Longwall Mining and SMCRA: Unstable Ground for Regulators and Litigants

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LONGWALL MINING AND SMCRA: UNSTABLE GROUND FOR REGULATORS AND LITIGANTS

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I. INTRODUCTION

Since the advent of the first modern longwall systems in the late 1960s,¹ the growth of longwall mining in the United States has changed the face of the mining industry. West Virginia has more operating longwall mines than any other state.² Some of these sites have become legal battlegrounds between mining interests and the citizens whose homes have been damaged and water sources lost or impaired as a result of these highly productive operations. The legal debate surrounding the protection of individual properties and the public interest has focused to some extent upon the issues of property law construing mining rights as they relate to evolving technologies and their effects,³ but increasingly citizens have sought

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protection in statutes and regulations governing mining and its effects.

The Surface Mining Control and Reclamation Act of 1977 (SMCRA) was designed "to protect society and the environment from the adverse affects of surface coal mining operations . . . ." SMCRA and the state programs approved to implement it pursuant to section 503 of the Act, contain both general and specific provisions regulating the surface effects of underground mining. This Article will examine some of those provisions, and the legal issues surrounding them, as they relate to modern longwall mining.

A. Longwall Mining and Its Effects

Modern longwall mining is an underground mining technique which removes coal from a "panel" which may be from 400 to 1000 feet along the face and from 1,000 to over 10,000 feet long. The coal seams mined by this method must be relatively level and range from 40 to 180 inches in seam height. It is a highly mechanized system, typically consisting of three principal components: a shearer or plow, which cuts the coal as it moves across the face; a chain-type armored face conveyor to remove the coal from the face; and a system of self advancing hydraulic roof supports, usually chocks or shields, which support the roof as the shearer makes its cut and then allow the roof to collapse behind the mining. In the United States, longwall mining is the retreating type; the longwall panels are situated between development sections or panel entries consisting of a row or rows of chain pillars, laid out parallel to the main entries, which allow access and ventilation to the panel and define its dimensions.

7. Merritt, supra note 2.
8. Id.
10. PENG & CHIANG, supra note 9.
Longwall mining is favored in the industry as a method which results in extremely high recovery rates-more than 85 percent at relatively low cost. A typical longwall panel will require fewer employees than a room-and-pillar operation and, with modern roof support systems, is considered to be relatively safer. The difficulty with longwall mining is that, as practiced in the United States today, it causes subsidence of the surface overlying and in the vicinity of the panel and often results in loss of or damage to natural water sources.

The damages associated with subsidence generally were vividly described by the Supreme Court of the United States in *Keystone Bituminous Coal Association v. DeBenedictis*:

> Coal mine subsidence is the lowering of strata overlying a coal mine, including the land surface, caused by the extraction of underground coal. This lowering of the strata can have devastating effects. It often causes substantial damage to foundations, walls, other structural members, and the integrity of houses and buildings. Subsidence frequently causes sinkholes or troughs in land which make the land difficult or impossible to develop. Its effect on farming has been well documented — many subsided areas cannot be plowed or properly prepared. Subsidence can also cause the loss of groundwater and surface ponds. In short, it presents the type of environmental concern that has been the focus of so much federal, state, and local regulation in recent decades.

Longwall mine subsidence effects vary to some degree from mine to mine, depending on the topography and lithography, the thickness and depth of the coal, and the dimensions of the panels. The removal of the coal and collapse of the roof in the longwall mining process disturbs the overburden strata, which deform and fail. Surface subsidence extends laterally so that areas not directly over the panels will nevertheless be within the “angle of draw” affected by subsidence. The progress of the mining as it moves through the panel also creates a wave effect ahead of the mining, within an “angle of advance influence.” In addition, there are powerful surface stresses along the edges of the panel which are more destructive than those

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12. 480 U.S. at 474-75.
13. PENG & CHIANG, supra note 9, at 575-639.
in the center, and are most associated with damages to overlying structures; these areas are sometimes identified as being within an "angle of critical deformation."14

The strata overlying the mining will experience different fracturing patterns depending on their depth, so that areas immediately above the coal seam will experience the most severe disruption but seams higher up may be less affected.15 These overburden strata are categorized, in ascending order, as the caved zone, the fractured zone, and the continuous deformation zone. Each zone is associated with different subsidence characteristics, especially those relating to disruption of aquifers. The effects in any given case, however, must be examined not solely by reference to zones, but by more complex factors such as the topography overlying the mine, the composition of the strata, and the manner in which mining is conducted, as well as the height and lateral dimensions of the mining.16

Proponents of longwall mining have held that the subsidence from longwall mining is more benign than that resulting from room-and-pillar methods. They reason that because longwall subsidence is certain, rapid, and predictable, damage can be observed and remedied quickly, and the unpredictable and disruptive subsidence that can occur even many years after room-and-pillar mining is avoided.17 There is undoubtedly some merit to this view, which, as will be

14. Id. at 580.
15. PENG & CHIANG, supra note 9, at 575-639.
16. For example, in hilly areas such as are found in West Virginia, the upper strata and surface, even though not within the caving or fracturing zone, may be vulnerable to landslides and slippage associated with cracking. Similarly, where homeowners and users rely on upper "perched" aquifers for their natural water sources, water losses are also typical.

The following stipulations, made in a permit appeal before the West Virginia Reclamation Board of Review in Marsh v. Faerber, 85-22-RBR (1985) illustrate the problems encountered by those living on a ridgetop area in Marshall County, West Virginia:

3. [The] Company's longwall mining activities under the [name omitted] property have caused the disruption of certain natural water sources on the . . . property. The farm pond was dewatered in late March of 1984, and in the months that followed, the certain springs on the property dried up. In July or August of 1984, the well at the . . . barn was dewatered, and an additional well, though not in use, has also lost its water. To date, none of these water sources has returned.
4. The mining of panel 4A has caused subsidence cracking on the [name omitted] property, which is as much as 2-1/2 feet in width.
17. See ROTH ET AL., supra note 2, at 313-14.
discussed, Congress seems to have recognized in its allowance for planned subsidence.\textsuperscript{18} Unfortunately, as the ongoing controversies demonstrate, any hopes of quick and painless subsidence from longwall operations have not been realized in practice. Affected citizens have reported continued shifting and settling of their lands and residences for years after the underpass of a longwall panel and water supplies have shown minimal recovery.

\textbf{B. Current Regulation Under SMCRA}

SMCRA does not mention longwall mining. It does, however, have important provisions relating to underground mining which are key to the longwall debate. Perhaps the most important of these is the definition of “surface coal mining operations,” which is defined, in part, as follows:

(28) ‘[S]urface coal mining operations’ means —
(A) activities conducted on the surface of lands in connection with a surface coal mine or subject to the requirements of section 1266 of this title . . . and surface impacts incident to an underground coal mine . . . .
(B) the areas upon which such activities occur or where such activities disturb the natural land surface.\textsuperscript{19}

This definition triggers a panoply of permitting, bonding, and reclamation requirements, as well as administrative and citizen enforcement provisions, most of which are beyond the scope of this Article.

In addition to provisions applicable to “surface coal mining operations” generally, section 516\textsuperscript{20} of SMCRA contains performance standards specifically addressed to the surface effects of underground coal mining operations. In the controversies over longwall mining, the provision usually invoked requires operators to:

(1) adopt measures consistent with known technology in order to prevent subsidence causing material damage to the extent technologically and economically feasible, maximize mine stability, and maintain the value and reasonably foreseeable use of such surface lands, except in those instances where the mining

\begin{itemize}
  \item \textsuperscript{18} See infra text accompanying notes 62-64.
  \item \textsuperscript{20} 30 U.S.C. § 1266 (1988).
\end{itemize}
technology used requires planned subsidence in a predictable and controlled manner: Provided, That nothing in this subsection shall be construed to prohibit the standard method of room and pillar mining . . . . 21

It should be noted, however, that this is not the only provision of section 516 which is pertinent to longwall mining. For example, permits issued to underground mines must “protect offsite areas from damages which may result from mining operations;” “eliminate conditions which constitute a hazard to health and safety of the public;” “minimize the disturbances of the prevailing hydrologic balance at the minesite and in associated offsite areas and to the quantity of water in surface ground water systems both during and after coal mining;” and “to the extent possible using the best technology currently available, minimize disturbances and adverse impacts of the operation on fish, wildlife, and related environmental values, and achieve enhancement of such resources where practicable.” 22

Further, section 516(c) of SMCRA requires the state regulatory authority to “suspend underground coal mining under urbanized areas, cities, towns, and communities and adjacent to industrial or commercial buildings, major impoundments, or permanent streams if he finds imminent danger to inhabitants of urbanized areas, cities, towns, and communities.” 23

Regulations promulgated by the Secretary of the Interior to implement these provisions have been through a series of revisions and legal challenges. 24 From the outset, however, the centerpiece of the program, as it relates to subsidence, has been the subsidence control plan required to be included in the permit applications of underground mines whenever structures or renewable resource lands exist in the permit area and adjacent areas. Plans must include detailed information regarding the method of coal removal; a map showing the areas of planned subsidence and where measures to prevent, minimize, or correct subsidence will be used; a description of phys-

ical and geological features; a description of monitoring needed to evaluate the subsidence; a description of subsidence control and prevention measures to be utilized where subsidence is not planned; a description of planned effects of subsidence; and a description of remedial measures to be taken.25

25. The regulation provides in full:

**Subsidence Control Plan.**

The permit application shall include a survey which shall show whether structures or renewable resource lands exist within the proposed permit area and adjacent area and whether subsidence, if it occurred, could cause material damage or diminution of reasonably foreseeable use of such structures or renewable resource lands. If the survey shows that no such structures or renewable resource lands exist, or no such material damage or diminution could be caused in the event of mine subsidence, and if the regulatory authority agrees with such conclusion, no further information need be provided in the application under this section. In the event the survey shows that such structures or renewable resource lands exist, and that subsidence could cause material damage or diminution of value or foreseeable use of the land, or if the regulatory authority determines that such damage or diminution could occur, the application shall include a subsidence control plan which shall contain the following information:

(a) A description of the method of coal removal, such as longwall mining, room-and-pillar removal, hydraulic mining, or other extraction methods, including the size, sequence, and timing for the development of underground workings.

(b) A map of underground workings which describes the location and extent of areas in which planned-subsidence mining methods will be used and which includes all areas where the measures described in paragraphs (d) and (e) of this section will be taken to prevent or minimize subsidence and subsidence-related damage; and, where appropriate, to correct subsidence-related material damage.

(c) A description of the physical conditions, such as depth of cover, seam thickness, and lithology, which affect the likelihood or extent of subsidence and subsidence-related damage.

(d) A description of monitoring, if any, needed to determine the commencement and degree of subsidence so that, when appropriate, other measures can be taken to prevent, reduce or correct material damage in accordance with § 817.121(c) of this chapter.

(e) Except for those areas where planned subsidence is projected to be used, a detailed description of the subsidence control measures that will be taken to prevent or minimize subsidence and subsidence-related damage, including, but not limited to-

(1) Backstowing or backfilling of voids;

(2) Leaving support pillars of coal;

(3) Leaving areas in which no coal is removed, including a description of the overlying area to be protected by leaving the coal in place; and

(4) Taking measures on the surface to prevent material damage or lessening of the value or reasonably foreseeable use of the surface.

(f) A description of the anticipated effects of planned subsidence, if any.

(g) A description of the measures to be taken in accordance with § 817.121(e) of this chapter to mitigate or remedy any subsidence-related material damage to, or diminution in value or reasonably foreseeable use of-

(1) The land, or

(2) Structures or facilities to the extent required under State law.

(h) Other information specified by the regulatory authority as necessary to demonstrate that
Operators must comply with performance standards which require them to follow these plans, and to take remedial action with respect to damage which does occur, including the restoration of surface land, to the extent economically and technologically feasible, to a condition capable of maintaining the value and reasonably foreseeable economic uses which it was capable of supporting prior to subsidence.\textsuperscript{26} Most states implementing the regulations also require repair of or compensation for subsidence damage to structures, although the federal regulations in current form only require repair or compensation for structures "[t]o the extent required under applicable provisions of State law."\textsuperscript{27} Subsidence regulations also require that owners of property and structures overlying the projected mining be notified by mail, at least six months in advance, of the specific areas and dates of the contemplated mining and the location where the subsidence control plan may be examined.\textsuperscript{28}

In addition, the hydrological effects of longwall mining require specific attention to the permit requirements relating to hydrology generally. Most important is the statement of probable hydrologic consequences (PHC) required under the Act and regulations to be included in the permit application\textsuperscript{29} and the cumulative hydrologic impact assessment (CHIA) which must be prepared by the permitting authority prior to permit issuance.\textsuperscript{30}

A decade of litigation has highlighted the difficulties of translating expressed concerns into practical application. Litigation over the permanent regulations has resulted in a series of judicial opinions treating more than 130 issues, most of which are beyond the scope of this Article.\textsuperscript{31} Some issues, however, are critical to an understanding of the regulation of longwall mining under SMCRA.

In the first round of challenges to the 1979 permanent program regulations, *In re Permanent Surface Mining Regulation Litigation*, District Judge Flannery addressed industry's threshold contention that the phrase "except in those instances where the mining technology used requires planned subsidence in a predictable and controlled manner" exempted longwall mining entirely from subsidence permit application requirements. Rejecting industry's position, the court explained:

Section 516(b)(1) affords the operator an option to prevention of subsidence when he demonstrates predictable and controlled subsidence through longwall mining. *But the operator must establish "planned and controlled subsidence."* It is only through the filing of a subsidence control plan that the regulatory authority can determine the eligibility for the use of mining methods that allow mine collapse. This report enables the regulatory authority to determine *whether the controlled subsidence protects the values section 516(b)(1) intends to preserve.*

While appeals were pending from this and related decisions, Secretary of the Interior, James Watt, announced his intention to revise the regulations and the matter was remanded accordingly. The revisions promulgated in 1983 retained, for the most part, the requirements of subsidence control plans and restoration of subsided land and were reviewed by the district court in *In re Permanent Surface Mining Regulation Litigation* ("Round II").

In *National Wildlife Federation v. Hodel*, the United States Court of Appeals rejected an industry challenge to the Secretary's requirement that mine operators, including longwall operators, restore land damaged by subsidence to a condition capable of maintaining the value and reasonably foreseeable uses which it was capable of supporting before subsidence. Although the court disagreed with the district court's reasoning that the restoration requirement could be predicated under section 516(b)(10), which allows the Secretary to incorporate standards applicable to surface mines in section 515 "with respect to other surface impacts not specified in this subsec-

32. 14 Env't Rep. Cas. (BNA) 1083 (D.C. Cir. 1980).
33. *Id.* at 1097-98 (emphasis added).
34. *See generally Hodel*, 839 F.2d at 702 (summarizing regulatory litigation and revisions).
36. 839 F.2d 694 (D.C. Cir. 1988).
"RATION," it approved the regulation upon the Secretary’s original justification that restoration was consistent with the language in section 516(b)(1) requiring the mine operator to “maintain the value and reasonably foreseeable use” of surface lands. The court also examined the bonding requirements relating to subsidence, approving the provisions for adjustment of the bond for subsidence damage after, rather than before, occurrence.

The Hodel decision also held that the water replacement provisions of section 717(b) of SMCRA do not apply to underground mines. NWF had contended that since the term “surface coal mine” includes surface impacts incident to underground coal mines, the requirement that “the operator of a surface coal mine shall replace” certain water supplies damaged by “such surface coal mining operation” necessarily applies to underground mines. The court of appeals, however, reviewing the legislative history of section 717(b) and of the performance standards of the Act in general, concluded that Congress meant to distinguish between the environmental requirements applicable to surface mines and underground mines. The court concluded that although the Secretary and state authorities were authorized to compel operators to replace damaged water supplies, they were not required to do so.

Postsubsidence remediation was again the subject of judicial comment in National Wildlife Federation v. Lujan. At issue was a provision of the 1983 regulations which was originally stricken on procedural grounds and repromulgated in 1985, which required operators to repair or replace structures damaged by subsidence only “[t]o the extent required under State law.” In district court, Judge Flannery had determined that exempting operators from repairing or compensating for damage to structures based on state common law waivers of subsidence damage conflicted with the requirements

37. Id. at 741.
38. Id. at 726-28. This decision affirmed in part the case of in re Permanent Surface Mining Regulation Litigation (Round II), 21 Env’t Rep. Cas. at 1743.
39. Hodel, 839 F.2d at 753-54.
40. Id.
41. 928 F.2d 453 (D.C. Cir. 1991).
42. 30 C.F.R. § 817.121(c)(2) (1983).
of section 516(b) that operators "adopt measures consistent with known technology in order to prevent subsidence causing material damage to the extent technologically and economically feasible . . . and maintain the value and reasonably foreseeable use of such surface lands." The Secretary elected not to appeal this ruling and modified his position directing all states to require that operators repair or compensate for subsidence-damaged structures, irrespective of state property law.

Industry appealed, however, and the court of appeals reversed. The court of appeals rejected both the environmentalists' position that repair or compensation was essential to the implementation of section 516(b) and the industry's contention that the Secretary was prohibited from requiring restoration of structures. Rather, the court looked at the issue as one of permissible interpretation. It concluded that the Secretary had properly determined that repair of subsidence damage to structures was not mandatory under the statute and had adequately explained his policy reasons for this interpretation in articulating that while the long-term public interest in the preservation of lands is not adequately protected when an operator purchases the right to subside, the public interest is not impaired when property owners agree to contract away damage to their structures. Significantly, the appeals court disagreed with the Secretary's negative view of the public interest in structures, noting that the "NWF correctly recognizes that the public may have an interest in protecting privately-owned structures," but held that "the Secretary may conclude, in the absence of an explicit congressional directive, that this public interest does not outweigh private property and contract rights."

44. Lujan, 928 F.2d at 458-59.
45. Id. at 460; see also Keystone Bituminous Coal Ass'n v. Benedictis, 480 U.S. 470 (1987), discussing the public interest in preventing subsidence to private structures. This public interest was important in the Supreme Court's rejection of industry's contention that the Pennsylvania subsidence act resulted in an unconstitutional "taking" and impairment of contract rights. These constitutional issues, resolved for the most part in Keystone, may be asserted in other applications of the SMCRA. See generally Valid Existing Rights Symposium, 5 J. Min. L. & Pol'y 381-755 (1990). These issues are beyond the scope of this Article.
46. Lujan, 928 F.2d at 460.
Other cases arising under state counterparts of SMCRA have also shed some light on the matter of subsidence. Cases from both the state and federal courts in Illinois have rejected the view that a so-called "longwall" exemption relieves longwall mines of permit and subsidence control requirements\textsuperscript{47} or of their duty to restore property and to repair or compensate for damage to structures.\textsuperscript{48} In \textit{Melvin v. Old Ben Coal Co.}, the district court rejected industry's interpretation that "all subsidence caused by longwall mining is automatically authorized . . . because longwall mining predictably causes subsidence" as leading to "an absurd result.\textsuperscript{49}

In a subsidence case in West Virginia, \textit{Rose v. Oneida Coal Co.},\textsuperscript{50} the Supreme Court of Appeals, rejecting a common law claim for subsidence damage, concluded that the West Virginia Surface Coal Mining and Reclamation Act (WVSCMRA)\textsuperscript{51} "has changed many of the old common law rules regarding the rights and remedies of surface owners \textit{vis a vis} mineral owners."\textsuperscript{52} Thereafter, in \textit{Cogar v. Sommerville},\textsuperscript{53} the court interpreted the federal regulations to hold that early broad-form waivers of surface damage were insufficient to waive WVSCMRA's prohibition against mining activities and disturbances within 300 feet of an occupied dwelling. A few months later, however, in \textit{Russell v. Island Creek Coal Co.},\textsuperscript{54} the court found Congress to have been more deferential to state law in regard to water rights, finding that the water replacement provisions of WVSCMRA\textsuperscript{55} could be waived in a deed predating the act, so long

\textsuperscript{48} Old Ben Coal Co. v. Dep't of Mines and Minerals, 562 N.E.2d 1202 (Ill. 1990).
\textsuperscript{49} 610 F. Supp. at 135.
\textsuperscript{50} 375 S.E.2d 814 (W. Va. 1988).
\textsuperscript{52} Rose, 375 S.E.2d at 816. In \textit{Giza v. Consolidation Coal Co.}, Civ. Action No. 85-0056-W(S) (N.D. W. Va. Dec. 12, 1991) the court, without substantial decision, took a contrary view. However, the issue as characterized by the dissent court was whether SMCRA and WVSCMRA render common-law waivers void. The opinion does not discuss the fact that SMCRA and WVSCMRA impose duties upon the operator which exist irrespective of waivers, the violation of which gives rise to a statutory cause of action for damages under W. Va. Code § 22A-3-25 (1985) and 30 U.S.C. § 1270(f) (1988).
\textsuperscript{53} 379 S.E.2d 764 (W. Va. 1989).
\textsuperscript{54} 389 S.E.2d 194 (W. Va. 1989).
as it was clear that the surface owner intended in the deed to waive any damages to natural water sources from the surface mining at issue.

Although the facts in Cogar and Russell did not involve longwall mining or subsidence, an understanding of these cases is important in subsidence-related litigation. In one sense, they appear to be inconsistent in their approach to waivers of rights or claims which existed prior to the passage of WVSCMRA. From another view, however, the cases may be harmonized on two levels. The first is in the court's inquiry regarding the consistency of the state program with federal law and regulations: the federal regulations with regard to the "buffer zone" waivers were "extensive and exacting" and had been interpreted as granting rights additional to those at common law, whereas the federal regulations were silent as to water damage waivers and the Secretary's deference to state law on this issue had been expressly upheld in NWF v. Hodel. The second is in the court's recognition that the deed in issue "is not in the form of an old, generally worded coal severance deed but is a 1972 conveyance of the right to surface mine . . . explicitly without liability for damages to 'the springs and water courses therein or thereon,' . . . for $10,000." Finally, it is most important to note the limitation of the court's decision in Russell to the issue of private water replacement rights. In a concluding, lengthy footnote, the court explained that its decision did not affect the operator's permit obligations to comply with provisions in the reclamation plan

to assure the protection of: (A) The quality of surface and ground water systems, both on- and off-site, from adverse effects of the surface-mining operation; (B) the rights of present users to such water; and (C) the quantity of surface and ground water systems, both on- and off-site, from adverse effects of the surface-mining operation or to provide alternative sources of water where such protection of quality cannot be assured.

The underlying message: private rights may be waived; public rights cannot.

56. The court referred to these regulations as governing waivers of subjacent support.
57. Russell, 389 S.E.2d at 200.
58. 839 F.2d at 756.
59. Russell, 389 S.E.2d at 205.
60. Id. at 206 n.12 (quoting W. Va. Code § 22A-3-10(a)(11) (1985)).
C. Pending Issues of Subsidence

As discussed above, the permanent regulation litigation relating to subsidence has developed largely around the issue of restoration and remediation of its adverse effects. It cannot be assumed, however, that the question of subsidence is one to be addressed only after damage is done. As succinctly stated in the legislative history of SMCRA: "It is the intent of this section [516] to provide the Secretary with the authority to require the design and conduct of underground mining methods to control subsidence to the extent technologically and economically feasible in order to protect the value and use of surface lands."61 Indeed, the Office of Surface Mining Reclamation and Enforcement (OSMRE) has recognized the importance of premining control of subsidence in its requirement of a subsidence control plan, irrespective of whether planned subsidence is contemplated.

As enlightened as this approach may appear at first blush, a review of the language of the exemption itself should require that OSM and the state agencies reviewing subsidence control plans subject them to greater scrutiny. First, it should be noted that although the exemption as designed by Congress was clearly intended to "allow for" longwall mining and other full extraction methods,62 the express language does not provide that longwall mining be forever exempted from the applicable requirements. Rather, section 516(b) exempts only those specific "instances where the mining technology used requires planned subsidence in a predictable and controlled manner."63 If the mining technology used in a given operation does not "require" planned subsidence, measures must be adopted consistent with known technology to prevent subsidence causing material damage. Thus, to the extent that developing technology enables a longwall operation to mine without subsiding the land overlying the mining, it should be required do so.

62. Id.
Second, planned subsidence must be "predictable and controlled."\(^{64}\) Agency interpretation and court opinions have already foreclosed the argument that the mere incantation of longwall mining is dispositive — permit applications must show that the mining will be predictable and controlled. Requiring the operator to demonstrate control of subsidence at the permit level, before mining begins, is critical to the process. Experience has taught, however, that agencies have placed more weight on prediction than control.

This should not be so. Even where subsidence is necessary, there are methods of controlling and minimizing its negative impacts. Such methods include: partial backfilling or complete extraction to reduce the effects of a panel edge underlying surface structures or important features; continuous extraction to avoid the static movement and deformation which takes place along the edge when mining stops; wide-face extraction which creates a larger center portion of the subsidence basin, where stresses typically are less severe; arrangement of the panel so that extraction is parallel to the long dimension in structures; "harmonic" extraction of two adjacent seams or cuts, or of adjacent panels within a seam, which eliminates some of the cumulative effects of the sequential mining of multiple faces; opposite symmetrical extraction for protection of certain kinds of structures; selected extraction in multiple seam mining, beginning with a deeper or thinner seam to develop data and experience in the subject area; limited thickness extraction; and simultaneous extraction of both sides of a fault underlying surface structures.\(^{65}\) Leaving a safety pillar under structures or surface features is also a reliable way of protecting them.\(^{66}\) In addition, measures are available to protect surface structures by modifications to the structures themselves, such as slotting, reinforcing, underpinning, trenching, and bracing.\(^{67}\) To utilize these methods, however, requires planning in advance of mining. Subsidence control plans provide the appropriate vehicle for setting forth these controls, subject to appropriate public

\(^{64}\) Id.
\(^{65}\) PENG & CHIANG, supra note 9, at § 12.5.2.
\(^{66}\) Id. at 636-38.
\(^{67}\) Id. at § 12.5.1.
scrutiny, and for assuring that the operator, as a condition of the permit, implements them.

Recent developments in longwall technology, already in use in Europe and the United Kingdom, have enabled some longwall mining to occur with less subsidence damage than is currently experienced in the United States. These developments include, for example, the ability to turn a panel to avoid certain surface features and technology designed to eliminate the "corrugated" surface subsidence resulting from the typical system of parallel subsided longwall panels separated by supported development entries. In addition, subsidence can be prevented for the long term through the use of steel support arches, although the cost of this system as a permanent preventive measure is regarded as excessive. In keeping with the technology oriented approach of section 516 of SMCRA, agencies should demand that longwall operations stay abreast of such technological developments and, where longwall mining can reasonably be accomplished avoiding unnecessary surface subsidence damage, should insist that measures be employed to prevent such subsidence.

Postdamage restoration, repair, compensation, or all three are also desirable. They provide some relief from the hazards and societal costs of longwall mining and provide some economic incentive for technological developments which will reduce damage costs. Practically and legally, however, they are not the best answer to the problem of subsidence. From a practical standpoint, the current regulatory approach is inadequate in that it can result in superficial repairs, often with much delay, and provides no compensation for the inconvenience, loss of use of property, and relocation costs which may be incurred by affected households. While these deficiencies may be corrected to some extent by strengthening the regulations on the federal or state level, the letter and purpose of section 516(b) and SMCRA can best be accomplished by allowing longwall operators to subside only as necessary for their operations and requiring them to control the subsidence that does occur. And, a

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69. Id.
regulatory requirement of advance measures and controls will force technology far better than after-the-fact efforts to pay remediation costs — efforts which may be nominal, especially in poor rural areas and which will not cover the true societal costs of subsidence.

1. Water Loss

One of the most difficult problems associated with longwall mining is water loss. A study performed in 1988 by the U.S. Geological Survey of "Groundwater Hydrology of Marshall County West Virginia, with Emphasis on the Effects of Longwall Coal Mining" revealed a significant negative impact on the hydrology of the area overlying the longwall mining. The study showed that the fracturing of zones overlying the coal resulted in increased transmissivity, decreased groundwater levels and spring flow, and increased water level fluctuations. Even more startling observations appeared in studies performed by Conoco in the early 1980s, evaluating the hydrological effects of longwall operations in northern West Virginia, including a finding that approximately 80 percent of the wells and springs in a subject area went dry after mining. Debate continues as to whether or in what instances such water loss may be viewed as "temporary." However, it appears to be undisputed that longwall subsidence has resulted in the migration of water from "perched" aquifers to deeper strata, and in deformity or tilting of aquifers, causing natural seeps and springs to change location permanently. Where water wells and springs are used for residential purposes, irrigation, and watering of livestock, the impact of dewatering can be devastating. Mining companies have addressed this problem in some instances through water replacement programs, often by providing "city water" from public water supplies. But this approach seems inadequate both from the standpoint of the livestock owner or farmer and the public at large, which has an interest in the preservation of public water systems for other purposes.

70. The Conoco reports are part of the administrative record before the Reclamation Board of Review in Marsh v. Faerber, 85-22-DBR (1985). See supra note 16.

From a regulatory standpoint, disruption of water supplies is properly addressed in the permitting process in the PHC and reclamation plan requirements, in the subsidence control plan, and in the CHIA. In the case of longwall mining and its effects on water sources, however, the difficulty of predicting outcome has been a substantial impediment to effective regulation. This is demonstrated in the Ohio case of Citizens Organized Against Longwalling v. Division of Reclamation, in an appeal from the issuance of a permit to a longwall operation. There the company had submitted a consultant’s report predicting no “permanent adverse or significant impact.” The Chief of the Division of Reclamation had qualified this prediction in his CHIA with the observation that there had been no specific studies on the hydrological impacts of the recent longwall operations in the area, commenting that the company’s statements of Probable Hydrologic Consequences “may be overly optimistic.” The chief approved the permit, nevertheless, noting the “lack of definitive research that would allow one to conclusively interpret [the] data.” The Chief concluded: “Where these adverse effects would occur is largely a matter of speculation.” Confronted with the claim on appeal that the CHIA prepared by the agency was inadequate in its evaluation of the evidence of dewatering of streams and ponds, the court held:

We agree with appellant that . . . [the operator’s] hydrological determination and the chief’s CHIA appear too general, unsubstantiated and optimistic. However, we also agree with appellee’s argument that it is impossible for either intervenor or the chief to predict the future effects of mining with absolute certainty. Even more importantly, we note that while the board considered the GWA report [submitted by the operator] flawed, the board held that other information existed to

72. 30 U.S.C. §§ 1257(11), 1258(13) (1988); 30 C.F.R. §§ 784.13, 784.14 (1991); see Hodel, 839 F.2d at 755-56; see also Russell, 389 S.E.2d at 206 n.12 (West Virginia program).
73. See supra note 25.
74. See supra note 30; This provision is explained in the legislative history as follows: One of the written findings the regulatory authority makes in the approval or denial of an application for a mining permit addresses the impact of mining on the hydrologic balance of the area. This finding also includes the authority’s assessment of the probable cumulative impact of existing and anticipated mining on the hydrologic balance of the area affected. These specific standards are emphasized at the permit approval stage due to the critical and long-term impacts mining can have on the water sources of the area affected.
support the conclusions of intervenor's hydrological determination and the chief's CHIA, and rendered the determination and the CHIA adequate.76

Finally, the court attempted to protect water rights by requiring water replacement at operator expense and placing the burden on the operator in the event of a dispute as to causation and remanded the case for fuller development of a water replacement program.77

The problem with this type of approach is that it is inconsistent with the general principle established under SMCRA that a permit should not be awarded unless the applicant "affirmatively demonstrates" that all requirements of the applicable state or federal program have been met, that reclamation can be accomplished under the law and the applicable reclamation plan, and that the "proposed operation . . . has been designed to prevent material damage to hydrologic balance outside permit area."78 The burden should be upon the operator to show no adverse impact, not upon the affected citizens.79

The fact that some states, including West Virginia,80 require operators to replace damaged water supplies provides small comfort to individuals and communities who depend on fragile water systems for the long-term value and foreseeable uses of land. Although agencies have made some attempts to develop better prediction methods, the emphasis remains on water replacement rather than protection of valuable hydrologic resources. To embrace such a view in the short term leaves property owners frustrated; to embrace it in the long term is to change the character of renewable resource lands and to place unnecessary additional burdens upon public water systems.

2. The Section 522 Debate

The most active current regulatory debate regarding longwall and other full extraction mining causing subsidence is over the question

76. Id. at 694.
77. Id. at 694-99.
80. W. VA. CODE § 22A-3-24 (1985); see also ROTH ET AL., supra note 2.
of whether the provisions of section 522\textsuperscript{81} of SMCRA apply to mine subsidence. Section 522 of SMCRA provides for the designation of certain areas as unsuitable for all or certain types of surface coal mining operations.\textsuperscript{82} Although most designations are discretionary

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82. 30 U.S.C. § 1272 (1988) provides in part:
(a) Establishment of State planning process; standards; State process requirements; integration with present and future land use planning and regulation processes; savings provisions . . . .

. . .

(2) Upon petition pursuant to subsection (c) of this section, the State regulatory authority shall designate an area as unsuitable for all or certain types of surface coal mining operations if the State regulatory authority determines that reclamation pursuant to the requirements of this chapter is not technologically and economically feasible.

(3) Upon petition pursuant to subsection (c) of this section, a surface area may be designated unsuitable for certain types of surface coal mining operations if such operations will-

(A) be incompatible with existing State or local land use plans or programs; or

(B) affect fragile or historic lands in which such operations could result in significant damage to important historic, cultural, scientific, and esthetic values and natural systems; or

(C) affect renewable resource lands in which such operations could result in a substantial loss or reduction of long-range productivity of water supply or of food or fiber products, and such lands to include aquifers and aquifer recharge areas; or

(D) affect natural hazard lands in which such operations could substantially endanger life and property, such lands to include areas subject to frequent flooding and areas of unstable geology . . . .

(e) Prohibition on certain Federal public and private surface coal mining operations.

. . .

After August 3, 1977, and subject to valid existing rights no surface coal mining operations except those which exist on August 3, 1977, shall be permitted —

(1) on any lands within the boundary of units of the National Park System, the National Wildlife Refuge Systems, the National System of Trails, the National Wilderness Preservation System, the Wild and Scenic Rivers System, including study rivers designated under section 1276(a) of Title 16 and National Recreation Areas designated by the Act of Congress;

(2) on any Federal lands within the boundaries of any national forest: Provided, however, That surface coal mining operations may be permitted on such lands if the Secretary finds that there are no significant recreational, timber, economic, or other values which may be incompatible with such surface mining operations and —

(A) surface operations and impacts are incident to an underground coal mine; or

(B) where the Secretary of Agriculture determines, with respect to lands which do not have significant forest cover within those national forests west of the 100th meridian, that surface mining is in compliance with the Multiple-Use Sustained Yeld Act of 1960 [16 U.S.C. §§ 528-31], the Federal Coal Leasing Amendments Act of 1975, the National Forest Management Act of 1976, and the provision of this chapter: And provided further, That no surface coal mining operations may be permitted within the boundaries of the Custer National Forest;

(3) which will adversely affect any publicly owned park or places included in the National Register of Historic Sites unless approved jointly by the regulatory authority and the Federal, State, or local agency with jurisdiction over the park or the historic site;

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with the regulatory authority, subsection 522(e) covers circumstances where "the decision to bar surface mining . . . is better made by Congress itself." 83 This subsection prohibits, subject to valid existing rights, 84 all "surface coal mining operations" in certain protected areas, including: within the boundaries of National Parks and National Wildlife Refuge systems or, subject to exceptions, on federal lands within a national forest, or which will adversely affect publicly owned parks or historical places. 85 The "buffer zone" prohibitions in this section are particularly significant in that they outlaw surface coal mining operations:

(4) within one hundred feet of the outside right-of-way line of any public road, except where mine access roads or haulage roads join such right-of-way line and except that the regulatory authority may permit such roads to be relocated or the area affected to lie within one hundred feet of such road, if after public notice and opportunity for public hearing in the locality a written finding is made that the interests of the public and the landowners affected thereby will be protected; or

(5) within three hundred feet from any occupied dwelling, unless waived by the owner thereof, nor within three hundred feet of any public building, school, church, community, or institutional building, public park, or within one hundred feet of a cemetery. 86

Resort to the definitions in SMCRA appears easily to dispose of the contention that mine subsidence within the "buffer zones" and other protected areas is not prohibited by these provisions. "[S]urface Coal Mining Operations' means activities conducted on the surface of lands in connection with a surface coal mine or subject

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84. For a comprehensive review of the interpretation and legal issues surrounding Valid Existing Rights (VER) under SMCRA, see Valid Existing Rights Symposium, 5 J. Min. L. & Pol'y 381-764 (1990) and proposed rulemaking at 56 Fed. Reg. 33,152 (1991).
to the requirements of section 1266 of this title surface operations and surface impacts incident to an underground coal mine . . . .”

The regulations promulgated under SMCRA have not addressed the issue clearly, however, and only Illinois has explicitly included surface effects of underground mining in its comparable statutory provisions.

There seems to be little question that surface impacts such as openings and haul roads are prohibited in these areas, absent a proper waiver. Until recently, OSMRE has appeared to agree with the position that subsidence is within the scope of the section 522 restrictions. In a 1984 Notice of Decision published by OSMRE in the Determination of Valid Existing Rights Within the Otter Creek Wilderness Area of Monongahela National Forest, for example, the Deputy Undersecretary held that surface impacts of subsidence were prohibited under the provisions of section 522(e)(1) of SMCRA.

88. 30 C.F.R. §§ 761.5, 761.11(d)-(g) (1991). The definition of “surface [coal mining] operations and impacts incident to an underground coal mine” in the current regulations is:
all activities involved in or related to underground coal mining which are either conducted on the surface of the land, produce changes in the land surface or disturb the surface, air or water resources of the area, including all activities listed in section 701(28) of the Act and the definition of surface coal mining operations appearing in § 700.5 of this chapter.
89. ILL. REV. STAT. ch. 96 1/2 para. 7907.01(b)-(c) (1979).
91. 49 Fed. Reg. 31,228 (1984). The issue before the agency was whether the Otter Creek Coal Company had “Valid Existing Rights” to avoid the prohibition. The agency concluded that because the prohibition would not only prevent entry through portals, affecting 22% of the recoverable coal, but also would prohibit the remaining underground mining because of subsidence and hydrologic effects, a taking would occur if the prohibition were enforced and therefore VER should be recognized.
It explained:
With respect to the company’s coal reserves located within the wilderness, the ban would be complete unless there is some way to remove the coal without conducting “surface coal mining operations” upon the lands of the OCWA. The evidence revealed that only a portion of the coal would be accessible from portals located outside of the wilderness, at the Condon Mine 1 and Otter Creek Mine. Then coal which would be accessible in this way would represent approximately 22 percent of the total coal which the company expects to recover. However, although most of the surface operations and impacts incident to such underground mining could be constructed or directed so as not to affect wilderness land, certain surface impacts to the wilderness could not be avoided, namely subsidence and hydrologic effects.

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In 1988 the Secretary proposed a rulemaking on whether all subsidence, or only subsidence causing material damage, should be prohibited. The matter was deferred, however, for a Solicitor's opinion, which, recently issued, now adopts a contrary view, and Notice of Inquiry has been published adopting the current position that these prohibitions do not include subsidence.

The current view seems inconsistent with both the language of the Act and its stated purposes. The Solicitor's opinion that "logically subsidence is not included in the definition of 'surface coal mining operations'" is puzzling at best. To suggest that subsidence is not one of the "surface impacts incident to an underground coal mine" falling within the definition in section 701(28)(A) of SMCRA seems contrary to a plain English reading of the statute. Property damaged by subsidence is also an area "where such activities [including 'activities . . . subject to section 516'] disturb the natural surface" and should thus be included in the definition of surface coal mining operations under section 701(28)(B). Moreover, the legislative intent to include subsidence within the definition is amply demonstrated by reference to the committee reports which discuss

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Thus, even the 22 percent accessible from outside the wilderness could not be recovered without causing prohibited surface impacts inside the wilderness area.

*Id.* at 31,233.

92. 53 Fed. Reg. 52,374 (1988). The comments to the original regulations, however, emphasize that the definition of "surface operations and impacts incident to an underground coal mine" was intended to cover all surface disturbances, including subsidence. 44 Fed. Reg. 14,990 (1979); see also 44 Fed. Reg. 14,992-93 (1979) (VER exemption applies to underground mining); 44 Fed. Reg. 14,994 (1979) (100 foot buffer zone measured horizontally); 54 Fed. Reg. 30,551 (1989).


96. 30 U.S.C. § 1291(28)(A) (1988). In *Hodel*, 839 F.2d at 742, the court described this section as "broadly defin[ing]" the term 'surface coal mining operations.'

97. 30 U.S.C. § 1291(28) (1988). This section defines surface coal mining operations as including:

(A) activities conducted on the surface of lands in connection with a surface coal mine or subject to the requirements of section 1265 of this title . . . and surface impacts incident to an underground coal mine . . .

(B) the areas upon which such activities occur or where such activities disturb the natural land surface. . . .

*Id.* (emphasis added).
subidence under the heading "Surface Impacts of Underground Mines," or in descriptions of such surface impacts.

More substantial support for the Solicitor's position would appear to lie in the fact that Congress distinguished between surface mining and underground mining in its passage of section 516 of SMCRA, which establishes performance requirements for underground coal mining separate from those applicable to surface mines under section 515. This argument finds some support in the case law as well. The reasoning that such a distinction should be made in the case of the section 522(e) prohibitions, however, is defeated by reference to express language indicating that underground mining is included in that provision. Section 522(e)(2)(A), which prohibits, subject to certain exceptions, the mining of federal lands within a national forest, specifically allows the Secretary to permit certain "surface operations and impacts [which] are incident to an underground coal mine" in the protected areas. This exemption from the prohibition would obviously not be necessary if underground mining and its effects were not within the purview of section 522 in the first instance.

Another view apparently taken by the Solicitor is that section 516, addressing the surface effects of underground mining, limits the application of section 522. Again, at first blush, there is some measure of persuasion in the argument because subsection 516(c) allows the regulatory authority to suspend underground mining under certain "areas, cities, towns, communities, and adjacent to industrial or commercial buildings, major impoundments, or permanent streams, if he finds an imminent danger to inhabitants of urbanized areas, cities, towns or communities"; accordingly, it may be argued that the prohibitions of section 522(e) could not have been intended to create an outright prohibition of surface effects within the buffer zone areas. A closer examination of the two sections, however, re-

99. Id. at 175.
102. See Hodel, 839 F.2d at 754; see also S. REP. No. 128, 95th Cong., 1st Sess. 84 (1977).
reveals that the protection in section 516(c) may be regarded as additional, rather than alternative, to that in section 522. For example, a regulatory authority may suspend mining under 516(c) to avoid an imminent danger even where the buffer zone restrictions have been waived by the surface owners.104 Likewise, a regulatory authority should invoke section 522(e) to deny a permit to an operator planning to subside a National Park, even though such mining is not necessarily prohibited under section 516(c).105

In short, the definition of “surface coal mining operations,” the structure of the Act106 and prior interpretations107 indicate that section 516 was designed to implement the environmental performance standards applicable to underground mining, but is not the exclusive source of authority to regulate underground mining. Indeed, other surface impacts covered by section 516 have been expressly found to be within the section 522(e) prohibitions.108

It has also been suggested that since section 516 of SMCRA requires the Secretary to promulgate regulations recognizing the dif-

104. This would be particularly significant where the waiver is found to have been made in a deed or other instrument which predates the passage of SMCRA. For example, in C. & T. Evangelinos v. Div. of Reclamation, No. 88-B-12 (Ohio App. Ct., 1989), the court found a waiver of the 300 foot limitation in a 1965 deed which allowed the mineral owner to “construct, maintain, replace and remove any structures” on the property without liability. This opinion, it is submitted, misreads both the law and the intent of the clause in the deed, which was probably not intended to allow the removal of plaintiff’s residence but rather to allow the mineral owner to construct, maintain, replace, or remove structures necessary for the mining. The requirement of a valid waiver of the 300 foot prohibition was properly interpreted in Cogar v. Sommerville, 379 S.E.2d 764 (W. Va. 1989), as providing additional protection to surface owners whose residences would otherwise be subject to damages or destruction under typical broad form deeds. As explained in Cogar:

[The old severance deeds waived only surface damages and did not authorize mining operations within three hundred feet of an occupied dwelling. We believe that permitting a waiver of the three-hundred-foot requirement in these circumstances would be contrary to one of the purposes of Congress in enacting the federal surface mining law — protection of property owners.

Id. at 769.

105. The argument that section 1266(b)(1) and (c), 30 U.S.C. § 1266(b)(1) & (c), cover subsidence damage exclusively would mean that one using planned and controlled subsidence would be allowed to subside a National Park or adversely affect a National Historic Site.

106. In Hodel, 839 F.2d at 701, the court explained: Environmental impacts from surface coal mining (and the surface impacts of underground coal mining operations) are regulated through two basic mechanisms: a permit system (§§ 506-514) and a series of performance standards (§§ 515-516).

107. See supra note 90.

108. See supra note 90; see also Cogar v. Faerber, 371 S.E. 321 (W. Va. 1988).
ference between surface and underground mining, it is permissible
to exclude subsidence from the prohibitions of section 522 on that
basis. Section 516(d) provides:

The provisions of this subchapter relating to State and Federal programs, permits,
bonds, inspections and enforcement, public review, and administrative and judicial
review shall be applicable to surface operations and surface impacts incident to
an underground coal mine with such modifications to the permit application re-
quirements, permit approval or denial procedures, and bond requirements as are
necessary to accommodate the distinct difference between surface and under-
ground coal mining. The Secretary shall promulgate such modifications in ac-
cordance with the rulemaking procedure established in section 1251 of this title.109

This subsection states that surface operations and impacts in-
cident to an underground coal mine are governed by the permitting,
bonding, and other specified requirements of the Act, but allows
for modification of "the permit application requirements, permit
approval or denial procedures, and bond requirements as are nec-
essary to accommodate the distinct difference between surface and
underground coal mining." It specifically states, however, that "the
provisions of this subchapter relating to . . . permits . . . shall be
applicable" to underground mines. Thus, it is a substantive re-
quirement, necessary for the issuance of any underground permit,
that no permit or revision application shall be approved unless the
area proposed to be mined is not included within an area designated
unsuitable for coal mining pursuant to section 522 of this title.110

In conclusion, any effort to exclude subsidence from the stric-
tures of section 522 of SMCRA, must necessarily be predicated on
the conclusion that Congress meant to exclude subsidence from the
term "surface coal mining operations" when it used that term in
this section. There is simply nothing in section 522 to support this
conclusion. The failure to mention subsidence cannot be regarded
as an exclusion when the definition of "surface coal mining op-
erations" includes it, and Congress certainly knew how to draft an
exception or proviso if it wanted one. Further, in light of Congress’
expressed concerns about subsidence damage111 it does not make sense

that Congress would have wanted to ignore subsidence in crafting the provisions for protecting its most precious areas, such as the National Park and Wilderness Systems. 112

The fundamental argument is really an economic one: that applying the “buffer zone” prohibitions to subsidence would have such a devastating impact on the industry, particularly the longwall mining industry, that Congress could not have intended it. 113 The acceptance of this premise is fundamentally flawed in two respects: First, there is no proof that the economic effects will be as drastic as are claimed; indeed, in Pennsylvania, where structures and other features are protected under the Bituminous Mine Subsidence and Land Conservation Act, 114 longwall mining continues to thrive. 115 Second, a harsh economic result would not justify refusal to apply express provisions of the law, especially in light of the Supreme Court’s Keystone decision. 116

D. New Developments in the Common Law Rights Debate

It is impossible to address the issue of longwall mining under SMCRA without some reference to state common law and the right to subside. Any mining which will result in surface subsidence, of course, must be accomplished under a valid deed or other instrument which allows the removal of, or waives liability for, subjacent sup-

112. See, e.g., the Otter Creek decision, supra note 91, in which the agency relied on the following legislative history from the Senate Report regarding the section 1272(e) provisions:

In addition to this [unsuitability] designation process, the Committee has made a judgment that certain lands simply should not be subject to new surface coal mining operations. These include primarily and most emphatically those lands which cannot be reclaimed under the standards of this Act and the following areas dedicated by the Congress in trust for the recreation and enjoyment of the American people; lands within the National Park System, the National Wildlife Refuge System, the National Wilderness Preservation System, the Wild and Scenic Rivers System, National Recreation Areas, National Forest with certain exceptions, and areas which would adversely affect parks or National Register of Historic Places.


113. See Denise A. Dragoo, Subsidence Controls & Section 522 of the Surface Mining Control & Reclamation Act, 11 J. ENERGY NAT. RESOURCES & ENVT.L. 31 (1990), wherein the author asserts that OSM’s 1988 proposal to apply section 1272(e) of SMCRA to subsidence, see 53 Fed. Reg. 52,374 (1988), would essentially “ban longwall mining.” Id. at 32.

114. See supra note 11.

115. Pennsylvania had 12 active longwall installations in 1990, more than any other state except West Virginia. Merritt, supra note 2, at 41.

port. West Virginia recognizes, as do many other states, that the surface estate has an implied right of subjacent support which must be expressly waived in order to allow mine subsidence without liability.\textsuperscript{117} Pennsylvania has held that such support constitutes an estate in land.\textsuperscript{118} Irrespective of the definition, longwall operators must have a specific right to subside.

In recognition of the recent expansion of longwall mining as the technology of choice, citizen advocates have questioned whether such mining was contemplated at the time of the turn-of-the-century severance deeds under which much of the mining in the eastern United States is predicated and, if not, whether such mining should be allowed. To date, courts have not been particularly receptive to claims that the right to conduct longwall mining should not be implied in early deeds granting the right to subside without liability; for the most part, these courts have declined the invitation to analogize longwall mining to surface mining,\textsuperscript{119} and have accordingly declined to require that the technology be specifically contemplated in the deed.\textsuperscript{120} They reason that the destruction of the surface in the strip mining process is radically different from that occurring from deep mining — a difference in kind rather than in technology and that because subsidence is essentially the same whether it results from longwall mining or other methods, there is no basis upon which to preclude one technology while allowing another.\textsuperscript{121}

Recent cases, however, reveal that the matter is by no means settled. The issue, properly framed, is one applicable to any deed: the intent of the parties. An Illinois appellate court in \textit{Phillips v. Old Ben Coal Co.}\textsuperscript{122} recently upheld a verdict for damages resulting

\begin{enumerate}
\item See, e.g., Winnings v. Wilpen Coal Co., 59 S.E.2d 655 (W. Va. 1950).
\item See, e.g., Chartiers Block Coal Co. v. Mellon, 25 A. 597 (Pa. 1893).
\item See Stewart v. Chernicky, 266 A.2d 259 (Pa. 1970) (holding that the right to conduct surface mining will not be implied in early broad form deeds, where such mining was not contemplated); West Virginia-Pittsburgh Coal Co. v. Strong, 42 S.E.2d 46 (W. Va. 1947).
\item See supra note ______.
\end{enumerate}
from subsidence notwithstanding the operator’s reliance on a 1912 deed which expressly waived the surface owner’s right to subadjacent support. The court focused not on the kind of damage, but rather the certainty of subsidence, and concluded that it had not been bargained for at the time of the original deed. The court explained: “To extend the waiver contained in the deed to longwall mining, which entails the certainty of subsidence, would be imposing on the grantor of the waiver a far greater liability than he originally bargained for.” 123 The court went on to note, “[w]hile the common law duty to prevent subsidence damage may be waived in the case of longwall mining operations, such waiver must clearly and unequivocally demonstrate that the definite and certain subsidence is contemplated by the parties.” 124

This type of analysis is consistent with that employed by the West Virginia Supreme Court of Appeals in evaluating express language in a deed. For example, a 1980 case involving haulageways 125 allows a landowner to prove usage and custom affecting language used in a deed and requires the trier of fact to determine whether the technology to be used “is so different from anything contemplated [at that time] . . . that it overburdens the surface owner’s estate and is beyond the deed’s reservation: whether the burden now is alien to that generally contemplated by parties to such deeds at the time and place of its execution.” 126

Other cases state the proposition more strongly. In Cogar v. Sommerville, 127 a case rejecting the application of broad form waivers to the 300 foot “buffer zone limitation,” 128 the court stated,

a severance deed is to be construed in light of the conditions and reasonable expectations of the parties at the time it is made. As a consequence, mining methods not contemplated at the time of the severance deed may not be utilized. 129

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123. Id. at 4.
124. Id.
126. Id. at 93.
More recently in *Russell v. Island Creek Coal Co.*, a water rights case, the court interpreted *Cogar* as holding that waivers of subjacent support must be clear and unequivocal, and limited to cover "only such matters as may fairly be said to have been within the contemplation of the parties at the time of . . . execution." Quoting its earlier opinion, the court reiterated that "any waiver of a right in a mineral severance deed must be one that is within the contemplation of the parties" and added "[o]f course, in reading the instrument of conveyance, the rights of the parties and the determination of whether the waiver . . . is knowing and specific must be 'construed in light of the conditions and reasonable expectations of the parties at the time it is made.'"

While such authorities provide a strong theoretical basis for a more principled and realistic construction of the intent of the parties granting mining rights and waivers of subsidence damage, industry has also countered with evidence that longwall mining was known at least as early as the turn of the century. One federal court, in an unpublished opinion, has accepted this view, and unquestionably there is evidence in the early literature of mining described as "long wall" or "longface" mining dating back to at least the turn of the century. An examination of this evidence, however, reveals that there is a vast difference between what appears in the literature and modern longwall mining. For example, Professor Peng in his treatise "Coal Mine Ground Control," stated:

Modern longwall mining is a relatively new method in the United States. Early trials in the Eastern and Central Coalfields were not successful, mainly because the face supports did not have sufficient capacity. It was not until in the late 1960's, when high capacity self-advanced power supports were available, that longwall mining was successfully reintroduced.

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131. Referred to as *Cogar II* to differentiate that decision from Cogar v. Faerber, 371 S.E.2d 321 (W. Va. 1988), in which the court rejected the same operator's claim of valid existing rights.
133. Id. at 204.
134. Id. at 205.
137. Id. at 265.
Other researchers have reviewed these early attempts, and have recognized that early longwall mining was fraught with difficulties and failures and did not attain acceptance on a meaningful scale. Stated bluntly, "[l]ongwall mining has often been attempted in the U.S. but with almost no success until the 1960's."

In light of this history, it is likely that most courts will view longwall mining as a recent technology, although factual development regarding the custom and practice in the area of the mining at the time of the deed may well be critical to the inquiry. Given the fact that technologies constantly change in the mining industry, the proper focus should be not on what type of unseen machines are underground, but rather, on the risks and burdens to the surface owners that were bargained for according to the custom of the day at the time of conveyance. In this light, the argument remains strong that the risk of subsidence under previously used technology should not be equated with the certainty and effects of subsidence associated with modern longwall methods.

II. CONCLUSION

As subsidence damage and water loss continue to plague the users and owners of property in areas where longwall mining is prevalent, the need for a consistent legal approach to subsidence control has become increasingly more urgent. Agencies should do more to force technology by demanding affirmative demonstration of premining controls at the permit stage, by strengthening the landowner's remedies when property is damaged by subsidence, and by limiting the area where subsidence is allowed in order to preserve the values protected by section 522 of SMCRA, except where lawful and know-


139. Longwall Becomes Americanized, COAL MINING AND PROCESSING, May 1978, at 62. Because subsidence is dependent, in part on gob size, a small area of mining would have limited surface effects. See PENG & CHANG, supra note 9, at 576-77.
ing waivers are obtained. Finally, courts should pay closer attention to the circumstances surrounding the execution of deeds where long-wall mining is concerned to assure that the damages and risks attendant to such mining were truly part of the bargain.