Surface impacts of drilling

a. Land

The land around the well site can be drastically altered. Crops, livestock, native

flora and fauna may all be negatively impacted by drilling on the property. On the well pad itself, forested area must be cleared and land must be leveled. In addition, this well pad must be supported by lengthy access roads, pipelines and support facilities. Because of the near‐constant use of heavy machinery, the soil under the well pad and access roads can become heavily compacted and eroded. This leads to decreased soil percolation and increased water runoff.6 This causes less vegetative growth and in turn, more soil erosion. All of this affects water quality of streams and other water bodies into which stormwater carries such eroded soil.

When a large area of forest is removed, the ecosystem as a whole is affected. Native

species of animals are uprooted, and non‐native species are given an opportunity to invade the new land. These invasive species are aggressive and difficult to remove once they gain a foothold. Garlic mustard, stilt grass, autumn olive, and Japanese knotweed are all known to invade these types of areas in Pennsylvania forests.7

4 Id. at I-29.

5 58

6 Mary Beth Sweeney et. al., “Study Guide II, Marcellus Shale Natural Gas: Environmental Impact,” The League of

Women Voters of Pennsylvania, 2009-10, pp. 2.

7 Sweeney et. al., “Study Guide II,” at 3.

b. Air

While natural gas is considered a clean fossil fuel, its extraction can release a great

deal of air pollution. Estimates vary depending on specific wells, but there will be a

massive increase in heavy‐truck traffic. One study of a Denton, Texas natural gas drill site found that 592 one‐way truck trips were required per well.8 Diesel and heavy‐duty trucks can emit air toxins such as carbon dioxide, particulate matter, and known carcinogens.9

And these are the just the emissions from the trucks. The wells themselves are another

source of air pollution from supply equipment or gas leaks. The United States Department

of Energy estimates that 50 billion cubic feet of methane escapes from leaking valves

during natural gas drilling. This is the single largest source of methane emissions in the

nation.10

In addition to methane, other pollutants are released into the air by the drilling

process. Along with this principal component of natural gas, one can expect increased

emissions of the following: nitrogen oxides; volatile organic compounds; benzene; toluene;

ethyl benzene; xylene; carbon monoxide; sulfur dioxide; particulate matter; ozone; and

hydrogen sulfide.11 Each of these pollutants causes known health risks.

c. Noise

While not as serious a health risk as air or water pollution, noise can be a nearconstant

annoyance. During heavy exploration phases, trucks may travel across the land

24‐hours a day. If used, gas compressors run at high decibels around the clock. And the

various seismic testing techniques previously discussed are by their nature loud and

obtrusive.

8 “Hancock & The Marcellus Shale: Visioning the Impacts of Natural Gas Extraction Along the Upper Delaware,”

Columbia University Urban Design Research Seminar, 2009, pp. 11. (citing, “Preparing for Natural Gas

Development: Understanding Impacts and Protecting Public Assets,” A Gas Drilling Research Task Force Report

for Sullivan County,” February 13, 2009.

9 U.S. Environmental Protection Agency (EPA). (2002) *Health assessment document for diesel engine exhaust*.

Prepared by the National Center for Environmental Assessment, Washington, DC, for the Office of

Transportation and Air Quality; EPA/600/8‐90/057F. Available from: National Technical Information

Service, Springfield, VA; PB2002‐107661, and http://www.epa.gov/ncea.; *Status Report on Clean Mobile*

*Source Diesel Initiatives in the Northeast States and Eastern Canadian Provinces*. (Sept. 2003). Prepared by

Northeast States for Coordinated Air Use Management for the Conference of New England Governors and

Eastern Canadian Premiers (NEG/ECP). Available from www.nescaum.org/documents.

10 United States Department of Energy, Office of Fossil Energy, “Environmental Benefits of Advanced Oil and Gas

Exploration and Production Technology.”

http://fossil.energy.gov/programs/oilgas/publications/environ\_benefits/env\_benefits.pdf.

11 Sweeney et. al. “Study Guide II,” at 9. (citing, “Modern Shale Gas, Development in the United States: A Primer,”

Ground Water Protection Council & ALL Consulting, 2009, Prepared for the U.S. Department of Energy, Office of

Fossil Energy and National Energy Technology Laboratory.)

8

d. Water

Water pollution is the single largest environmental concern associated with natural

gas drilling. As noted before, wells ‐ whether vertical or horizontal – use significant

amounts of water during the drilling process. As more and more wells are drilled in

Pennsylvania, the demand for water will be significant. In the Susquehanna and Delaware

River basins, the cheapest and most common source of water is a nearby stream, river or

lake in the basin watershed. Thus, proper water quality management is critically important

for landowners and policymakers alike.

In addition to quantity, water quality issues can arise. When water is used in the

drilling process, it is combined with numerous chemicals to create what is known as

“slickwater” or “frac water”. All of the chemicals used are designed to perform a specific

function to increase gas flow efficiency. There are acids to dissolve minerals and prevent

oxidation. Biocides are used to eliminate bacteria in the water and corrosion inhibiters

used to prevent corrosion of the pipe. Friction reducers and gels increase flow efficiency of

the slickwater. And this is just the start. Other ingredients include oxygen scavengers, pH

adjusters, proppants, scale inhibitors, and surfactants. A detailed list of these additives and

their function can be found in the U.S. Department of Energy’s “Modern Shale Gas”

Primer.12

Anywhere from 30‐70% of the slickwater returns to the surface.13 Along with the

chemicals detailed above, this water contains a mix of rock, minerals, and in some case,

radioactive material.14 Companies often construct onsite storage pits to house the vast

quantities of this wastewater – which can pose risks if the waters leak, overflow, or

otherwise escape from the pits – something that has already occurred at some

Pennsylvania well sites.

At least one analysis of Marcellus Shale drilling activities in Pennsylvania has found

significant numbers of accidents, spills, and regulatory violations having environmental

impacts. The Pennsylvania Land Trust Association found 1,435 violations of Pennsylvania

12 Ground Water Protection Council, “Modern Shale Gas, Development in the United States: A Primer,” U.S.

Department of Energy, Office of Fossil Energy and National Energy Technology Laboratory, April 2009, pp. 63.

It should be noted that only 15,000 gallons of these chemicals are used for every 1 million gallons of water.

Industry is quick to note that amounts to only 0.5% by volume.12 However, this should not downplay the

concern of contamination. These chemicals are chosen because the increase gas production – not for

minimizing environmental impacts. In the drilling process, these chemicals are combined in a slurry and

because much of this frac water gets reused, chemicals can build up over time, as does their potential for

adverse environmental impact. It only takes only one leak to contaminate an entire community’s water

supply.

13 Sweeney et. al., at 4.

14 “Oil and Gas at Your Door,” Chapter I, pp. I-27.

9

Oil and Gas Laws between January 2008 and June 25, 2010, with 952 of those violations

having or likely to have an impact on the environment.15

Thus, the claim that gas drilling will have no environmental impacts in Pennsylvania is not

supported by the facts.

LEGAL ASPECTS OF ENVIRONMENTAL CONCERNS

Given the potential environmental impacts of gas drilling, it is important to

understand the various legal regulations that may play a role in regulating drilling. There are federal, state, and local sources of regulation to consider.

There are two ways to think about the applicable law. One is to focus on the sources of the law (i.e., federal, state, local). The second is to think about the law in terms of the drilling process. Let’s start with sources.

Federal Regulation

Gas Exploration is regulated in the United States mostly under the Department of

the Interior and the Environmental Protection Agency though various federal acts such as National Environmental Policy Act, Clean Water Act, Clean Air Act and the Safe Drinking Water Act / Energy Policy Act of 2005.

*National Environmental Policy Act*

The Department of the Interior (DOI) regulates and approves exploration and

extraction of natural resources on federally‐owned lands throughout the United States. If the drilling involves such federal lands, DOI must follow a decision‐making process mandated by the National Environmental Policy Act (NEPA)16 to conduct a thorough analysis of environmental impacts before they give final approval. The NEPA process requires citizen review and potential to comment. However, unless federal lands or funds are involved, NEPA will not be implicated.

*Clean Water Act*

The Clean Water Act of 1972 (CWA)17 establishes the basic structure for regulating

discharges of pollutants into the waters of the United States and regulating water quality

standards for surface waters. By authority of the CWA, the EPA has implemented pollution

control programs such as setting wastewater standards for industry. They have also set

15 *See* www.conserveland.org/violationsrpt.

16 Section 102 of the National Environmental Policy Act of 1969, 42 U.S.C. §4332; CEQ NEPA Regulations 40

C.F.R.§1508.12;

17 Clean Water Act (33 U.S.C. §1251 et seq. (1972)

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water quality standards for all contaminants in surface waters. Under the CWA it is

unlawful to discharge any pollutant from a point source into navigable waters, unless a

permit is obtained by the EPA or a qualifying state agency. EPA's National Pollutant

Discharge Elimination System (NPDES) permit program controls discharges.18 Point

sources are discrete conveyances such as pipes or man‐made ditches. Individual homes

that are connected to a municipal system, use a septic system, or do not have a surface

discharge do not need an NPDES permit; however, industrial, municipal, and other facilities

must obtain permits if their discharges go directly to surface waters. This typically

includes stormwater runoff as well from associated industrial activity and discharges from

municipal storm water systems.19

However, companies drilling wells for natural gas operate under an exemption from

the CWA which excludes materials that are injected in to a well for production of gas and

water derived from the production of gas as not being a pollutant.20 Congress extended the

exemption to all gas construction facilities in the 2005 Energy Bill.21 In addition, the CWA

does not required drilling companies to obtain a permit for discharges of stormwater

runoff from the exploration, production, treatment, or transmission of natural gas.22

*Clean Air Act*

The Clean Air Act (CAA), 42 U.S.C. § 7401 et seq., allows EPA to set limits on certain

air pollutants in order to ensure basic health and environmental protection from air

pollution for all Americans. The CAA also gives EPA the authority to limit emissions of air

pollutants coming from sources like chemical plants, utilities, and steel mills through the

National Ambient Air Quality Standards (NAAQS). Individual states may have stronger air

pollution laws, but they may not have weaker pollution limits than those set by EPA.

Additionally, EPA must approve state and local agency plans for reducing air pollution. If a

plan does not meet the necessary requirements, EPA can issue sanctions against the state

and, if necessary, take over enforcing the CAA in that area.

The purpose of NAAQS is to limit the emission of substances that contribute to air

pollution and endanger public health.23 The CAA does not enumerate the substances to be

regulated by NAAQS, but rather gives the EPA the authority to determine which substances

should be governed by NAAQS.24 Each state must, in turn, adopt and submit to the EPA for

18 40 C.F.R. § 122.1

19 40 C.F.R. § 122.28

20 Id.

21 http://www.ewg.org/reports/Free-Pass-for-Oil-and-Gas/Oil-and-Gas-Industry-Exemptions

22 §1251

23 42 U.S.C. § 7409(a)-(b) (2006) – National Primary and Secondary Ambient Air Quality Standards

24 § 7408(a)(1).

11

approval a State Implementation Plan (SIP) for each primary and secondary standard that

provides for the implementation, maintenance, and enforcement of such standards.25 The

EPA established which substances are regulated by NAAQS in the promulgated EPA

regulations 40 CFR pt. 50. The regulations set standards for Sulfur Dioxides, Particulate

Matter, Carbon Monoxide, Ozone, and Nitrogen Oxide.26

The CAA also requires the EPA to establish and enforce National Emission Standards

for Hazardous Air Pollutants (NESHAPS).27 These standards regulate 188 different

hazardous air pollutants (HAP).28 The CAA further directs the EPA to name major and area

sources that emit these HAPs, and develop regulations for these sources based on

maximum achievable control technology (MACT).29

Section 7412(n)(4)(A) of the CAA provides that emissions from oil and gas wells,

pipeline compressors, and pump stations cannot be aggregated with emissions from other

similar units to determine whether such units or stations are major sources of air

pollution30 or any other purpose under Section 7412. Section 7412(n)(4)(B) provides that

the EPA may only establish an "area source" category for oil and gas production wells if

they are located in a metropolitan statistical area or consolidated metropolitan statistical

area with over a million people if such wells present "more than a negligible risk of adverse

effects to public health."31 Under authority of the CAA, the EPA has issued several

regulations that pertain to Oil and Gas exploration and production.

The EPA has established National Emission Standards for Organic Hazardous Air

Pollutants for Equipment Leaks.32 These provisions apply to certain pumps, compressors,

agitators, pressure relief devices, and other pieces of equipment that are intended to

operate in organic hazardous air pollutant service 300 hours or more per year.33

25 § 7410(a)(1).

26 40 CFR pt. 50 et seq.

27 42 U.S.C. § 7412 (2006) - Hazardous Air Pollutants

28 See § 7412(b).

29 §§ 7412(a), (c), (g).

30 42 U.S.C. § 7412(n)(4) (2006)

31 42 U.S.C. § 7412(c)(3) (2006).

32 40 C.F.R. pts. 63.160-.183 (Subpart H) – National Emission Standards for Organic Hazardous Air Pollutants for

Equipment Leaks

33 Id.

12

The EPA has also established National Emission Standards for Hazardous Air

Pollutants from Oil and Natural Gas Production Facilities.34 These provisions apply to

emission points of hazardous air pollutants located at oil and natural gas production

facilities that are major or area sources of hazardous air pollutants (i.e., all sources of

hazardous air pollutants), as well as "[f]acilities that process, upgrade, or store

hydrocarbon liquids prior to the point of custody transfer," and "[f]acilities that process,

upgrade, or store natural gas prior to the point at which natural gas enters the natural gas

transmission and storage source category or is delivered to a final end user."35

*Safe Drinking Water Act and the Energy Policy Act of 2005*

The Safe Drinking Water Act (SDWA), 42 U.S.C. § 300f et seq., is the principal federal

law in the United States that ensures safe drinking water for the public.36 Pursuant to the

act, the EPA is required to set standards for drinking water quality and oversee all states,

localities, and water suppliers who implement these standards. The SDWA applies to every

public water system in the United States but privately drilled and owned wells are excluded

from EPA review.

The Energy Policy Act of 2005 provides for minimal requirements to obtain a permit

for underground injection wells but specifically excludes the regulation of the underground

injection of brine or other fluids which are brought to the surface in connection with oil or

natural gas production or natural gas storage operations, or any underground injection for

the secondary or tertiary recovery of oil or natural gas, unless such requirements are

essential to assure that underground sources of drinking water will not be endangered by

such injection.37 In effect, SDWA cannot regulate gas drilling operations.

*Underground Injection Control Program*

The Underground Injection Control Program (UIC Program) regulates certain

aspects of hydraulic fracturing. Injection wells are categorized in to five classes. The

categories are defined based on similarities such as the fluids injected, techniques utilized,

and injection depth. The UIC Program primarily regulates activities in Class II and Class V

injection wells. Class II wells inject fluids commonly used for natural gas production. The

majority of the injected fluid is brine that comes to the surface during the extraction of gas.

There are approximately 144,000 Class II wells in operation in the United States, injected

34 40 C.F.R. pts. 63.760-.777 (Subpart HH) – National Emission Standards for Hazardous Air Pollutants from Oil

and Natural Gas Production Facilities –

35 40 C.F.R. pt. 63.760(a)(1)-(3).

36 42 U.S.C. § 300f et seq. (1974)

37 42 U.S.C.A. § 300h (b)(2).

13

more than two billion gallons of brine every day. Fracturing that uses Class II and V

injection wells to open space in a formation are also regulated by the UIC Program. 38

State Regulation

Gas exploration is regulated in Pennsylvania under the state’s oil and gas laws (Oil

and Gas Act, Coal and Gas Resource Coordination Act, and Oil and Gas Conservation Law),

and the environmental protection laws that include the Clean Streams Law, the Dam Safety

and Encroachments Act, the Solid Waste Management Act, and the Water Resources

Planning Act.39 DEP’s Bureau of Oil and Gas Management regulates the exploration,

development and recovery of Marcellus Shale natural gas reservoirs in a manner that will

protect the commonwealth’s natural resources and the environment.40

Pennsylvania law requires drillers to case and cement Marcellus Shale natural gas

wells through all fresh water aquifers before drilling through deeper zones known to

contain oil or gas. This casing and cement protects groundwater from the fluids and natural

gas that will be contained inside the well, and keeps water from the surface and other

geologic strata from mixing with and contaminating groundwater.

If drilling causes disruption of water quality or flow in water wells, state law

requires drilling operators to replace or restore water supplies affected by drilling. If you

are not satisfied with the drilling company’s response, a complaint can be filed with the

nearest DEP regional office. DEP will investigate complaints within 10 days and issue

orders as necessary to replace or restore the water supply. Once a well is no longer

producing, the operator must plug the well and restore the site within nine months of

plugging the well.

Many landowners and municipalities are interested in receiving notice of well

permit applications. DEP has a no‐cost subscription service called eNotice that notifies

land owners and municipalities with an email when a well permit application is received.

This system enables land owners and municipalities to receive notice of a permit

application at the same time that DEP receives the application. eNotice can be accessed

through DEP’s website at www.depweb.state.pa.us.

*Oil and Gas Act*

The Oil and Gas Act is the principal law that regulates extraction of natural gas in

Pennsylvania. The purposes of the Oil and Gas Act are to develop natural gas resources,

38 http://www.epa.gov/safewater/uic/wells\_hydrofrac.html

39 http://www.elibrary.dep.state.pa.us/dsweb/Get/Document-77964/0100-FS-DEP4217.pdf

40 Id.

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protect the safety of gas personnel and facilities, protect the safety and property rights of nearby people, and to safeguard natural resources and the environment.41

The Oil and Gas Act requires companies to obtain a permit from DEP before drilling

or altering an existing well. A plat prepared by an engineer or surveyor must be included in the permit application. A notice of the application must then be sent to the surface landowner and to surface landowners or water purveyors who have water supplies within 1,000 feet of the proposed well location. Additionally, notice must be provided to the owner or operator of an underlying coal mine. DEP is required to issue a permit within forty‐five days of submission unless it needs to be extended for an addition fifteen days. This short timetable, coupled with the volume of applications and the DEP resources available for meaningful review, can raise concerns about the thoroughness of the review process. DEP can impose conditions in granting a permit or can deny the request for a permit for several reasons, including that the well site is in violation of the Oil and Gas Act or issuance of the permit would violate the Act, an incomplete application, an objection to the well location by the owner or operator of a coal mine, a well is not bonded adequately,

or if the applicant has current wells in violation of the Act. After a permit is issued, the natural gas company may begin drilling after providing 24 hour notice to DEP, the surface landowner, and the local political subdivision in which the well is located. These permits typically expire after one year unless renewed.42

In situations where a proposed well is planned to be drilled on a surface estate belonging to an individual other than a well operator, the surface estate owner may object to DEP’s permit grant. Objections must be filed within fifteen days of receipt of the plat and notice of the application. Objections may be based on inaccuracies of information in the permit or based on the proposed location of the well.43

Local Regulation (Zoning)

On a local level, zoning rules can affect gas drilling or exploration on a particular

parcel. Local zoning regulations determine if gas exploration or mineral extraction is a permissible use in any of the zoning districts of the municipality. In many cases, mineral extraction is allowed in at least one zoning district as a permissible use or under a special exception, conditional use, or variance. The local Zoning Officer should be able to help determine if this activity is allowed and if any additional permits are needed. The interaction of zoning and the Oil and Gas Act is a complex issue due to potential preemption by the Pennsylvania Oil and Gas Act. In 2009, the Pennsylvania Supreme Court decided two key cases that address the extent the Oil and Gas Act supersedes local municipal regulation of gas drilling. In *Range Resources Appalachia v. Salem Township*,44

41 58 P.S. § 102.

42 58 P.S. § 201.

43 58 P.S. § 202.

44 Range Resources Appalachia v. Salem Township, 964 A.2d 689 (Pa. 2009).

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Salem Township enacted an ordinance that regulated surface development activities

associated with gas drilling operations. The court ruled that the Oil and Gas Act preempted some provisions of the ordinance related to development. In *Huntley & Huntley v. Borough of Oakmont*,45 the Supreme Court reversed the Commonwealth Court’s decision that the Oil and Gas Act preempted a local zoning ordinance. The court ruled that a municipality has the authority to designate zoning districts that either permit or prohibit oil and gas wells. Together, *Salem Township* and *Borough of Oakmont* seem to hold that local zoning rules controlling the *location* of drilling (i.e., where drilling is done) are not preempted, but local zoning controlling the *activity* of drilling (i.e., how drilling is done) are preempted. Thus, local governments in Pennsylvania can require the oil and gas industry to comply with ordinances and go through a public hearing and approval process as a part of an application for a conditional use or special exception application when it relates to where drilling will occur. In addition, this case necessitates that gas companies obey ordinances that prohibit the drilling of wells altogether in a designated zoning district.

LEGAL ISSUES BY PROCESS STEPS

If one thinks of the steps in the gas development process, the legal issues discussed

above could be rearranged as follows:

*Site Selection*

‐ NEPA (if federal lands or fund involved)

‐ Contract law (for leases – see next section of Guide)

*Seismic Testing*

‐ Law related to trespass (if entry onto land is unauthorized)

‐ State regulations on explosive charges

*Drill Pad and Well Development*

‐ Local zoning re location of drilling

‐ Oil and Gas Act

‐ Clean Water Act

‐ Clean Air Act

‐ Safe Drinking Water Act

45 Huntley & Huntley v. Borough of Oakmont, 964 A.2d 855 (Pa. 2009).

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LEGAL ASPECTS OF LANDOWNER LEASING

Drilling on the Marcellus Shale natural gas reserves presents a great financial

opportunity to landowners in Pennsylvania. However, this opportunity carries with it the potential for great risk. Before delving into specific issues, it is important to remember that knowledge and information are absolutely critical to protecting your land, your health, and your rights. Fortunately, there is a wealth of information available through the internet, state agencies, and various organizations devoted to Marcellus Shale development in Pennsylvania. Consult your neighbors. Attend community meetings. And before you sign a mineral lease or a surface use agreement, please consult an attorney experienced in the oil and gas industry.

Oil and gas companies must acquire the rights to drill on a particular piece of land before any work can begin. Generally, the gas company will be interested in two basic sets of rights: mineral rights and surface rights.46 If the landowner owns the mineral rights to a piece of property, the gas exploration companies may want to enter a lease agreement to extract the minerals that are available. A typical lease contains information on what type of work will be conducted on the land and in return how much they are willing to provide in compensation for access to the minerals extracted. If a property owner does not own the mineral rights beneath the property, there are still other options. A property owner may bargain with gas exploration companies to provide more convenient access to the particular location on the property via a surface use agreement with the gas company. A mineral lease is a contractual agreement between the owner of a mineral tract (the lessor) who grants the right to develop deposits of mineral to a producer (the lessee).47 Surface use agreements, on the other hand, are a type of contract that dictates how, where, and when a gas company may use the land.48 The latter can be incorporated into a mineral lease, but can also be used by a landowner who does not own the mineral estate beneath their property. These documents are vital to both the landowner owner and the gas company. They can provide an interested mineral owner with protections. But they also create a legal relationship, and thus legal liabilities, between the landowner and the gas company. The agreement can contain provisions that detail the rights and duties of each party. As such, mineral and surface leases should only be written, negotiated, and

46 The mineral estate, or the ownership of minerals lying below the surface of your land, is considered a real

property interest, separate from the surface estate. Surface rights refer to the ownership of your land and the ability

to use it as you see fit (residence, agriculture, or other development). When different parties own the mineral and

surface rights, the rights are severed. Generally, severance occurs when a landowner sells off his mineral rights, or

reserves them when selling his surface rights.

47 “Fact Sheet: Landowners and Oil and Gas Leases in Pennsylvania,” PA Department of Environmental Protection,

pp. 1, available at (weblink)

48 “Oil and Gas at Your Door, Chapter III: Tips for Landowners,” at pp. III-3.

17

signed after extensive consultation with an attorney experienced in mineral leases and one

familiar with the interests of the landowner.

As a general rule, when negotiating a mineral lease or surface use agreement,

document all meetings and most importantly, do not sign anything until you have consulted

an experienced attorney. Once the lease is signed, the landowner is bound to its terms of

the contract and has little to no recourse outside of the provisions of the lease.

Some of the issues that might arise in the lease negotiation include:

a. Legal Description and Primary Term

Any lease should include a definite description of the property. Including both

acreage and boundaries helps to avoid potential disputes, especially if neighboring

landowners are also leasing their property.

The lease should clearly designate its term length. The term limits can vary from

lease to lease, but the average length is a five year term. A landowner should be careful to

consider automatic extensions of the lease. Some courts have interpreted and found that

certain industry practices automatically extend the lease without the consent of the

landowner.

b. Signing Bonus and Royalty Fees

In Pennsylvania, landowners must be paid a minimum royalty of 12.5% of the value

of marketable gas produced on their property,49 but that is only a minimum. A landowner

should understand how the royalty fees are calculated, as they can be formulated in

different ways. Some companies calculate the royalty from gross profits. Others use net

profits and remove fees for extraction, production, and taxes. Gas exploration companies

may also offer a signing bonus in addition to the royalty fees. A landowner should consult

an attorney and a Tax consultant to determine how payments are calculated and possible

tax implications arising from such payments.

c. Surface Use Protections and Reclamation

This broad category represents a myriad of provisions designed to protect the

interests that may be valued by the landowner: air pollution; water quality and usage; land

use restrictions; and noise restrictions. The burden falls to the landowner to prioritize

environmental concerns, consult an experienced attorney, and write these protections into

the lease agreement. A landowner should also consider the end of the drilling process in

these provisions. The Oil and Gas Act requires gas companies to reach an agreement with

the landowner on restoration of the property after the well is abandoned.50 A landowner

49 Oil and Gas Leases, 58 P.S. §§33-34.

50 Oil and Gas Act, 58 P.S. §601.401.

18

may, for example, require the gas company, at its expense, to restore the land to its

predrilled state as one of the lease terms.

d. Environmental Indemnity

Accidents can happen and environmental damage can occur—that risk is inherent to

almost any industry. A landowner who signs a lease can face legal and financial liabilities

for accidents occurring on the land or environmental damage caused by the drilling and

production operations on the land. One way for a landowner to protect themselves and to

control that liability is through indemnity clauses in the lease through which the gas

company agrees to pay what the landowner would owe in such circumstances. Without

indemnity clauses, a landowner may be left paying substantial fines to neighbors or to the

State of Pennsylvania. Even with indemnity clauses, the landowner does not avoid all

liability—only the financial burden of such liability, and only to the extent that the gas

company has the resources to cover its indemnity promise.

As this brief overview suggests, the leasing of mineral rights and allowing surface

access raises complication legal issues. Landowners stand to benefit financially from gas

reserves under their property. However, there are many issues to consider besides

economics. Land topography can be altered as thousands of well sites are constructed in

the next five years. Air pollution in these predominantly rural areas could drastically

increase due to more concentrated industrial activity. Lastly, the effect to Pennsylvania’s

waters could be far‐reaching. With these environmental concerns in mind, it is incumbent

upon the landowner to consider all options before signing a natural gas lease. Once signed,

there may be little a landowner can do to protect their land and their rights as they are

bound by the terms of the contract. A landowner should consult with an experienced

attorney, and consider all legal, financial, and environmental benefits and consequences to

drilling on their land.