roads might have the unintended consequence of inviting other drivers to use the newly improved road, potentially increasing traffic. To the extent permitted by applicable law, Lessee agrees to improve and maintain all roads used by it in good repair. These duties apply to all roads utilized by Lessee, regardless of whether such road was constructed by Lessee. For public roads, Lessee shall maintain such roads in conformity with standards set forth by the relevant permitting authority to provide a smooth, rut-free, all-weather surface suitable for use by automobiles. For private roads, Lessee shall utilize shale, gravel, or crushed stone where necessary to provide a smooth, rut-free, all-weather surface suitable for use by automobiles. When such roads are no longer being used by Lessee, if Lessee has laid stone or any other topping, Lessee agrees, upon Lessor's request, to remove such topping and to restore the surface as nearly as possible to its baseline condition. When improving, constructing, or maintaining roads, Lessee shall not use any materials from the Leased Premises without the written consent of the Lessor.

Risks: This increased truck traffic leads to visual, noise, and air pollution.

How to Protect Yourself:

- + If dirt roads are involved, you can have the Company periodically use non-polluting dust suppression techniques, the easiest of which is spraying water on the road.
- + You can require that all of the Company's employees drive slowly on the roads.
- + You can prohibit the Company from using the roads at certain times of the day or year, such as not early in the morning, late at night, or on weekends.

At Lessor's request, Lessee shall control dust from traffic to the maximum extent practicable, utilizing water or a non-pollutant as a dust suppressant when necessary. Unless otherwise authorized by Lessor, Lessee shall use fresh water not obtained from the Leased Premises.

Lessee shall prevent its employees, agents, and contractors from operating vehicles in a negligent manner or at speeds in excess of [xx] miles per hour while on the Leased Premises. Unless emergency conditions dictate or Lessee has received prior written consent from Lessor, Lessee shall prevent its employees, agents, and contractors from traveling and operating any vehicle on the Leased Premises between: [xx] o'clock PM and [xx] o'clock AM, as well as on [xx].

5. Fencing

Description of Activity: The Company's operations will include many activities that, for safety reasons, it will be important to keep enclosed.

Risks: Fencing is especially important to keep children, livestock, wildlife, and unauthorized persons from getting too close to certain structures and equipment that could be harmful to them.

How to Protect Yourself:

+ You can require that the Company use fences around all of its operations and grant you reasonable access to those areas.

At Lessor's request, Lessee shall (i) fence all wells and well sites, tank batteries, pits, and other equipment placed on the Leased Premises with a fence capable of deterring livestock, wildlife, small children, and trespassers; (ii) keep such fences in good repair; and (iii) keep all gates and fences closed at all times. Lessor shall be allowed all reasonable access to fenced areas.

6. Noise

Description of Activity: The operation and movement of heavy machinery and equipment associated with well site development may be noisy.

Risks: This noise could cause nuisance and stress for you, your family, your neighbors, and any livestock, wildlife, or pets in the vicinity.

How to Protect Yourself:

- + You can require that the Company limit noiseproducing activities to specific times of day. For example, you can prohibit such activity when people are asleep early in the morning and/or late at night, and/or on weekends and holidays.
- + You can also require that the Company's operations do not generate noise in excess of a certain decibel level.

Lessee shall not operate any vehicles, equipment, or machinery on the Leased Premises between: [xx] PM and [xx] AM, as well as on [xx]. At any given time, Lessee's operations shall not generate noise in excess of [xx] decibels, on average over the course of any [xx] minute period, nor [xx] decibels at any one time, as measured from any point within [xx] feet from the activity generating the sound.

7. Restrictions on Using Hazardous Materials

Description of Activity: Companies will be using hazardous materials and chemicals in most phases of their operations.

Risks: These hazardous materials could be very harmful to you, your family, animals, and/or your property by polluting water, air, and land.

How to Protect Yourself:

- + As a practical matter, you cannot prohibit the Company from using or generating hazardous materials during the fracking process.
- + You can, however, require the Company to provide you with detailed information about such substances. For example, you can ask for the Material Safety Data Sheets for all hazardous chemicals used.

+ You can also require the Company to take all necessary precautions when using such hazardous materials.

Potential Lease Language: Lessee shall not use, dispose of, or release on the Leased Premises or permit to exist or to be used, disposed of or released on the Leased Premises as a result of its operations any substances (other than those Lessee has been licensed or permitted by applicable public authorities to use on the Leased Premises) which are defined as "hazardous materials", "toxic substances" or "solid wastes" in federal, state, or local statutes, regulations, or ordinances. For any such materials or substances that are used or generated on the Leased Premises, Lessee shall provide Lessor with the applicable Material Safety Data Sheets.

Should any pollutant, hazardous material, toxic substance, or solid waste be accidentally released on the Leased Premises, Lessee shall immediately notify Lessor and the applicable governmental body of such event, and shall take all action necessary to mitigate harm and clean up, remediate, and restore the release site.

8. Seismic Testing

Description of Activity: Before engaging in any drilling or production operations, the Company may perform seismic testing to pick the best places to drill wells. This testing works by sending seismic waves into the earth to determine the makeup of the rock layers, from which the Company may be able to determine where the natural gas is and how much is there. There are different ways that the Company can generate these seismic waves, including the use of explosives and large "thumper" trucks (trucks that pound the ground in various spots to generate seismic waves). Explosives are not common in current operations, but they are still sometimes used.

Risks: If explosives are used, the resulting holes can cause erosion and/or pollution of adjacent ponds, streams, and wells. Thumper trucks generally cause fewer environmental risks, but can create additional visual, noise, and air pollution while they are in use (these concerns are dealt with in the "Roads" section included above).

How to Protect Yourself:

- + You can prohibit the Company from using explosives when conducting its seismic testing.
- + If you do not prohibit the use of explosives during seismic testing, you can require that the Company minimize erosion by not conducting seismic testing on sloped land.
- + You can require that the Company plug all "shot holes" caused by explosives from bottom to top when it has finished seismic testing activities.
- + You can require the Company to limit its seismic testing period to a specific number of weeks.
- As with all activities, you can require that seismic testing be conducted in specific areas (or not in specific areas), especially avoiding areas that are environmentally sensitive.

Note: This issue is covered by the lease language provided in the section above on limiting the location and scope of the Company's activities.

Without Lessor's prior written consent, Lessee shall refrain from using explosives during its Seismic Testing Activities.

[In the event that you do not prohibit the use of explosives during seismic testing]:

Lessee shall not conduct Seismic Testing Activities on slopes which have an angle that is greater than [xx] degrees. Any holes in the ground resulting from Lessee's seismic testing shall be plugged, from bottom to top, within [xx] days from the date on which the hole was shot. Lessee shall plug and abandon these holes in a manner that prevents vertical movement of water in the hole.

The duration of Seismic Testing Activities shall not exceed [xx] weeks. For the purposes of this Lease, Seismic Testing Activities shall

include all activities undertaken by Lessee for the purpose of gathering information regarding the subsurface geology of and/or natural resources located on or beneath the Leased Premises and/or adjacent lands.

Risks: If the Company uses wire survey flags to mark land as part of its seismic testing process, farm equipment (such as tractors) can shred the flags, producing metal bits that can kill livestock which graze on the land. Additionally, if the Company uses seismic lines to mark land, these lines can destroy vegetation and could cause erosion.

How to Protect Yourself:

- + You can require that the Company minimize its use of seismic lines.
- + You can require that seismic survey stakes be made of wood instead of metal.
- + As with all activities, you can require that the Company remove all materials when the process is finished.

Throughout its Seismic Testing Activities, Lessee shall minimize the use of physical markers, including, but not limited to, seismic lines, survey flags, and stakes. To the extent that Lessee utilizes survey flags in its seismic testing activities, Lessee shall refrain from using flags or flag stands made of metal. Within [xx] days from the date on which the Lessee has completed its Seismic Testing Activities, Lessee shall remove all materials used in such Seismic Testing Activities, including all physical markers, as well as any refuse or other equipment that may have been left behind by Lessee.

9. Development of the Well Site

Description of Activity: Once the Company determines where to put its drilling well(s), it will begin preparing the well site(s) for drilling operations. This process involves stripping the land of vegetation and putting in place drilling and production equipment such as the well pad, drill rig, tank battery, compressors, and water tanks. It

also involves building access roads so that trucks can reach the well site(s).

Risks: Developing the well site(s) can leave an ugly "scar" on the land if the Company does not engage in proper reclamation and re-vegetation. If the Company spreads out its operations and the location of equipment, then more land will be impacted.

How to Protect Yourself:

- + Given that well pads are often much larger than they need to be, you can limit their size.
- + You can require that all infrastructure (e.g., well pads, compressor stations, condensate tanks) be located as close together as possible, in as small an area as possible.
- + You can make the Company engage in "interim reclamation," i.e. planting trees and other vegetation near the well in order to minimize the eyesore and to help reduce the noise associated with ongoing drilling and production operations.
- + As with all activities, you can require that the well site be placed in a specific area (or not in specific areas), especially avoiding areas that are environmentally sensitive.

Note: This issue is covered by the lease language provided in the section above on limiting the location and scope of the Company's activities.

The Well Site shall be no larger than [xx] acres. In addition, Lessee shall use its best efforts to minimize the size of the Well Site and locate equipment and infrastructure as close together as possible.

Following the construction of the Well Site, and prior to Lessee engaging in any drilling or production operations, Lessee shall consult with Lessor to take steps to minimize the visual impact associated with the Well Site. At Lessor's request, and to the extent that it does not present an increased fire hazard, Lessee shall take reasonable efforts to plant trees and other vegetation in areas that help minimize the visual impact of the well site. Both parties recognize that said vegetation shall be limited to that which does not interfere with Lessee's ability to conduct its operations. Well Site construction is deemed to have been completed when the Well Site has been constructed such that it is able to be used for its primary purpose.

For the purposes of this Lease, the Well Site shall refer to the area that includes a well drilled on the Leased Premises and the associated facilities that are appurtenant to the operation of said well for the purpose of aiding in the processes of extraction and recovery, lifting, stabilization, treatment, separation, production processing, storage, and measurement of hydrocarbon gas and/or liquids.

10. Drilling and Fracking

Description of Activity: Once the equipment is in place, the Company will begin drilling the well. The first part involves drilling a vertical well that is thousands of feet deep. Once the well reaches the layer of shale which contains the natural gas that the Company is seeking, the Company will change the direction of its drilling and drill horizontally into the shale. Next, the Company will engage in the actual "fracking" of the shale to extract the gas trapped within. This is done by shooting water, chemicals, and additives down the well hole at high pressures to create fractures in the shale so that the gas can be extracted. This mixture of water, sand, and chemicals is commonly referred to as "frackwater" or "slickwater." When the mixture comes back up from the well, it is often referred to as "wastewater" or "produced water." This produced water carries with it additional organic compounds that are picked up from inside the well. Some of these compounds, although occurring naturally, may pose health or environmental hazards when brought to the surface.

Risks: The drilling and fracking processes can lead to the contamination of water sources such as ponds, streams, and wells and could thus be harmful to health. Fracking

requires the use of many different chemicals. The drilling process can also release and carry to the surface naturally occurring substances, like arsenic or mercury, and radioactive material (often referred to as "NORM") such as radon, all of which can be harmful to health.

How to Protect Yourself:

- + You can require that the Company provide you with notice before it starts drilling.
- + You can require that the Company provide you with a list of substances that it will use in its fracking fluid.
- + You can require that the Company not store chemicals on your property, or require that they be kept in a particular area at a safe distance from your home, crops, livestock, and water sources.
- + You can require that the Company pay for periodic radon and hydrogen sulfide testing in and around your house.

Note: Lease provisions regarding other types of testing, such as water and soil, are included above in the sections covering acquisition of baseline information and maintenance of water quality.

Lessee shall provide at least [xx] calendar days prior written notice to Lessor before Lessee commences any actual drilling on the Leased Premises.

Prior to injecting any substance into a well drilled on the Leased Premises, Lessee shall provide Lessor with a list of all substances, broken down by compound, that are to be injected. Lessee shall also provide Lessor with Material Safety Data Sheets for each compound to be injected into the well. Lessee shall not store chemicals on the Leased Premises, except to the extent necessary to carry out current use of such chemicals in operations. Lessee shall keep chemicals necessary to carry out current use [xx] feet from any residential structure, growing crops, livestock, and water sources on the Leased Premises. At Lessor's request, Lessee shall pay for radon and hydrogen sulfide testing, to occur once every [xx] months, of any residences on the Leased Premises, whether constructed before or after the effective date of this Lease. Such test results shall promptly be provided to Lessor. This testing shall be performed by an independent company of Lessor's choosing that is properly licensed to conduct such testing by the State of Ohio. Testing shall also be conducted prior to and at the completion of operations on the Leased Premises or on any land in the unit of which any of the Leased Premises is a part.

Risks: Fracking fluid uses a tremendous amount of water, sometimes up to several million gallons per fracking event, and wells can be fracked multiple times. If local water sources are used by the Company, the fracking process can deplete the water in your wells, streams, or ponds.

How to Protect Yourself:

+ You can require that the Company bring all water for its operations from off site. *Note: One potential downside to this approach is that it will mean more trucks driving to and from the well site.*

Without Lessor's prior written consent, Lessee shall not use surface or groundwater from the Leased Premises, including Lessor's springs, ponds, wells, creeks, streams, rivers, or lakes for any operations undertaken by Lessee.

Without Lessor's prior written consent, Lessee shall not drill or operate any water well, take water, or otherwise use or affect water in subsurface water formations. Any water well drilled by Lessee on the Leased Premises, with Lessor's written consent, shall be left intact and shall become the property of Lessor upon the termination of this Lease.

11. Disposal of Wastewater

Description of Activity: After the well has been fracked, a large portion of the wastewater returns to the surface where it will be stored for re-use or discarded. This

wastewater is usually contaminated. There are various methods of temporarily storing this wastewater, most notably in large open-air impoundment pits or several closed tanks usually grouped in batteries. Additionally, companies sometimes try to dispose of this wastewater by spraying or misting it out of an open-air impoundment pit, or by spreading it on dirt roads. In some cases, companies try to pipe wastewater between well locations so that it can be managed at a central location. Centralized impoundment pits are thus larger than pits serving single wells.

Risks: If the Company uses an impoundment pit to store wastewater, it will dig a large pit on your property, which can leave a scar on the land.

How to Protect Yourself:

+ You can require that used fracking fluid be stored temporarily in a tank, trucked away, and properly disposed of by the Company, thus eliminating the need for a pit.

Note: One potential short-term downside to this approach is that it will mean more trucks driving to and from the well site. This nuisance is slight, however, compared to the problems an impoundment pit presents.

Without Lessor's prior written consent, Lessee shall not dig any pits on the Leased Premises for the storage of produced water, wastewater, brine, saltwater, or frackwater ("Wastewater"). Lessee shall remove all Wastewater from the Leased Premises and dispose of it off-site in conformity with applicable Ohio law.

Risks: If an impoundment pit is used for temporary storage, it can present a hazard for children, livestock, and wildlife. Evaporating wastewater can create air pollution and foul odors in the surrounding area. Additionally, if

there is a tear in the pit liner, (or no liner), the chemicalfilled wastewater can seep into the ground and contaminate soil and water sources.

How to Protect Yourself:

+ If you decide to allow the Company to build an impoundment pit, you can ensure that the Company builds it in accordance with Ohio law, including that it be adequately lined and fenced to keep out livestock and children.

Note: This fencing provision is covered by the lease language provided in the section above on fencing.

- + You can require that the Company does not spray wastewater into the air or onto the ground to aid in its evaporation or disposal.
- + You can require that the Company treat the wastewater on-site to mitigate the air pollution and foul odors associated with it.
- + As with all activities, you can require that pits be placed in specific areas (or not in specific areas), especially avoiding areas that are environmentally sensitive.

Note: This issue is covered by the lease language provided in the section above on limiting the location and scope of the Company's activities.

Any pit agreed upon by Lessor and Lessee shall conform to all applicable regulatory requirements and be deep enough to allow at least [xx] inches of backfill over the liner after grading to surrounding pre-drill contour. Promptly after completion of operations, any backfill, liners, and Wastewater shall be removed, and the pits shall be prepared for burial, back filled, graded, and planted within [xx] days, weather permitting.

Lessee shall immediately notify Lessor and the Ohio Department of Natural Resources if any pit lining is torn, punctured, or otherwise breached, allowing any fluid contained in a pit or designated to be contained in a pit to seep, leak, or overflow through or around the liner.

Lessee shall not employ any methods that actively aid in the evaporative process of any produced water, wastewater, brine, saltwater, or fracwater ("Wastewater") stored in a pit on the Leased Premises. This prohibition includes spraying, misting, dispersing, or otherwise actively aiding in the evaporation of such Wastewater into the surrounding environment by any means whatsoever.

At Lessor's request, Lessee shall use reasonable means to periodically treat the Wastewater temporarily stored in a pit on the Leased Premises so as to minimize any odors emanating from it.

Risks: If the Company pipes wastewater to a different location, the wastewater can contaminate local water sources, such as wells, streams, and ponds, if the piping leaks and/or ruptures.

How to Protect Yourself:

+ You can require that the Company refrain from piping wastewater across your land.

Note: As above, one potential downside to this approach is that it will mean more trucks driving to and from the well site.

- + If you do allow the Company to pipe wastewater, you can require that the Company inspect the piping regularly.
- + As with all activities, you can also require that the wastewater pipes be placed in specific areas (or not in specific areas), especially avoiding areas that are environmentally sensitive.

Note: This issue is covered by the lease language provided in the section above on limiting the location and scope of the Company's activities.

Without Lessor's prior written consent, Lessee shall not utilize any piping to transport Wastewater over any part of the Leased Premises.

In the event that Lessee utilizes piping to transport Wastewater, Lessee shall visually inspect the length of such piping regularly, with such inspections occurring no less frequently than once every [xx] days. In the event that any portion of the piping is damaged or leaking, Lessee shall a) immediately notify Lessor and the Ohio Department of Natural Resources, b) cease utilizing the piping until it is repaired, and c) undertake all cleanup efforts necessary to fully remediate any resulting contamination.

12. Extraction of Natural Gas

Description of Activity: The actual extraction of natural gas entails the gas flowing up through the well and through the pipelines that have been connected to carry the gas to places where it can be prepared for market.

Risks: Natural gas is highly flammable and its extraction creates a risk of fires at the well site.

How to Protect Yourself:

- + In addition to the primary fire prevention techniques required by Ohio law, you can require that the Company build dikes and/or firewalls around the well site and associated equipment to prevent the spread of substances that could increase the risk of fire.
- + You can also require that the Company has the ability to disable the well remotely if necessary.

Lessee must construct and maintain at all times dikes, berms, firewalls, or other methods of secondary containment around the Well Site, including around all tanks and other receptacles, so as to contain a volume of liquid equal to at least [xx] times the total volume of such tanks and other receptacles located within the boundaries of the firewall, dike, or berm. Lessee shall have remote

capability to cease all activity at the well site and to close the well in the event that such emergency cessation of activities is necessary.

13. Pipelines

Description of Activity: To carry gas from the well to market, the Company will need to build pipelines that connect the well to the larger network of pipelines around the country.

Risks: Above-ground pipelines are an eyesore. Buried pipelines require excavation and leave a "scar" on the land. Additionally, buried pipelines could be ruptured during any future construction activities.

How to Protect Yourself:

- You can require that any pipelines that the Company builds are not interstate pipelines (which are larger than the typical "gathering lines" used locally).
- + You can require that pipelines be limited in their usage and not be used beyond the life of the well.
- + If you are concerned about the pipeline being an eyesore, you can require that the Company bury all pipelines.
- + You can require "interim reclamation" for any area affected by either above-ground or buried pipelines.
- + As with all activities, you can require that pipelines be placed in specific areas (or not in specific areas), especially avoiding areas that are environmentally sensitive, or areas where you might want to build something in the future, and perhaps utilizing areas that are already developed, such as near and parallel to roads.

Note: This issue is covered by the lease language provided in the section above on limiting the location and scope of the Company's activities.

Lessee shall have the right to construct pipelines that are necessary for its operations, provided that it reimburse Lessor for reasonable damages caused by their construction. Unless otherwise agreed to in advance in writing by Lessor, all pipelines shall be less than [xx] inches in diameter and shall not be designed or used for interstate transmission. Lessee shall use its best efforts to locate all pipelines near and parallel to preexisting or planned roads.

The right to build and/or operate pipelines on the Leased Premises may not be assigned to a utility company, pipeline company, or anyone else who owns no interest in the Leased Premises or is not otherwise contracted or affiliated with Lessee for the purpose of carrying out the rights and obligations under this Lease. The right to use said pipelines terminates when production from the Leased Premises ceases and all wells associated therewith are plugged and abandoned.

[If you would like the pipeline to be buried]:

Lessee shall bury any and all pipelines that it constructs on the Leased Premises. Lessee shall "double ditch" all underground lines so that all topsoil will be replaced on the surface. Unless otherwise agreed to in writing by Lessor, the width of the graded underground line corridor shall not exceed [xx] feet. If Lessee constructs buried pipelines on the Leased Premises, Lessor shall have the right to construct and lay drainage and other utility pipes, wires, and lines across or under Lessee pipelines in a manner which does not interfere with the use thereof.

[Note: Ohio law requires that buried pipelines be 2 feet below the surface; if you would like them to be buried deeper than that, you should specify that in the lease.]

Within [xx] days from the date on which pipeline construction has been completed, weather permitting, Lessee shall engage in interim reclamation of the surface disturbance caused by the pipeline. Pipeline construction is deemed to have been completed when the pipeline has been constructed such that it is able to be used for its primary purpose. As part of this interim reclamation, Lessee shall grade all areas as nearly as practicable to the baseline contours following applicable state regulations and Best Management Practices ("BMPs"), and spread set aside topsoil evenly to its original depth. Lessee shall purchase and plant graded areas with seeds of Lessor's choice that meet the Ohio Division of Natural Resources regulations and BMPs. Lessee shall pay for all damage to growing crops, fences, tiles, and other appurtenances to the Leased Premises caused by such pipelines.

14. Compressors

Description of Activity: Before piping the natural gas long distances, the Company will compress it to allow for more efficient transport. This will involve the use of a compressor station at some point in the process. Note that there does <u>not</u> need to be a compressor station at every well site.

Risks: Compressor stations run on engines and can be very loud. Additionally, the engine running the compressor causes local air pollution and may add to respiratory problems for you and your family.

How to Protect Yourself:

- + Given that it is not necessary that every well site has a compressor station, you can prohibit the Company from putting a compressor on your land.
- + If you decide to allow a compressor, you can require that the Company erect noise barriers to reduce the noise pollution from the Compressor.
- + As with all activities, you can also require that the compressor station be placed in a specific area (or not in specific areas), especially avoiding areas that are environmentally sensitive.

Note: This issue is covered by the lease language provided in the section above on limiting the location and scope of the Company's activities.

Without a separate written agreement, no pump stations or compressors shall be located on the Leased Premises.

[If you decide to allow a compressor on your property]:

Lessee shall take reasonable steps to erect noise barriers between the compressor and any residence and barn located on the Leased Premises, whether constructed before or after the effective date of this Lease. Prior to the construction of any pump station or compressor, Lessor and Lessee shall mutually agree in writing on the type of noise barrier to be used. In no case shall any pump station or compressor be located within [xx] feet of any structure occupied by humans or animals.

15. Separators and Dryers

Description of Activity: Before sending the natural gas through interstate pipelines, the Company will use a separator to purify it. As with compressor stations, there does <u>not</u> need to be a separator at every well site.

Risks: Separators can release harmful contaminants into the air such as hydrogen sulfide, benzene, and volatile organic compounds (sometimes called "VOCs"). Additionally, the separation process produces more wastewater that must be disposed of.

How to Protect Yourself:

- + Given that it is not necessary that every well site has a separator, you can prohibit the Company from putting a separator on your land.
- + As with all activities, you can also require that the separator be placed in a specific area (or not in specific areas), especially avoiding areas that are environmentally sensitive.

Note: This issue is covered by the lease language provided in the section above on limiting the location and scope of the Company's activities.

Without a separate written agreement, no dryers or separators shall be located on the Leased Premises.

[If you decide to allow a separator on your property]:

In no case shall any dryer or separator be located within $\left[xx\right]$ feet of any occupied structure.

16. Injection Wells

Description of Activity: After a well no longer produces enough gas for the Company to make a profit by extracting it, the Company will often seek to reuse the well for the purpose of either a) storing natural gas or b) storing or disposing of wastewater. This process involves injecting natural gas or wastewater back into the well (hence the well is often referred to as an "injection well" or a "disposal well").

Risks: Allowing the gas well to be reused in the future as an injection well increases the potential that the substances injected into the well will contaminate soil, groundwater, and nearby wells, ponds, and streams.

How to Protect Yourself:

- + You can expressly prohibit the gas well from being used as an injection well in the future.
- + If you do decide to allow the Company to use the well as an injection well in the future, you can require that this be covered by a separate agreement that specifies the exact conditions according to which injection must take place.

Without a separate written agreement, Lessee is prohibited from using any well drilled on the Leased Premises as a "disposal" or "injection" well. Pursuant to this prohibition, Lessee shall not use the Leased Premises for the permanent disposal of any drill cuttings, or the storage or disposal of Wastewater or other wastes resulting from the Company's use of the Leased Premises. No disposal wells or any other devices or means of disposal of Wastewater or other wastes resulting from the Company's use of the Leased Premises are permitted on the Leased Premises. Lessee shall have no right to use the Leased Premises or any portion thereof, surface or subsurface, for gas, oil, or Wastewater storage purposes.

17. Waste Management

Description of Activity: The Company's activities will generate, in addition to wastewater, solid waste and debris, some of which will be hauled off, but some of which could end up on your land temporarily, or even permanently.

Risks: If not properly managed and disposed of, this waste (liquid and solid) and/or debris can create an eyesore and could potentially pollute your land.

How to Protect Yourself:

- + You can require that the Company properly dispose of all waste and debris within a certain period of time.
- + You can specifically prohibit the Company from burying any waste on your property.
- + You can require that the Company keep the property and equipment clean at all times.

Lessee shall at all times keep the Leased Premises clean and free of debris, litter, and waste (whether liquid, solid, or gaseous).

Lessee shall not bury any materials, including, but not limited to, drill cuttings, Wastewater, or any other wastes, on the Leased Premises. Lessee shall keep all tanks and other equipment at each well location painted, and shall keep the well site and all roads leading thereto free of all noxious weeds and debris. Unless there is agreement otherwise, Lessee shall remove all waste and debris (i.e. material not originally from or of the Leased Premises, or material no longer in its original condition), in whatever form or state, from the Leased Premises, within [xx] days of the termination of this Lease or of the cessation of construction, production, or operations on the Leased Premises, whichever may occur sooner.

18. Monitoring

Description of Activity: It is also helpful to ensure that you are monitoring the Company's activities throughout its operations.

Risks: Without the ability to monitor the Company's activities, there is no way to ensure that it is complying with its obligations under the lease and under the laws and regulations of the State of Ohio.

How to Protect Yourself:

- + You can require that the Company grant you access to its operations, including the well site, any impoundment pits, etc., so that you can monitor compliance with lease terms and applicable laws and regulations.
- + You can also require that the Company provide you with copies of its permits, plans, reports and other relevant documents to ensure general compliance with applicable laws and regulations.

Lessee shall at all times grant Lessor reasonable access to its operations on the Leased Premises for the purposes of determining compliance with the terms and provisions of this Lease.

Upon Lessor's written request, Lessee shall furnish Lessor copies of all permits, plans, and other relevant documents required under any applicable law for the operations to be conducted on the Leased Premises.

Lessee shall promptly notify Lessor upon receipt by Lessee of any notice of noncompliance, governmental enforcement action, judicial proceeding and/or threat thereof brought to the attention of Lessee affecting its possession under the Lease or the interest of Lessor in the Leased Premises as well as copies of all filings, statements, and reports made by Lessee, or others with regard to Lessee or its operations, with the Ohio Department of Natural Resources or other government agency pertinent to drilling, completing and equipping wells.

19. Reclamation Bonding

Description of Activity: After the Company ceases operations, it might abandon the leased premises without having fully reclaimed (i.e., restored) them. Even though Ohio law requires that the Company engage in reclamation following its activities, for various reasons, this reclamation sometimes does not occur. This can be because the Company has gone out of business. It can also be because the Company has sold the lease to another Company that is not as reputable and is willing to risk violating the state's reclamation laws.

Risks: If the Company fails to engage in reclamation, you can be left with the responsibility of reclaiming your land at your own expense. Reclamation is important, as the natural gas operations create residual waste materials and leave scars on your property, including roads, seismic activities, well drilling, fracking, any pits that have been dug and any areas that have been cleared of trees or other vegetation. While Ohio law requires the Company to post a reclamation bond, the required amount can be relatively minimal.

How to Protect Yourself:

+ You can require that the Company post a reclamation bond in an amount that will be sufficient to cover the costs of reclamation, should you need to do it yourself.

Prior to commencement of operations, Lessee shall provide Lessor with a surety or collateral well-plugging, waste removal, and reclamation bond, in form acceptable to both parties (i.e. surety bond, irrevocable letter of credit, or bank certificate of deposit) in an amount equal to or exceeding [xx] times the reasonably expected estimated total cost of plugging and abandonment of the well, removal and remediation of any waste and associated contamination. and reclamation of the Leased Premises, as described in Chapter 1509.072 of the Ohio Revised Code. Said bond shall remain in effect until the plugging and abandonment of the well have been completed in compliance with applicable State law, the well site has been restored and re-vegetated and wastes have been removed and any contamination remediated to the satisfaction of Lessor. This estimated total cost must include, at a minimum, expected labor rates, equipment rental/contracting rates, and a listing of all materials and their affiliated costs per unit required to plug and abandon each well and to reclaim associated areas on the Leased Premises.

20. Insurance, Indemnification, and Assignments

Description of Activity: Natural gas operations create a risk of property damage and/or personal injury. It is thus important that the Company, and not you, bears these risks and has the ability to pay when something goes wrong.

Risks: It would be financially damaging to you and your family if you were to be held liable for an accident that happened on your land as a result of the Company's operations.

How to Protect Yourself:

- + You can require that the Company maintain insurance policies throughout the life of its operations.
- You can require that you be named as an additional insured party on the Company's policies.

- + You can require that the Company indemnify and hold you harmless from any damages, loss, or claims arising out of its operations.
- + You can require that the Company get your consent before transferring the lease to anyone else.

The provisions of this section shall survive the termination of this Lease.

Insurance

(a) A company licensed by the Ohio Department of Insurance to do business in the state shall underwrite all policies required by this Lease. Insurance requirements may be met by a combination of selfinsurance, primary, and excess insurance policies

(b) Lessee shall assure that Lessee and any person acting on Lessee's behalf under this Lease carry the following insurance with one or more insurance carriers at any and all times such party or person is on or about the Leased Premises or acting pursuant to this Lease:

(i) Workers Compensation and Employer's Liability Insurance (\$[xx] minimum coverage);

(ii) Commercial General Liability and Umbrella Liability Insurance (\$[xx] minimum coverage);

(iii) Business Auto and Umbrella Liability Insurance (\$[xx] minimum coverage); and

(iv) Environmental Liability (\$[xx] minimum coverage).

Lessee shall cause Certificates of Insurance evidencing the above coverage to be provided promptly upon request to Lessor, or to such other representative of Lessor as Lessor may from time to time designate. The insurance policies required under this section shall cover the Lessor as additional insureds with regard to the Leased Premises and all operations thereon, and shall reflect that the insurer has waived any right of subrogation against the Lessor. Failure to comply with this Insurance section shall be a basis of default and all operations on the Leased Premises shall cease immediately.

Indemnity

Lessee agrees to defend, indemnify, and hold harmless Lessor and Lessor's heirs, successors, representatives, agents, and assigns ("Indemnitees"), from and against any and all claims, demands, and causes of action for injury (including death) or damage to persons, property and/or natural resources and fines or penalties, or environmental matters arising out of, incidental to, or resulting from the operations of or for Lessee or Lessee's servants, agents, employees, guests, licensees, invitees, or independent contractors, and from and against all costs and expenses incurred by Indemnitees by reason of any such claim or claims, including attorneys' fees; and each assignee of Lessee of this Lease, or an interest therein, agrees to indemnify and hold harmless Indemnitees in the same manner provided above. Such indemnity shall apply to any claim arising out of operations conducted under or pursuant to this Lease, however caused.

Assignments

Lessee may not assign this Lease without prior written approval of Lessor. No assignment by Lessee (or any assignee of Lessee) of all or any part of or interest in this Lease shall relieve Lessee (or any assignee of Lessee) of any liability for breach of any covenant, warranty, or other obligation of Lessee hereunder, whether theretofore or thereafter accrued. Each assignee of all or any portion of the rights of Lessee hereunder agrees to be bound by the provisions of this lease to the same extent as if such assignee were an original party to this Lease.

21. Violation of Lease Terms and Applicable Laws

Description of Activity: As mentioned above, there can be certain circumstances in which the Company (or a different company which ends up with rights under your lease) may fail to follow the terms of the lease or applicable laws. If this occurs, you want to be able to terminate the lease.

Risks: If the Company violates lease terms or applicable environmental laws, it could result in operating conditions that are dangerous to you, your family, your neighbors, animals, and/or your property.
How to Protect Yourself:

+ You can make it a condition of the lease for the Company to comply with all lease terms and applicable laws, whereby any breach of this condition breaks the lease at your option.

All operations conducted by Lessee shall comply with federal, state, and local statutes, regulations, ordinances, and orders, and any applicable terms of this Lease, whichever is more stringent for Lessee. Lessee shall obtain all permits, plans, and other relevant documents required under any applicable law for the operations to be conducted on the Leased Premises. Lessee's failure to comply with any federal, state, or local law, any regulation or order of any enforcement agency having jurisdiction over Lessee's operations, or any of the terms of this Lease shall be deemed, at Lessor's option, to be a default under this Lease. If Lessor exercises its option to terminate the Lease, Lessee shall not be absolved of its obligations incurred by Lessee up to that point, including those obligations that have been contemplated to remain in effect beyond the terms of the Lease itself.

Appendix: Sample Lease Addendum

Note: The following section replicates in one cohesive addendum the sample lease language presented above. This addendum is not a complete lease; it addresses only the environmental and health issues covered by this guide.

1. <u>Acquisition of Baseline Information</u>

(a) Prior to the commencement of any activity under this Lease, Lessee shall perform studies to ascertain the baseline condition of Lessor's environment. The baseline information collected shall include, but shall not be limited to: a) an inventory of crops, native or cultivated grasses, trees, pastures, and animals, whether domestic or wild, on the Leased Premises, and b) results of soil, water, and air quality testing performed by an independent company of Lessor's choosing that is certified bv the Ohio Environmental Protection Agency and/or the Ohio Department of Health. Lessee shall pay all costs of such studies and testing. Lessor shall be provided complete copies of any and all studies and testing results and data, and shall have full rights to independently contact the testing laboratory for inquiry and information.

(b) Lessee shall also provide Lessor with a plan describing each stage of Lessee's proposed activities, identifying the likely effects that said activities will have on all aspects of the Leased Premises and setting out in detail what steps Lessee shall take to mitigate the adverse effects on the Leased Premises.

2. <u>Location and Scope of the Operations</u>

(a) Before Lessee commences any operations on the Leased Premises, Lessee and Lessor shall mutually agree in writing on the location of all Seismic Testing Activities, Well Sites, wells, tanks, tank batteries, pits, roads, pipelines, pipes, pump stations, compressors, dryers, separators, gates, and other equipment and facilities so as to avoid disruption of Lessor's use of the Leased Premises. Lessor's consent shall not be unreasonably withheld.

(b) Lessee shall also, to the degree practicable:

design and lay out its operations to be concentrated in a single area of the Leased Premises so as to avoid unnecessary utilization of surface areas;

locate all pipelines and roadways within a single corridor; and

conduct operations on pre-disturbed land, prior to using undisturbed land.

(c) Lessor reserves the right to construct any structure or other improvements, at any location selected by Lessor, anywhere on the Leased Premises. If Lessor commences construction of a structure or other improvement on the Leased Premises, Lessee will not locate any equipment, nor conduct any operations, within [xx] feet of the proposed structure or improvement without Lessor's written permission.

(d) Lessee hereby agrees that it shall conduct its activities in such a manner that shall not render Lessor or any other person rightfully in close proximity to the site incapable of continuing to enjoy the use of his or her land. Lessee will plan and conduct its surface operations in a manner that will avoid or minimize intrusion into crop fields. In the event such an intrusion cannot be avoided, Lessee shall compensate Lessor for the damage or loss of growing crops at current market value.

(e) Employees, agents, and independent contractors of Lessee shall have no right to and are prohibited from firing any firearms, hunting, and fishing on the Leased Premises. Lessor has the right to deny access to the Leased Premises to any person found to have violated this provision. Furthermore, Lessor retains the right for Lessor, its successors, assigns, and invitees to fish and hunt anywhere on the Leased Premises.

(f) Lessee shall notify Lessor in writing at least [xx] calendar days prior to any removal of marketable timber (marketability to be within the discretion of Lessor). At Lessor's option, Lessor may choose to harvest timber, or Lessor may require an appraisal of the timber by a qualified independent appraiser, and Lessee shall pay Lessor the appraised value for the timber identified prior to its removal by Lessee.

3. <u>Maintenance of Water, Soil, and Air Quality</u>

(a) Lessee shall maintain or improve the baseline quality and quantity of all water sources on the Leased Premises, including, but not limited to, streams, ponds, lakes, springs, aquifers, and wells. To this end, in addition to the required studies and testing that take place prior to operations, Lessee shall also test all water sources on the Leased Premises at the completion of operations, at least every [xx] months during operations, and as deemed necessary by Lessor in Lessor's sole discretion due to changes in flow or quality, including but not limited to color, smell, or taste. This testing shall be performed by an independent company of Lessor's choosing that is certified by the Ohio Environmental Protection Agency and/or the Ohio Department of Health. Lessee shall pay all costs of testing and shall provide Lessor with complete copies of any and all testing results and data. Lessor shall have full rights to independently contact the testing laboratory for inquiry and information.

(b) Should any of these water sources be compromised, tainted, chemically altered, infiltrated, polluted, or reduced as a result of Lessee's operations, Lessee shall promptly take any and all steps necessary to restore water quality

and quantity to its baseline condition. During the period of such remediation, Lessee shall provide Lessor with an adequate supply of potable water consistent with the baseline condition of the water source prior to Lessee's operation. Any pollution or reduction of any water source after any operations commence will be presumed to be the result of Lessee's operations unless Lessee can prove otherwise, with Lessee having the burden of proof by a preponderance of the evidence. Until Lessee can prove otherwise as to cause, Lessee shall provide the required replacement supply beginning immediately upon Lessor's providing evidence to Lessee of the water quality and/or quantity condition causing concern.

(c) Lessee shall also maintain or improve the baseline soil quality and air quality on the Leased Premises. To this end, in addition to the required studies and testing that take place prior to operations, Lessee shall also conduct air quality and soil quality testing on the Leased Premises at the completion of operations, at least every [xx] months during operations, and as deemed necessary by Lessor in Lessor's sole discretion due to noticeable changes in quality. This testing shall be performed by an independent company of Lessor's choosing that is certified by the Ohio Environmental Protection Agency and/or the Ohio Department of Health. Any pollution of the air or soil on the Leased Premises after any operations commence will be presumed to be the result of Lessee's operations unless Lessee can prove otherwise, with Lessee having the burden of proof by a preponderance of the evidence. Lessee shall pay all costs of testing. Lessor shall be provided complete copies of any and all testing results and data, and shall have full rights to independently contact the testing laboratory for inquiry and information.

(d) In the event that, during the term of this Lease, a local government or government agency having jurisdiction over the Leased Premises develops a plan for testing or other analysis of water, soil, and/or air quality, that involves formation of a fund for specific or random tests of water quality in areas subject to oil and gas exploration, including the Leased Premises, Lessee agrees to participate in such a plan to the same extent as if that plan had been in existence at the time of inception of this Lease.

4. <u>Roads</u>

(a) Lessee agrees to locate and grade not more than one (1) road to each major work area necessary for its operations and to confine travel to such road. Any road constructed by Lessee shall not exceed [xx] feet in width, or a minimum width required to perform required operations. Any road constructed by Lessee shall be constructed such that there is sufficient turnaround space for emergency vehicles.

(b) At Lessor's request, Lessee shall install and diligently maintain fences, gates, closures, and/or cattle guards on all roads built by Lessee. Lessor will be allowed free use thereof. At Lessor's request, such fences, gates, closures, and cattle guards will become Lessor's property on termination of this Lease. At Lessor's request, Lessee shall keep all gates closed when not in use.

(c) To the extent permitted by applicable law, Lessee agrees to improve and maintain all roads used by it in good repair. These duties apply to all roads utilized by Lessee, regardless of whether such road was constructed by Lessee. For public roads, Lessee shall maintain such roads in conformity with standards set forth by the relevant permitting authority to provide a smooth, rutfree, all-weather surface suitable for use by automobiles. For private roads, Lessee shall utilize shale, gravel, or crushed stone where necessary to provide a smooth, rutfree, all-weather surface suitable for use by automobiles. When such roads are no longer being used by Lessee, if Lessee has laid stone or any other topping, Lessee agrees, upon Lessor's request, to remove such topping and to restore the surface as nearly as possible to its baseline condition. When improving, constructing, or maintaining roads, Lessee shall not use any materials from the Leased Premises without the written consent of the Lessor.

(d) At Lessor's request, Lessee shall control dust from traffic to the maximum extent practicable, utilizing water or a non-pollutant as a dust suppressant when necessary. Unless otherwise authorized by Lessor, Lessee shall use fresh water not obtained from the Leased Premises.

(e) Lessee shall prevent its employees, agents, and contractors from operating vehicles in a negligent manner or at speeds in excess of [xx] miles per hour while on the Leased Premises.

(f) Unless emergency conditions dictate or Lessee has received prior written consent from Lessor, Lessee shall prevent its employees, agents, and contractors from traveling and operating any vehicle on the Leased Premises between: [xx] o'clock PM and [xx] o'clock AM, as well as on [xx].

5. <u>Fencing</u>

At Lessor's request, Lessee shall (i) fence all wells and well sites, tank batteries, pits, and other equipment placed on the Leased Premises with a fence capable of deterring livestock, wildlife, small children, and trespassers; (ii) keep such fences in good repair; and (iii) keep all gates and fences closed at all times. Lessor shall be allowed all reasonable access to fenced areas.

6. <u>Noise</u>

Lessee shall not operate any vehicles, equipment, or machinery on the Leased Premises between: [xx] PM and [xx] AM, as well as on [xx]. At any given time, Lessee's operations shall not generate noise in excess of [xx] decibels, on average over the course of any [xx] minute period, nor [xx] decibels at any one time, as measured from any point within [xx] feet from the activity generating the sound.

7. <u>Restrictions on Using Hazardous Materials</u>

(a) Lessee shall not use, dispose of, or release on the Leased Premises or permit to exist or to be used, disposed of or released on the Leased Premises as a result of its operations any substances (other than those Lessee has been licensed or permitted by applicable public authorities to use on the Leased Premises) which are defined as "hazardous materials", "toxic substances" or "solid wastes" in federal, state, or local statutes, regulations, or ordinances. For any such materials or substances that are used or generated on the Leased Premises, Lessee shall provide Lessor with the applicable Material Safety Data Sheets.

(b) Should any pollutant, hazardous material, toxic substance, or solid waste be accidentally released on the Leased Premises, Lessee shall immediately notify Lessor and the applicable governmental body of such event, and shall take all action necessary to mitigate harm and clean up, remediate and restore the release site.

8. <u>Seismic Testing</u>

(a) Without Lessor's prior written consent, Lessee shall refrain from using explosives during its Seismic Testing Activities.

(b) Lessee shall not conduct Seismic Testing Activities on slopes which have an angle that is greater than [xx] degrees. Any holes in the ground resulting from Lessee's seismic testing shall be plugged, from bottom to top, within [xx] days from the date on which the hole was shot. Lessee shall plug and abandon these holes in a manner that prevents vertical movement of water in the hole.

(c) The duration of Seismic Testing Activities shall not exceed [xx] weeks.

(d) Throughout its Seismic Testing Activities, Lessee shall minimize the use of physical markers, including, but not limited to, seismic lines, survey flags, and stakes. To the extent that Lessee utilizes survey flags in its seismic testing activities, Lessee shall refrain from using flags or flag stands made of metal. Within [xx] days from the date on which the Lessee has completed its Seismic Testing Activities, Lessee shall remove all materials used in such Seismic Testing Activities, including all physical markers, as well as any refuse or other equipment that may have been left behind by Lessee.

(e) For the purposes of this Lease, Seismic Testing Activities shall include all activities undertaken by Lessee for the purpose of gathering information regarding the subsurface geology of and/or natural resources located on or beneath the Leased Premises and/or adjacent lands.

9. <u>Development of the Well Site</u>

(a) The Well Site shall be no larger than [xx] acres. In addition, Lessee shall use its best efforts to minimize the size of the Well Site and locate equipment and infrastructure as close together as possible.

(b) Following the construction of the Well Site, and prior to Lessee engaging in any drilling or production operations, Lessee shall consult with Lessor to take steps to minimize the visual impact associated with the Well Site. At Lessor's request, and to the extent that it does not present an increased fire hazard, Lessee shall take reasonable efforts to plant trees and other vegetation in areas that help minimize the visual impact of the well site. Both parties recognize that said vegetation shall be limited to that which does not interfere with Lessee's ability to conduct its operations. Well Site construction is deemed to have been completed when the Well Site has been constructed such that it is able to be used for its primary purpose.

(c) For the purposes of this Lease, the Well Site shall refer to the area that includes a well drilled on the Leased Premises and the associated facilities that are appurtenant to the operation of said well for the purpose of aiding in the processes of extraction and recovery, lifting, stabilization, treatment, separation, production processing, storage, and measurement of hydrocarbon gas and/or liquids.

10. Drilling and Fracking

(a) Lessee shall provide at least [xx] calendar days prior written notice to Lessor before Lessee commences any actual drilling on the Leased Premises.

(b) Prior to injecting any substance into a well drilled on the Leased Premises, Lessee shall provide Lessor with a list of all substances, broken down by compound, that are to be injected. Lessee shall also provide Lessor with Material Safety Data Sheets for each compound to be injected into the well. Lessee shall not store chemicals on the Leased Premises, except to the extent necessary to carry out current use of such chemicals in operations. Lessee shall keep chemicals necessary to carry out current use [xx] feet from any residential structure, growing crops, livestock, and water sources on the Leased Premises.

(c) At Lessor's request, Lessee shall pay for radon and hydrogen sulfide testing, to occur once every [xx] months, of any residences on the Leased Premises, whether constructed before or after the effective date of this Lease. Such test results shall promptly be provided to Lessor. This testing shall be performed by an independent company of Lessor's choosing that is properly licensed to conduct such testing by the State of Ohio. Testing shall also be conducted prior to and at the completion of operations on the Leased Premises or on any land in the unit of which any of the Leased Premises is a part.

(d) Without Lessor's prior written consent, Lessee shall not use surface or groundwater from the Leased Premises, including Lessor's springs, ponds, wells, creeks, streams, rivers, or lakes, for any operations undertaken by Lessee.

(e) Without Lessor's prior written consent, Lessee shall not drill or operate any water well, take water, or otherwise use or affect water in subsurface water formations. Any water well drilled by Lessee on the Leased Premises, with Lessor's written consent, shall be left intact and shall become the property of Lessor upon the termination of this Lease.

11. <u>Disposal of Wastewater</u>

(a) Without Lessor's prior written consent, Lessee shall not dig any pits on the Leased Premises for the storage of produced water, wastewater, brine, saltwater, or frackwater ("Wastewater"). Lessee shall remove all Wastewater from the Leased Premises and dispose of it off-site in conformity with applicable Ohio law.

(b) Any pit agreed upon by Lessor and Lessee shall conform to all applicable regulatory requirements and be deep enough to allow at least [xx] inches of backfill over the liner after grading to surrounding pre-drill contour. Promptly after completion of operations, any backfill, liners, and Wastewater shall be removed, and the pits shall be drained, prepared for burial, back filled, graded, and planted within [xx] days, weather permitting.

(c) Lessee shall immediately notify Lessor and the Ohio Department of Natural Resources if any pit lining is torn,

punctured, or otherwise breached, allowing any fluid contained in a pit or designated to be contained in a pit to seep, leak or overflow through or around the liner.

(d) Lessee shall not employ any methods that actively aid in the evaporative process of any produced water, wastewater, brine, saltwater, or fracwater ("Wastewater") stored in a pit on the Leased Premises. This prohibition includes spraying, misting, dispersing, or otherwise actively aiding in the evaporation of such Wastewater into the surrounding environment by any means whatsoever.

(e) At Lessor's request, Lessee shall use reasonable means to periodically treat the Wastewater temporarily stored in a pit on the Leased Premises so as to minimize any odors emanating from it.

(f) Without Lessor's prior written consent, Lessee shall not utilize any piping to transport Wastewater over any part of the Leased Premises.

(g) In the event that Lessee utilizes piping to transport Wastewater, Lessee shall visually inspect the length of such piping regularly, with such inspections occurring no less frequently than once every [xx] days. In the event that any portion of the piping is damaged or leaking, Lessee shall a) immediately notify Lessor and the Ohio Department of Natural Resources, b) cease utilizing the piping until it is repaired, and c) undertake all cleanup efforts necessary to fully remediate any resulting contamination.

12. <u>Extraction of Natural Gas</u>

(a) Lessee must construct and maintain at all times dikes, berms, firewalls, or other methods of secondary around the Well Site, including around all tanks and other receptacles, so as to contain a volume of liquid equal to at least [xx] times the total volume of such tanks and other

receptacles located within the boundaries of the firewall, dike, or berm.

(b) Lessee shall have remote capability to cease all activity at the well site and to close the well in the event that such emergency cessation of activities is necessary.

13. <u>Pipelines</u>

(a) Lessee shall have the right to construct pipelines that are necessary for its operations, provided that it reimburse Lessor for reasonable damages caused by their construction. Unless otherwise agreed to in advance in writing by Lessor, all pipelines shall be less than [xx] inches in diameter and shall not be designed or used for interstate transmission. Lessee shall use its best efforts to locate all pipelines near and parallel to preexisting or planned roads.

(b) The right to build and/or operate pipelines on the Leased Premises may not be assigned to a utility company, pipeline company, or anyone else who owns no interest in the Leased Premises or is not otherwise contracted or affiliated with Lessee for the purpose of carrying out the rights and obligations under this Lease. The right to use said pipelines terminates when production from the Leased Premises ceases and all wells associated therewith are plugged and abandoned.

(c) Lessee shall bury any and all pipelines that it constructs on the Leased Premises. Lessee shall "double ditch" all underground lines so that all topsoil will be replaced on the surface. Unless otherwise agreed to in writing by Lessor, the width of the graded underground line corridor shall not exceed [xx] feet. If Lessee constructs buried pipelines on the Leased Premises, Lessor shall have the right to construct and lay drainage and other utility pipes, wires, and lines across or under Lessee pipelines in a manner which does not interfere with the use thereof. (d) Within [xx] days from the date on which pipeline construction has been completed, weather permitting, Lessee shall engage in interim reclamation of the surface disturbance caused by the pipeline. Pipeline construction is deemed to have been completed when the pipeline has been constructed such that it is able to be used for its primary purpose. As part of this interim reclamation, Lessee shall grade all areas as nearly as practicable to the baseline contours following applicable state regulations and Best Management Practices ("BMPs"), and spread set aside topsoil evenly to its original depth. Lessee shall purchase and plant graded areas with seeds of Lessor's choice that meet the Ohio Division of Natural Resources regulations and BMPs. Lessee shall pay for all damage to growing crops, fences, tiles, and other appurtenances to the Leased Premises caused by such pipelines.

14. <u>Compressors</u>

Without a separate written agreement, no pump stations or compressors shall be located on the Leased Premises.

[or]

Lessee shall take reasonable steps to erect noise barriers between the compressor and any residence or barn located on the Leased Premises, whether constructed before or after the effective date of this Lease. Prior to the construction of any pump station or compressor, Lessor and Lessee shall mutually agree in writing on the type of noise barrier to be used. In no case shall any pump station or compressor be located within [xx] feet of any structure occupied by humans or animals.

15. <u>Separators and Dryers</u>

Without a separate written agreement, no dryers or separators shall be located on the Leased Premises.

[or]

In no case shall any dryer or separator be located within [xx] feet of any occupied structure.

16. <u>Injection Wells</u>

Without a separate written agreement, Lessee is prohibited from using any well drilled on the Leased Premises as a "disposal" or "injection" well. Pursuant to this prohibition, Lessee shall not use the Leased Premises for the permanent disposal of any drill cuttings, or the storage or disposal of Wastewater or other wastes resulting from the Company's use of the Leased Premises. No disposal wells or any other devices or means of disposal of Wastewater or other wastes resulting from the Company's use of the Leased Premises are permitted on the Leased Premises. Lessee shall have no right to use the Leased Premises or any portion thereof, surface or subsurface, for gas, oil, or Wastewater storage purposes.

17. <u>Waste Management</u>

(a) Lessee shall at all times keep the Leased Premises clean and free of debris, litter, and waste (whether liquid, solid, or gaseous).

(b) Lessee shall not bury any materials, including, but not limited to, drill cuttings, Wastewater, or any other wastes, on the Leased Premises.

(c) Lessee shall keep all tanks and other equipment at each well location painted, and shall keep the well site and all roads leading thereto free of all noxious weeds and debris. Unless there is agreement otherwise, Lessee shall remove all waste and debris (i.e. material not originally from or of the Leased Premises, or material no longer in its original condition), in whatever form or state, from the Leased Premises, within [xx] days of the termination of this Lease or the cessation of construction, production, or operations on the Leased Premises, whichever may occur sooner.

18. <u>Monitoring</u>

(a) Lessee shall at all times grant Lessor reasonable access to its operations on the Leased Premises for the purposes of determining compliance with the terms and provisions of this Lease.

(b) Upon Lessor's written request, Lessee shall furnish Lessor copies of all permits, plans, and other relevant documents required under any applicable law for the operations to be conducted on the Leased Premises.

(c) Lessee shall promptly notify Lessor upon receipt by Lessee of any notice of noncompliance, governmental enforcement action, judicial proceeding and/or threat thereof brought to the attention of Lessee affecting its possession under the Lease or the interest of Lessor in the Leased Premises as well as copies of all filings, statements, and reports made by Lessee, or others with regard to Lessee or its operations, with the Ohio Department of Natural Resources or other government agency pertinent to drilling, completing and equipping wells.

19. <u>Reclamation Bonding</u>

Prior to commencement of operations, Lessee shall provide Lessor with a surety or collateral well-plugging, waste removal, and reclamation bond, in form acceptable to both parties (i.e. surety bond, irrevocable letter of credit, or bank certificate of deposit) in an amount equal to or exceeding [xx] times the reasonably expected estimated total cost of plugging and abandonment of the well, removal and remediation of any waste and associated contamination and reclamation of the Leased Premises, as described in Chapter 1509.072 of the Ohio Revised Code. Said bond shall remain in effect until the plugging and abandonment of the well have been completed in compliance with applicable State law, the well site has been restored and re-vegetated and wastes have been removed and any contamination remediated to the satisfaction of Lessor. This estimated total cost must include, at a minimum, expected labor rates, equipment rental/contracting rates, and a listing of all materials and their affiliated costs per unit required to plug and abandon each well and to reclaim associated areas on the Leased Premises.

20. Insurance, Indemnification, and Assignments

The provisions of this section shall survive the termination of this Lease.

Insurance:

(a) A company licensed by the Ohio Department of Insurance to do business in the state shall underwrite all policies required by this Lease. Insurance requirements may be met by a combination of self-insurance, primary, and excess insurance policies.

(b) Lessee shall assure that Lessee and any person acting on Lessee's behalf under this Lease carry the following insurance with one or more insurance carriers at any and all times such party or person is on or about the Leased Premises or acting pursuant to this Lease:

(i) Workers Compensation and Employer's Liability Insurance (\$[xx] minimum coverage);

(ii) Commercial General Liability and Umbrella Liability Insurance (\$[xx] minimum coverage);

(iii) Business Auto and Umbrella Liability Insurance (\$[xx] minimum coverage); and

(iv) Environmental Liability (\$[xx] minimum coverage).

Lessee shall cause Certificates of Insurance evidencing the above coverage to be provided promptly upon request to Lessor, or to such other representative of Lessor as Lessor may from time to time designate. The insurance policies required under this section shall cover the Lessor as additional insureds with regard to the Leased Premises and all operations thereon, and shall reflect that the insurer has waived any right of subrogation against the Lessor. Failure to comply with this Insurance section shall be a basis of default and all operations on the Leased Premises shall cease immediately.

Indemnity:

Lessee agrees to defend, indemnify, and hold harmless Lessor and Lessor's heirs, successors, representatives, agents, and assigns ("Indemnitees"), from and against any and all claims, demands, and causes of action for injury (including death) or damage to persons, property and/or natural resources and fines or penalties, or environmental matters arising out of, incidental to, or resulting from the operations of or for Lessee or Lessee's servants, agents, employees, guests, licensees, invitees, or independent contractors, and from and against all costs and expenses incurred by Indemnitees by reason of any such claim or claims, including attorneys' fees; and each assignee of Lessee of this Lease, or an interest therein, agrees to indemnify and hold harmless Indemnitees in the same manner provided above. Such indemnity shall apply to any claim arising out of operations conducted under or pursuant to this Lease, however caused.

Assignments:

Lessee may not assign this Lease without prior written approval of Lessor. No assignment by Lessee (or any assignee of Lessee) of all or any part of or interest in this Lease shall relieve Lessee (or any assignee of Lessee) of any liability for breach of any covenant, warranty, or other obligation of Lessee hereunder, whether theretofore or thereafter accrued. Each assignee of all or any portion of the rights of Lessee hereunder agrees to be bound by the provisions of this lease to the same extent as if such assignee were an original party to this Lease.

21. <u>Violation of Lease Terms and Applicable Laws</u>

All operations conducted by Lessee shall comply with federal, state, and local statutes, regulations, ordinances, and orders, and any applicable terms of this Lease, whichever is more stringent for Lessee. Lessee shall obtain all permits, plans, and other relevant documents required under any applicable law for the operations to be conducted on the Leased Premises. Lessee's failure to comply with any federal, state or local law, any regulation or order of any enforcement agency having jurisdiction over Lessee's operations, or any of the terms of this Lease shall be deemed, at Lessor's option, to be a default under this Lease. If Lessor exercises its option to terminate the Lease, Lessee shall not be absolved of any obligations incurred by Lessee up to that point, including those obligations that have been contemplated to remain in effect beyond the terms of the Lease itself.





This Guide was prepared for informational purposes only. It does not, and is not intended to, constitute legal advice. Use of the Guide does not create an attorney-client relationship between you and the Emmett Environmental Law & Policy Clinic. Because of the rapid pace of change in this area of the law, the Guide should not be used as a substitute for competent legal advice from a licensed professional attorney in your state.



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The Clinic works on a variety of local, national, and international projects covering the spectrum of environmental law and policy issues under the direction of Wendy B. Jacobs, a Clinical Professor at Harvard Law School and Director of the Emmett Environmental Law & Policy Clinic. This Guide was prepared by Joshua Herlands and Humu-Annie Seini, students at the Clinic, together with Shaun Goho, Clinical Instructor, and Justin DuClos, Fellow.

PENN<u>State</u>

Cooperative Extension College of Agricultural Sciences

Natural Gas Exploration

A Landowner's Guide to Leasing Land in Pennsylvania





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Natural Gas Exploration—A Landowner's Guide to Leasing Land in Pennsylvania



If you are a property owner in northern or southwestern Pennsylvania, you've probably heard the phrases "natural gas exploration," "Marcellus shale," or "gas lease" on the news or from your neighbors. Maybe a gas company representative or landman has visited your home, asking you to sign a lease that grants permission to explore or drill for natural gas on your land. All of the talk and activity surrounding natural gas reserves in Pennsylvania can be exciting as well as confusing for landowners.

This guide is meant to be a tool for property owners, covering the basics of what you need to know, answering some common questions about natural gas exploration in Pennsylvania, and directing you where to go for further information. The guide outlines what the gas resource is, how and why landowners are likely to be contacted, how a gas lease works, and what to consider when making decisions about gas leasing. When you understand the gas exploration and leasing process, you can make better decisions for your land and your family.

Although natural gas has been extracted from underground sources in Pennsylvania since the early 1800s, new technologies—in particular, horizontal drilling and hydraulic fracturing—are making gas extraction from deep reserves more economically feasible. Increasing demand for cleaner domestic energy will bring about continuing exploration. The gas industry is seeking points of access to highvolume reservoirs of natural gas, called "plays," that lie far below the hills and valleys of Pennsylvania.

Natural gas exploration and extraction is a potentially valuable economic stimulus to rural communities in Pennsylvania. As landowners are compensated for the use of the resource and as the gas industry develops the regional drilling infrastructure, economic gains can be significant and everyone can benefit.

Natural Gas Exploration—A Landowner's Guide to Leasing Land in Pennsylvania

OIL, GAS AND COALBED METHANE LEASE

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OIL, GAS, AND COALBED METHANE ADDENDUM

This addendum is attached to a certain Oil, Gas and Coalbed Methane Lease dated September _____2008, by and between John A. Smith and Jane B. Smith, husband and wife of <u>100 Pleasant Drive, Pittsburgh, PA, 15237-3655</u> hereinafter called the Lessor and <u>Gas Energy Partners, LL.C.</u> of 12 State Road, Smithville, Ohio 12345, hereinafter called the Lesse.

Should there be any inconsistency between the terms and conditions set forth in the main body of this lease, and the terms and conditions specified in the Addendum the provisions of the Addendum shall prevail and supersedue the inconsistent provisions of the main body of this lease.

In the event a well is to be drilled on the herein premises, Lessee agrees to notify the then current farmer regarding crops grown hereon and pay farmer for any damages to growing crops caused by Lesse's operations hereon.

Lesse agrees to notify Lessor at least 45 days prior to commencing any construction activities on the leased premises to allow for Lessor removal of marketable timber in the area(s) identified by Lessee for the proposed operations hereauder. Should Lessor choose not to remove such marketable timber, Lessee may remove said timber from the proposed operations area. Lessor shall then: (1) request Lesse to pay Lessor the value of any such marketable timber ad damages at the prevailing stump price for the local area as determined by an independent timber appraiser, admarketable timber shall then become the property of Lessee and removed from the leased premises q. (2) Lessor may request that Lessee stack the marketable timber on the leased premises at a mutually agreeable location in close proximity to the construction site, said marketable imber shall them and the property of Lessor."

It is agreed and understood that the Lessee shall repair and restore the surface of said premises as nearly as possible, including any damage to the existing drininage tile as a result of the Lessee's operations, to the condition in which said land existed at the time of the commencement of drilling operations upon the above described land. This work shall be completed within 90 days, weather permitting, after the cessation of the drilling operations upon the said lands. This work shall be done at the sole expense of the Lessee.

Location of any well(s) shall be approved by the Lessors or one of their representatives in writing prior to location thereof. Such approval shall not be unreasonably withheld or delayed. Upon receipt of Lesse's written location approval form. Lessor shall have fortenet (14) apps from the date of receipt to approve and return said form or to advise Lessee in writing of their disapproval of a specific location(s) associated with said form and provide Lessee with an alternate location(s) that Lessee deems to be economically feasible and at legal location pursuant to the rules and regulations of the State/Commonwealth. Lessor's failure to notify and return Lessee's written location approval form or to provide Lessee with such alternate location(s) within fourteen (14) days shall constitute Lessor's approval of the location(s) associated with said form. But as a private landowner, you might find yourself confused or frustrated by gas development activity that seems erratic. Good, nonbiased information about gas deposits and leasing is hard to come by because it's usually carefully guarded to prevent competing businesses from interfering with each other's gas development plans. And the sudden interest and pace of drilling have led to uncertainty and suspicion about the gas exploration process. As a property owner, you should understand the following points about natural gas leasing:

Property owners generally have the right to explore and extract natural gas under their property unless this right has been leased, sold, or otherwise transferred to another party. (Public records, deeds, and real estate titles will indicate the status of these rights.) If you own these natural gas rights, you may lease the right to explore for gas to a company that has the equipment and expertise to recover or receive the gas for a period of time, and accept payment for the lease and royalties for the value of the gas. Please note that "mineral rights" and "natural gas rights" are not necessarily the same thing, and you should be clear on what rights are legally yours. Check the deed to your property for this information.

Gas leases are legal and binding documents—they are contracts. They represent an official written agreement between two parties, usually between the gas company and the landowner. Because the leases are binding contracts, to protect your rights as a landowner you should have the proposed lease reviewed by a lawyer who is knowledgeable in PA oil and gas law and experienced in gas leases before entering into any contract. Once you sign a lease, there's really no way you can get out of it until it expires, unless you can prove fraud on the part of the gas company.

Gas leases are partly negotiable. To reduce the time and effort of setting up a gas lease with many landowners, gas companies and their representatives may offer a preprinted gas lease document. This document can serve as a starting point for a two-way negotiation, or it can be fully accepted or rejected by the landowner. You can make changes to the lease by creating an addendum that is approved (signed) by both parties



The Marcellus shale, a deep layer of rock that lies 5,000 to 9,000 feet underground, runs from the southern tier of New York through the western portion of Pennsylvania, into the eastern half of Ohio, and through West Virginia. In Pennsylvania, the formation extends from the Appalachian plateau into the western

valley and ridge. While this area has produced natural gas for years, many gas production companies are now interested in the Marcellus shale because of higher energy prices and new drilling technologies that could recover 50 trillion cubic feet of natural gas. Conservative estimates are that the Marcellus shale contains 168 trillion cubic feet of natural gas; in reality it could contain as much as 516 trillion cubic feet. The U.S. currently produces roughly 30 trillion cubic feet of gas a year, and demand for this gas is increasing steadily.

Natural fractures in the Marcellus shale are important to



recovering large amounts of gas. As heavily organic sediments were laid down approximately 380 million years ago, the black shale of the Marcellus formed. As the organic material decayed and degraded, methane and other components of natural gas formed and are now trapped tightly in the dense shale. About 300 million

years ago, the pressure of the gas caused fractures to form in the shale. These fractures run as slices from the northeast to the southwest and are fairly close together. While a vertical well may cross one of these fractures and other less productive fractures, new technology allows horizontal drilling, which can cross a series of very productive fractures.



Where and how does drilling take place?

Gas wells are drilled in locations where a gas company has obtained the right to explore for and develop natural gas. Wells are spaced according to mineral laws and regulations, with the goal of extracting gas efficiently with as few wells as possible. Geologists and geophysicists working for gas companies use seismic data to interpret the formations of rock layers underground. If seismic data suggests a reasonable possibility of efficient gas access, a well will be drilled in a specific location. Such a well is drilled using long sections of drill pipe. Depending on the geology, the drillers may drill vertically for several thousand feet, then use special joints to turn the shaft 90 degrees over the course of several hundred feet and continue drilling horizontally for an additional distance of up to 5,000 feet. A steel casing is cemented in place to stabilize the surface of the well bore and protect groundwater resources. Horizontal drilling allows companies to extract more gas in a cost-effective manner. In many cases, multiple wells may be drilled side by side on the same well pad, radiating out in different directions.

How are landowners involved in the gas exploration process?





Nearly everyone who lives in northern or southwestern Pennsylvania has seen convoys of three or four slow-moving seismic trucks. These trucks contain seismic equipment that generates information about rock formations underground. The resulting "two-dimensional" picture of subsurface rock patterns gives gas exploration companies a useful image of where gas might be located deeper underground. In some areas, a "three-dimensional" system of seismic testing is used to clarify gas deposit geology. Extensive grids of cabling, small explosives, and geophones create and record new seismic data.

Landowners have to give written permission for exploration on their land. All proposed work should be clearly described in the lease or addendum, including compensation for any damages, before this type of work begins. After the two- or threedimensional exploration process, some landowners find themselves intimately involved in gas exploration because their property is thought to be situated near or directly above a potentially valuable location for drilling and inclusion in a "drilling unit."



Gas leasing process and terms



Natural gas that is trapped underground has little or no value to landowners. It becomes a valuable resource only when companies with the proper equipment and technical ability begin to extract it from deep underground. Users of natural gas throughout the Northeast then pay transmission companies for the gas and its dependable supply. Consequently, the owner of the land from which the gas came is compensated for its value through the payment of a royalty. Part of the process of determining value and compensating the landowner for the gas is the leasing of gas rights on private land. Leasing is necessary for companies to drill wells. Gas companies must have sufficient acreage under lease before a well can be drilled. Companies determine the drilling unit they want to work in and designate the boundaries of the unit in a process called unitization. Commonly, this is based on the geology of the area. Unit size can range from 100 to 500

Gas leasing process and terms

acres or more. Marcellus gas wells in PA are all above a geologic formation called the Onondaga layer, so PA Oil and Gas law doesn't currently set unit size. Landowners in the unit receive a pro-rated share of the royalty based on the acreage they have in the unit.

As gas companies and geologists understand where gas drilling might be worthwhile in Pennsylvania, they send contractors, called landmen, out to private homes and farms to secure the mineral exploration rights for a period of time as gas development begins. This practice helps prevent another company from tying up the mineral exploration rights and making exploration more complicated and expensive. Landmen will usually visit owners of large parcels first, to lock up as much land as possible in a short time. For landowners, this visit is often the first experience they have had with natural gas exploration.

Not all landmen are part of a gas company. Some are independent brokers, others are speculators, and still others are part of gas leasing companies. Each of these businesses will have a different motivation for securing a lease on a parcel of privately owned land. Depending on where seismic data suggests there are optimum gas deposits, different landowners will receive different offers regarding drilling, exploration, surface access, and payments.

In any scenario, you as a landowner should know that the lease will be

the basis of negotiation and that the written terms of the contract will supersede anything that is said orally during contract negotiations. An effective gas lease should spell out clearly what each party is agreeing to during the gas exploration process. It should spell out the rights and responsibilities of each party in the agreement, how problems are to be handled, and how long the agreement lasts.

This guide will outline some things you should consider regarding gas leasing, but is not intended as legal advice. You should consult an attorney who specializes in gas leasing before making legally binding decisions.



1) Length of lease

Your lease agreement will specify a primary term, usually five years, and many signed gas leases are accompanied by bonus and rental payments that last through the





primary term of the lease. Depending on the terms of the lease, gas production on the leased land or in the vicinity may lead to a secondary term that lasts as long as production is active, as defined in the lease. You and your attorney should

carefully consider the language in the lease agreement because similarsounding phrases, such as "so long as operations are conducted" and "so long as gas is produced in paying quantities" can have very different impacts.

2) Gas lease payments

In any contract, you need to know what you're giving up and what you're getting. If you are offered a gas lease, what you'll be getting is, of course, payment. The original offer might include payments as a signing bonus, land rental fees, and/ or royalty payments.

- A bonus payment is a one-time payment for signing the lease.
- Rental payments including the bonus and annual rental amounts are normally made in one payment for the stated term of the lease and referred to as a paid-up lease. They can also be paid annually over the primary term of the lease.

A gas lease may also specify a delay rental, in addition to the base rental. A delay rental is made to compensate the landowner for delays in gas production or drilling.

There are no "going rates" or standard rental payments in gas leases in Pennsylvania. The amount offered will depend largely on how close or far the property is from the anticipated gas deposit. Higher bonus and rental payments are usually offered based on a company's understanding of the area's geology and proximity to optimal drilling locations. Unfortunately, the information about where the best concentrations of natural gas deposits are located is hard to find and can be confusing for a nonscientist. Educating yourself through learning sessions offered by non-biased parties and talking with friends and neighbors is a good way to discover prices companies are offering in your area and region.

Some factors that may increase potential bonus or rental payments include when the property:

- occupies a large portion of prime natural gas geology in your area
- is relatively near the prime gas geology
- owner is willing to allow lessrestricted exploration or drilling

Factors that may decrease potential bonus or rental payments include when:

the property comprises a small portion of acreage designated by companies as prime geology the property is not likely to be near the best geology

the lease restricts gas exploration on the surface (sometimes this makes only a small difference)

Before settling on a lease, the landowner should consider what home or farm expenses might relate directly to the lease. Legal fees, property tax increases, and other expenses may be necessary when entering into a lease, or during drilling, for the designated term(s). These expenses should be considered with the company's offer so that you can see your net economic gain. The timing and method of rental and bonus payments should be clearly stated in the gas lease. Failure to make payments may cancel the lease, but only if it is so stated in the lease.

Royalties are payments made to you, the landowner, by the energy company when natural gas is extracted from your land. Royalties, which are based on the terms agreed to in the lease, recognize the landowner's right to a portion of the value of the gas, resulting from the lease of exploration rights.

Pennsylvania law states that a gas lease is not valid unless it guarantees the landowner royalties of at least one-eighth, or 12.5 percent, of all natural gas removed from the property. You may negotiate with the energy company for a royalty payment that exceeds this minimum.

Leases are usually written to stop the rental payments when royalty payments begin. If the production unit only occupies a portion of the

property, the lease should be clear as to whether the royalty and rental terms apply to the entire parcel or just the portion in the unit. A royalty may apply only to the producing portion of the property, yet stop rental payments on the rest of the property. If applicable, you should determine how a royalty payment on a portion of your property might affect your overall rental payment expectations. Having your attorney include a Pugh* clause in the addendum gives you the option of separating these residual acres from the lease and potentially re-leasing them at a future time.

*A Pugh clause—a provision or addendum in a gas lease agreement that addresses whether the entire parcel of land will be held under a lease agreement, if only a portion of the leased land is developed. Specific terms of a Pugh Clause can greatly vary among lease agreements.

There are two types of Pugh Clauses. The Horizontal Pugh Clause basically states that any land included in a lease that is not within a producing unit will be released at the end of the primary lease term. The Vertical Pugh Clause states that the lease will continue, past the primary term, for all depths to the base of the deepest-producing formation and that all depths below will be released.

A shut-in royalty is paid where one or more wells are fully developed, but not producing marketable gas. This may be due to lack of pipeline connections, market timing to increase wellhead revenue, or other production and transmission circumstances. A private gas lease





may state a period of time, such as six months, that the landowner would have to wait before the shut-in royalty starts. During that time, the gas company may reserve the right to change the well, drill a different well, or otherwise adjust its production. Again, you will need to read the lease carefully, with your attorney, and make sure you understand what payments will come, how they will be made, and when they will stop. Royalties from gas and mineral properties are taxable as ordinary income.

Some gas leases might include a provision for free natural gas for the landowner. This agreement would entitle you to receive a specified amount of the natural gas extracted from your property at no cost. Generally, you would be responsible for the piping of the free gas from the wellhead to your residence, which can potentially add significant expense to you. As an alternative, the lease agreement may provide for you to receive a payment in lieu of free natural gas.

3) Surface or subsurface rights

When considering gas leasing, you should understand the extent of the rights you are granting to the energy company and seek to limit those rights if necessary. A standard lease will probably give the energy company very broad rights to use of your property's surface. Surface exploration may include tracked or wheeled equipment in fields and forests to record geologic data, the use of small explosives to create

sound waves that record seismic data, movement or construction of drilling rigs, land grading for the construction of a drilling pad and access road, equipment storage, and parking or work site activity for personnel, among other things. If you sign a lease granting surface rights, you can limit those rights. You can state, for example, that you have the final say on where a well is sited or where access roads are built on your property. You should also make sure you are protected in the event that drilling activities cause damage to crops, livestock, buildings, or personal property.

Some landowners restrict any surface activity for gas exploration on their land. In many, but not all of these cases, the parcel may be too small to conduct worthwhile surface explorations, and the gas company will offer the landowner a gas lease that requires permission for surface access only if necessary. If you chose to, you could negotiate terms that prohibit any surface activity whatsoever. Your contract addendum would state that the gas company has no surface rights but that you are granting subsurface rights.

In Marcellus shale areas of Pennsylvania, energy companies are interested in large blocks of land, and often they want groups of neighbors to agree to unitization. In this case, if you are part of the unit, and the energy company would drill a well on your neighbor's property, you would still be paid a royalty based on your pro-rated share. If the well was drilled on your property in the unit, and your lease provided

for you to receive a well siting fee (often \$2,000 to \$15,000), you would receive that beyond the royalty payments.

4) Storage of gas

In certain cases, natural gas can be pumped back into a gas well after being extracted elsewhere. Gas is stored to take advantage of seasonal market changes. Gas is in higher demand in the winter, so gas extracted during the summer can be pumped down into the gas formations under pressure, anticipating release closer to winter. Gas storage poses little hazard to the landowner; it makes use of depleted reservoirs. Although gas storage can increase wellhead revenue. it can also complicate the private gas lease. You should consider gas storage separately from the original exploration and drilling lease, and develop a separate gas storage lease, possibly for added income. Gas storage leases are often arranged with a completely different company, so if gas storage is proposed in the exploration lease, it can often be easily negotiated out. Be alert to the ways in which gas storage will affect your lease payments. For example, a well might be "shut in" and not producing marketable gas. If that well is converted for storage, a storage fee similar to a rental payment would continue, but with no royalties. These payment changes should be described clearly in the lease or addendum

5) Pipelines

When you are considering signing a contract, you should watch out for terms that would give blanket access to the gas company for pipeline right-of-way. If gas is being moved from a drilling unit that you're receiving a royalty from, pipeline access is expected by the company and is reasonable for the landowner to grant. If the right-of-way is for gas to be transported from a unit that is not on your property, then this should be negotiated separately, and the gas company should pay you an additional fee for this use.

6) The other party in the agreement

When you agree to and sign a gas lease, you are entering into a binding legal relationship with a business-a relationship that may continue for many years. Before signing the lease, you should know exactly with whom you are making the agreement. The other party may not be a gas company, but rather a speculator, a broker, or an independent landman who might sell the lease or take partial ownership of the royalty. Landowners who intend to sign a gas lease should be ready to negotiate a clause making lease assignments or sales subject to their approval. You should make sure you understand with whom you are dealing and whether your lease is freely assignable.





7) Leasing considerations for site-specific factors

As a landowner, you might not be sure what is worth negotiating and what is not, particularly if the energy company doesn't give you much information about the potential for drilling. Landowners who want to control surface activity on their property can stipulate such details as road construction, repair or compensation for timber stand damage, effective restoration of impacted farmland, and other sitespecific factors in a private lease. If your lease agreement allows for any surface access, you and your attorney should ensure that your interests are protected in writing. Issues you may want your lease or addendum to address include the following:

- The extent to which water may be used, such as from a farm pond, well, or stream, during the drilling process.
- The fairly assessed value of, and compensation for, damage to crops, timber, or water resources.

- Implementation of effective conservation and land restoration, such as:
 - Protection of agriculture soils during exploration and well operations, so farmland is restored to full productivity afterwards.
 - Protection or replacement of farm infrastructure, such as roadways, livestock travel lanes, drainage features, and fences.
- Road location and construction review by the landowner and a qualified engineer or forester.
- The site of the well relative to other property uses.
- Possible timing of surface operations to allow for livestock pasturing, hunting, or other rural land activities that have restricted seasons.
- A separate written agreement on location of pipelines in the property.

When negotiating a lease, you should also include a provision to require the gas company to indemnify you for any liability you might incur as a result of drilling activity. Indemnification means the gas company will protect you against, or compensate you for, any loss, damage, or injury that happens on your property as a result of drilling. The indemnification clause should be written to address all possibilities, including situations such as someone tripping over the drilling equipment, contamination of a neighbor's water well, an explosion caused by the release of natural gas, etc.

Also, since litigation is expensive even if you ultimately win a case, the indemnification clause should include a duty to defend so that the gas company is obligated to hire an attorney for you to defend against any lawsuit.

When the moment arrives and you're sitting at the kitchen table, holding a preprinted gas lease contract and wondering whether to sign it, what do you do? The decision to sign a gas lease rests entirely with the parties named in the lease document—namely, you and the energy company or landman. There is no legal requirement that could force you into signing a lease with a gas company, and public authorities cannot use the power of eminent domain in the natural gas exploration process. Since you are not legally obligated to sign a gas lease, the decision to sign is personal.

Remember: In any contract, you're giving something up and you're getting something in return. Financial issues play a large part in the decision, but land use and oil and gas rights are also part of the picture. If any part of the agreement is unclear or seems unfair, you can negotiate until you feel your interests are tended to. An attorney can help greatly with this process.



Gas lease language

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The language on a gas lease contract is difficult for most nonlawyers to understand. Sentences tend to be long and tedious, full of legal terms landowners do not see very often, including judicial determination, leasehold, lessee, cash equivalency, etc.). Few landowners can read through each sentence in the preprinted lease and understand its meaning and implication for their property. Gas company representatives may interpret the wording, but anything they say out loud is not what will

bind the parties in the contract. The wording in the printed contract will bind the landowner to the gas exploration process, for better or worse. The preprinted lease gas companies provide is usually as favorable or more favorable to them than to the landowner. Generally the use of multiple addenda will allow the landowner the opportunity to modify the lease to balance it, making it equally favorable to both parties.



The role of legal counsel



A qualified attorney can interpret a gas lease document. Your attorney can suggest changes, amend the document, and add the specific terms you want. Finally, an attorney can represent you if trouble arises. For example, if royalty payments are not made in the manner agreed to in the lease, an attorney can employ his or her knowledge and influence to resolve the matter. Many lawyers in Pennsylvania are able to help with gas lease contracts; however, some attorneys have additional experience in oil and gas rights that better equips them to work out special arrangements. It is fair to ask a lawyer if he or she has experience with gas lease contracts and what compensation will be required for this legal assistance. In fact, before you hire an attorney, it's very important to be certain that you understand the attorney's fee. Attorneys charge differently.

Extension's role

Penn State Cooperative Extension provides educational resources for landowners concerned about the natural gas leasing and exploration process. County extension offices may host an educational workshop, discuss leasing arrangements, or refer you to regulatory or legal specialists. Although extension educators cannot provide legal advice, they can provide additional insights about gas leasing.

For more information about gas exploration and leasing, visit Penn State's natural gas exploration and leasing Web sites: www.naturalgas.psu.edu www.wpsu.org/gasrush


Where can I find out if gas companies are leasing in my area?

Contact your local cooperative extension office. Penn State Cooperative Extension has Natural Gas Exploration and Leasing Teams that can help answer your questions and direct you to more detailed information.

What should I do if I am asked to lease my land for gas exploration?

Ask the gas company representative or landman for a copy of the lease and say you will look it over. Never sign anything on the spot. Ask a qualified attorney to review the lease and explain its impact on you and your landholdings.

My neighbors have been approached by gas companies, but no one has knocked on my door. How do I get in touch with the gas companies?

You can go to Penn State's natural gas exploration and leasing Web site, www.naturalgas.psu.edu, where you'll find a listing of energy companies in your area. When you call several energy companies to inquire on their interest in your landholdings, it's helpful to have your tax parcel number(s) handy because they will ask for that, as well as the township or county you live in.

What is an addendum? Why is it so important?

Leases are standard documents that are drawn up to favor the gas company. You and your attorney can protect your rights by preparing an addendum that includes terms of agreement that you specify. It is not uncommon for 20 or more of these to be added to the typical industry lease to modify it in a way that is more beneficial to you, the landowner.

Do I need an attorney? And if so, what type of attorney do I need?

To protect yourself and get the best outcome, you should consult an attorney. Exploring and drilling for gas is a million-dollar venture for energy companies. If a successful gas deposit is tapped on your land, your signature could represent a milliondollar decision. Before signing any natural gas lease agreement, you need to know what you are getting and what you are giving up. An attorney with experience in gas law is your best assurance to get the most out of your gas lease agreement.

One way to find a good attorney is through word-of-mouth. Who are your friends and neighbors using? You can also find a list of attorneys at www.naturalgas.psu.edu.

What is a landman?

A landman is an agent who works for a drilling company or who is contracted by a drilling company or







broker. The mission of a landman is to negotiate the lowest possible lease price and most advantageous terms for the energy/gas/drilling company. During the early stages of this process, hundreds of landmen might converge on an area to close leases quickly while landowners are just starting to understand the value of their mineral assets. When you are visited by a landman, it's time to seek qualified legal help.

My neighbor got more than ten times what I leased for. Can I demand more?

You would have to speak with an experienced attorney in gas law. But unfortunately, the answer is probably no. Remember, a gas lease is a binding legal contract. The time to do the research and make sure that the lease is most beneficial to you is before signing the lease agreement. Once you sign, you are legally bound by the terms you agreed to.

I own only four acres. My neighbors have leased. Are the gas companies interested in my little piece of land?

Yes. Although you may never have a drill rig on your property, if your property is in a drilling unit, you are due royalties based on the number of acres you have in the unit. Unless you have specific reasons not to lease, leasing could prove rewarding if gas is produced from your drilling unit.

Is it better to form a group of neighbors or go it alone?

Your decision to lease or not to lease should be based on what's important to you. You may want to join or form a group that has the same goals for land use since the amount of property available to the company by the group often increases its interest and typically provides greater leverage when negotiating terms of the gas lease. On the other hand, if you and your neighbor have different goals for your land, you might want to negotiate on your own.

If I sign a lease, how, when, and how much will I get paid?

You may be offered a one-time bonus payment from the energy company when you sign the lease. You might also receive a delay rental payment, which is an annual payment that would end when a well is drilled on your property. Royalty payments start when natural gas is extracted from your land. The state law requires that you be paid a minimum royalty of 12.5 percent, but you may negotiate for more. All of these types of payments are negotiable.

There are many factors that determine the amount and manner of payments you will receive after signing a gas lease. These include the current natural gas market, past drilling results in your vicinity, amount of acreage to be leased, the presence of pipelines or other infrastructure in the area of your property, and more.

The company that wants to lease my land is offering only a \$10 per-acre bonus. Should I accept its offer?

Never accept a first offer on the spot. Before you accept or sign anything, do your research. Talk to your neighbors to find out what they have been offered or have negotiated. There may be other natural gas exploration companies that would offer you better lease terms than the one that first contacted you. Contact 4 to 6 companies with the capacity to drill Marcellus wells and determine their interest in your landholdings. Talk with an attorney who is familiar with oil and gas law about negotiating for the best terms. Contact a member of the Penn State Natural Gas Leasing Team to find out more about companies that might be leasing in your region.

What is a drilling unit?

A drilling unit is the area from which an actual well would draw its gas. The unit is designated by the company and based on the geology of the area, and is where the gas would be drawn from when a particular well is drilled. You and your neighbor(s) in the unit share the royalty money from the gas well on a pro-rated basis based on acreage you have in the drilling unit.

What is the law of capture? Does it mean my neighbor can take the gas out from under my land?

The Law of Capture states that if a well is drilled on a property, anything that comes up out of that well belongs to the owner of that property. But in the case of natural gas in the Marcellus shale, this is not as much of a concern. First of all, it's illegal to drill under property that is not leased. Furthermore, because the gas in the Marcellus shale is in dense rock rather than pockets, there's little concern about a Marcellus well extracting natural gas from a neighboring property. The Marcellus shale has to be hydraulically fractured to release the trapped gas, and this fracturing commonly will release gas up to 1,000 feet from the bore hole. The gas companies typically design the drilling units to allow enough distance around the wells so that gas produced from them will be from that unit only.

What is a right of first refusal?

A right of first refusal is a term in the lease you should insist on instead of an option to automatically renew. The right of first refusal gives the gas company the right to match any competitor's offer for renewing the lease at the end of the primary term. For your purposes, this is preferable to the option to automatically renew, which allows the gas company to renew the lease for the same number of years as the original lease. As a landowner, you should not agree to





the option to automatically renew because essentially it locks you into the original offer. The right of first refusal will ensure that you get the best offer possible upon renewing your gas lease.

If I sign a lease allowing a gas company to explore and drill for natural gas on my land, does that also include storage and transportation of gas?

No. If a gas company wants to store gas on your property, or transport gas from someone else's property across your land, you should be compensated for that separately. You and your attorney should make sure that provisions for storage and transmission of gas are not included in a standard gas lease unless the gas is transported from your drilling unit.

My farmland is assessed under the clean and green program. How will gas leasing affect its status?

Clean and Green is a preferential assessment that allows the landowner to pay lower real estate taxes. It is a state program that is administered at the county level, and separate counties in Pennsylvania view the Clean and Green assessment differently. Depending on what county you live in, you may have to pay back taxes if you allow gas exploration and drilling on your land. If your land is assessed under Clean and Green, you'll want an addendum stating that the gas company will reimburse you for any back taxes you have to pay as a result of gas leasing and/or exploration.

Preserved land—If your land is under any kind of preservation or conservation easement program, there are limitations on how you can develop the land. You should discuss these issues with your attorney.

How can I be sure my water supply won't be contaminated if I allow drilling on my property?

A properly drilled well will ensure the protection of your fresh groundwater supply. When a well is drilled, a steel casing is cemented in place to protect groundwater resources. Also, remember that the natural gas is about 5,000 to 9,000 feet underground, while the groundwater supply is only about 400 feet underground.

If you are still concerned, you can have a predrilling survey of your water supply done and then have your water tested again after a well is drilled. If there are any changes, you can file a complaint with the regional office of the Bureau of Oil and Gas Management, Pennsylvania Department of Environmental Protection. All drinking water sources within 1,000 feet of the proposed natural gas well will automatically be tested as part of the well permitting process with DEP.



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Penn State Resources

Penn State Cooperative Extension www.naturalgas.psu.edu

Agricultural Law Resource & Reference Center, Penn State www.dsl.psu.edu/centers/aglaw/gas.cfm

Pennsylvania's Gas Rush: Uncovering the Impacts of Natural Gas Development www.wpsu.org/gasrush

State Agencies

Pennsylvania's Department of Agriculture www.agriculture.state.pa.us

Pennsylvania Department of Community and Economic Development, Governor's Center for Local Government Services

www.newpa.com/default.aspx?id=20

Department of Conservation and Natural Resources Website www.dcnr.state.pa.us

Pennsylvania Department of Environmental Protection www.depweb.state.pa.us

Pennsylvania Bureau of Oil and Gas Management Website www.dep.state.pa.us/dep/DEPUTATE/MINRES/OILGAS/oilgas.htm

Pennsylvania Department of Transportation (PennDOT) www.dot.state.pa.us

Other Agencies

Susquehanna River Basin Commission (SRBC) www.srbc.net

Delaware River Basin Commission (DRBC) www.state.nj.us/drbc

Pennsylvania Local Technical Assistance Program (LTAP) https://www.dot7.state.pa.us/LTAP/



Cooperative Extension College of Agricultural Sciences





Section 4: Related News Articles

Navarro, Mireya, "Signing Drilling Leases, and Now Having Regrets." The New York Times, Sept. 22, 2011. Web Feb. 20, 2012. http://www.nytimes.com/;

Robertson, Campbell, "Bitter Twist in Louisiana Family's Long Drilling Fight." The New York Times, Dec. 29, 2011. Web Feb. 20, 2012. http://www.nytimes.com/

Urbina, Ian, "Learning Too Late of the Perils in Gas Well Leases." New York Times, Dec. 1, 2011. Web Feb. 20, 2012. < http://www.nytimes.com/>;

Urbina, Ian, "Rush to Drill for Natural Gas Creates Conflicts with Mortgages." The New York Times, Oct. 19, 2011. Web Feb. 20, 2012. http://www.nytimes.com/

Urbina, Ian. "Officials Push for Clarity on Oil and Gas Leases." The New York Times, Nov. 24, 2011. Web Feb. 20, 2012. http://www.nytimes.com/2011/11/25/us/officials-push-for-clarity-on-oil-and-gas-leases.html?pagewanted=1&ref=ianurbina>

Urbina, Ian, "A Tainted Water Well, and Concern There May Be More." The New York Times, Aug. 3, 2011. Web Feb. 20, 2012 http://www.nytimes.com/;

Tavernise, Sabrina, "As Gas Drilling Spreads, Towns Stand Ground Over Control." The New York Times, Dec. 14, 2011. Web Feb. 20, 2012. http://www.nytimes.com/

Johnson, Kirk. "E.P.A Links Tainted Water in Wyoming to Hydraulic Fracturing for Natural Gas." The New York Times, Dec. 8, 2011. Web Feb. 20, 2012.

Applebome, Peter, "Drilling Debate in Cooperston, N.Y., Is Personal." The New York Times, Oct. 29, 2011. Web Feb. 20, 2012. http://www.nytimes.com/

Banerjee, Neela, "Landowner left out of the loop on 'fracking' risks." Los Angeles Times, Dec.12, 2011. Web Feb. 20, 2012. http://www.latimes.com/>

Reuters, "Pennsylvania quarantine cattle over gas drilling fluid." Reuters, Jul. 1, 2010. Web Feb, 20, 2012. http://www.reuters.com/

Schneyer, Joshua, "Energy giant hid behind shells in 'land grab." Reuters, Dec. 28, 2011. Web Feb. 20, 2012. http://www.reuters.com/

McAllister, Edward, "EPA to test water near Penn. fracking site." Reuters, Jan. 19, 2012. Web Feb. 20, 2012. < http://www.reuters.com>;

Rascoe, Ayesha, "US EPA probing natgas operations in Pennsylvania." Reuters, Feb. 14, 2012. Web Feb 20, 2012. http://www.reuters.com/

The Associated Press, "Tests: Pa. gas drilling town's water still fouled." The Wall Street Journal, Oct. 15, 2011. Web Feb. 20, 2012. http://online.wsj.com/

The Associated Press, "Pa. woman: Chemicals in my water in drilling area." Wall Street Journal, Feb. 24, 2012. Web Feb 24, 2012. http://online.wsj.com/;

The Associated Press, "Gas explosion rocks small Ohio village." USA Today Feb. 11, 2011. Web Feb 20, 2012. http://www.usatoday.com/;

The Associated Press, "NY Court Decision Bolsters anti-fracking movement." The Wall Street Journal, Feb. 22, 2012. Web Mar. 5, 2012. http://online.wsj.com/article/APf9893d30d5e0454fb0d020143e5816d0.html

The Associated Press, "2 Injured in Natural Gas Explosion in Seattle." Fox News, September 26, 2011. Web Feb. 20, 2012. http://www.foxnews.com/;

Eaton, Leslie, "Gas Blast Rocks Texan Town." The Wall Street Journal, Jun. 8, 2010. Web Feb. 20, 2012. http://online.wsj.com/;

Casselman, Ben, "Pennsylvania Gas-well Blowout Forces Evacuation." The Wall Street Journal, April 20, 2011. Web Feb. 20, 2012. http://online.wsj.com/;

Rubinkam, Michael, "Lowball Gas Drill Leases Haunt Pa." Associated Press, Jul. 24, 2011. Web Feb. 20, 2012. http://abcnews.go.com/;

Joyce, Christopher. "Worries Over Water As Natural Gas Fracking Expands." National Public Radio, August 2, 2011. Web Feb. 20, 2012. http://www.npr.org/;

Wheeler, Timothy B., "Gas leasing in Western Maryland spurs calls for reform." The Baltimore Sun, Dec. 31, 2011. Web Feb. 20, 2012. http://www.baltimoresun.com/>

Murawski, John, "Ownership of Lee County natural gas rights muddled." News and Observer, Nov. 18, 2011. Web Feb. 20, 2011. < http://www.newsobserver.com/>

Murawski, John, "Natural gas rights going fast in Lee County." News and Observer, Jun. 26, 2010. Web Feb. 20, 2012. http://www.newsobserver.com/>

Lustgarten, Abraham, "16 Cattle Drop Dead Near Mysterious Fluid at Gas Drilling Site." ProPublica, April 30, 2009. Web Feb. 20, 2012. http://www.propublica.org/

Baca, Marie C., "Forced Pooling: When Landowners Can't Say No to Drilling," *Pro Publica*, May 19, 2011. Web Feb. 20, 2012. http://www.propublica.org/article/forced---pooling---when--landowners---cant---say---no---to---drilling

Lustgarten, Abraham, "Louisiana Well Blowout Forces Hundreds from Homes." ProPublica, April 20, 2010. Web Feb 20,2012. http://www.propublica.org/;

Rivard, Ry, "Property, mineral rights in conflict." Daily Mail Capitol Reporter, Jul. 5, 2011. Web Feb. 20, 2012. PRWEB.com Newswire">http://www.dailymail.com/News/201107040823?page=1&build=cache>PRWEB.com Newswire. "Texas Law Firm Questions Water Use for Fracking During State's Record Drought." July 13, 2011. Web Feb. 13, 2012. http://www.digitaljournal.com/pr/362139>

Brougham, Rachel, "Mineral Rights lessors want answers: Attorneys to file lawsuits." Petoskeynews.com, Jan., 18, 2011. Web Feb. 20, 2012. http://www.petoskeynews.com/>

Brougham, Rachel, "Chesapeake Energy: Mineral rights lawsuits unfounded." Petoskeynews.com, Feb. 02, 2011. Web Feb. 20, 2012. http://www.petoskeynews.com/>

Wolf, Isaac, "At ground zero for fracking, residents say water has gone bad." Scripps Howard News Service, Nov. 18, 2010. Web Feb. 20, 2012. http://www.wcpo.com/;

Snyder, Jim, "Tainted-well Lawsuits Mount Against Gas Frackers Led by Cabot." Bloomberg, Jan 31, 2012. Web Feb. 20, 2012. http://www.bloomberg.com/>

Kidston, Martin, "5 years after gas well blowout, Clark residents vent frustrations." Gazette Wyoming Bureau, Aug. 4, 2011. Web Feb. 20, 2012. http://billingsgazette.com/; wjactv.com, "Gas Well Blowout Under Control in Clearfield County." Cox Media Group, Jun. 4, 2010. Web Feb. 20, 2012. http://www.wjactv.com/;

Levy, Marc, Associated Press, "Talisman cited for gas well blowout." The Times-Tribune, Jan. 26, 2011. < http://thetimes-tribune.com/>

O'Meara, Dina "Regulators say hydraulic fracturing may have caused oil spill on farm near Innisfail." Calgary Herald, Jan. 17, 2012. Web Feb. 20, 2012. http://www.calgaryherald.com/>

Eichelberger, Erika, "As Fracking Boom Hits Ohio, Deceptive Industry Practices Squeeze Landowners." The Indypendent, Feb. 23, 2012. Web Mar. 1, 2012. http://www.indypendent.org/>

CBS Denver, "Parents In Erie Form Group To Fight Against Fracking." CBS Local 4, Jan. 4, 2012. Web Feb. 20, 2012. http://denver.cbslocal.com/;

Luthern, Ashley, "Texas co. wants to lease mineral rights at Poland cemetery." Vindy.com, Jan. 14, 2012. Web Feb. 20, 2012. < http://www.vindy.com/>;

Wolf, Jeffrey, "Windsor residents worried about fracking near their homes." 9 News.com, Aug. 22, 2011. Web Feb. 20, 2012. http://www.9news.com/>

Finley, Bruce, "Denver metro cities digging in before oil and gas drills do." The Denver Post, Feb. 22, 2012. Web Feb. 22, 2012. < http://www.denverpost.com/>

Campbell, Jon, "Gas company attempts to extend leases." Pressconnects.com, Jan. 12, 2011. Web Feb. 20, 2012. http://www.pressconnects.com/;

Coin, Glenn, "Energy companies insist they can extend gas leases; landowners take them to court." The Post-Standard, Feb, 27, 2011. Web Feb. 20, 2012. http://www.syracuse.com/;

Campbell, Jon, "Lawyers fighting gas company efforts to extend leases." Stargazette.com, Feb. 16, 2011. Web Feb. 20, 2012. http://www.stargazette.com/;

Campbell, Jon, "N.Y. gas producers aim to extend expiring leases on state forests as they await hydrofracking permits." Lohud.com, Aug. 7, 2011. Web GFeb. 20, 2012. ">http://www.lohud.com/>

Schwartzel, Erich, "A big firm moves in; landowners face new types of shale leases." Pittsburgh Post-Gazette, December 11, 2011. Web Mar. 1, 2012. http://www.post-gazette.com/pg/11345/1196135-503.stm

Section 5: Additional Resources

The New York Times Oil and Gas Lease Database Landowner Coalition Leasing Groups Oil and Gas Rights Leasing Reports Oil and Gas Rights Leasing Presentations Links to Farmer Property Rights non-profit organizations Links to additional resources

The New York Times Lease Database:

http://www.nytimes.com/interactive/2011/12/02/us/oil-and-gas-leases.html

Landowner Coalition Leasing Groups:

http://marcellusdrilling.com/landowner-groups/

Oil and Gas Rights Leasing Reports:

Arthur, Daniel, "Hydraulic Fracturing Considerations for Natural Gas Wells of the Marcellus Shale." New York State Department of Environmental Conservation. Web Feb. 20, 2012. ">http://www.dec.ny.gov/>

Arkansas Public Policy Panel, "Model Oil and Gas Laws, Regulations, and Ordinances." March 2011. Web Feb. 20, 2012. http://arpanel.org/content/Model%20Gas%20Laws.pdf;

New York Department of Conservation Draft Supplemental Generic Environmental Impact Statement for gas drilling: http://www.dec.ny.gov/energy/75370.html

Andrews, Anthony, "Unconventional Gas Shales: Development, Technology, and Policy Issues." Congressional Research Service, Oct. 30, 2009. Web Feb. 20, 2012. http://www.fas.org/sgp/crs/misc/R40894.pdf>

Duke University Nicholas Institute for Environmental Policy Solutions. "Considering Shale Gas Extraction in North Carolina: Lessons from Other States." November, 2011. http://nicholasinstitute.duke.edu/climate/policydesign/nc-hydraulic-fracturing

Bamberger, Michelle, New Solutions, Vol. 22(1) 51-77, 2012, "Impacts of Gas Drilling on Human and Animal Health." Baywood Publishing Co., Inc. 2012;

Arkansas Public Policy Panel. "Arkansas in the Balance: Managing the Risks of Shale Gas Development in Natural State." Feb. 2011. http://www.arpanel.org/content/Arkansas%20in%20the%20Balance.pdf

Horwitt, Dusty, "Drilling Doublespeak." Environmental Working Group, 2011. Web Feb. 20, 2012. http://static.ewg.org/pdf/Drilling_Doublespeak.pdf>;

Radow, Elisabeth, "Homeowners and Gas Drillings Leases: Boon or Bust?" New York State Bar Association, Nov. 2011. Web Feb. 20, 2012. http://www.cce.cornell.edu/;

WORC, "Effective Regulations of Hydraulic Fracturing." November 2011. Web Feb. 20, 2012. http://www.worc.org/userfiles/file/Oil%20Gas%20Coalbed%20Methane/Hydraulic%20Fracturing/HF_Regs_long.pdf

Earthworks, Texas Oil and Gas Accountability Project, "Drill Right Texas." http://www.earthworksaction.org/files/publications/Drill_Right_Texas_FINAL.pdf

Intermountain Oil and gas BMP Project

http://www.oilandgasbmps.org/mainsearch.php

U.S. Bureau of Land Management Best Management Practicies

http://www.blm.gov/wo/st/en/prog/energy/oil_and_gas/best_management_practices.html

Presentations:

Treakle, Jordan. "Mineral Rights Leasing in North Carolina." Presentation by the Rural Advancement Foundation International-USA (2012). http://www.nclm.org/SiteCollectionDocuments/Legislative/TreaklePresentation.pdf

Engelder, Terry. "Pooling: A question poised on the tip of an ethical knife." Presentation by Marcellus Center for Outreach & Research, Penn State University (2010).

Farmer Property Rights non-profit organizations:

Rural Advancement Foundation International-USA: http://www.rafiusa.org

Western Organization of Resource Councils: http://www.worc.org

Earthworks: http://www.earthworksaction.org

West Virginia Surface Owners' Rights Organization: http://www.wvsoro.org/index.html

Additional Resources

NCSU Department of Agricultural and Resource Economics </br/>

Cornell Natural Gas Resource Center <http://cce.cornell.edu/EnergyClimateChange/NaturalGasDev/Pages/default.aspx>

National Agricultural Law Center Renewable Energy Reading Room </br/></br>www.nationalaglawcenter.org>

Water wiki <http://sogweb.sog.unc.edu/Water/index.php/Main_Page>

Penn State Agricultural Law Resource and Reference Center <http://law.psu.edu/academics/research_centers/agricultural_law_center/resource_areas/natural_ gas_exploration>

NC Department of Justice, consumer complaints <www.ncdoj.gov/Consumer/2-2-12-File-a-Complaint.aspx>