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FEDERAL REGULATION OF STRIP MINING

*By Thomas A. Larsen**

INTRODUCTION

Strip mining is a type of surface mining in which the earth is removed by bulldozers, power shovels or drag lines to reach the underlying mineral, usually coal. Area stripping occurs when the topography is relatively flat. Successive parallel cuts are made which, from the air, give a washboard appearance to the land. Contour strip mining occurs in rolling or mountainous terrains. Horizontal cuts are made into the hillside above the coal seam and the overburden, or loose earth (also called spoil) is placed at or over the outer edge of the cut. The horizontal cut produces a "bench" on the hillside.

Water pollution, decreasing soil fertility, landslides, destruction of original landscapes, and disintegration of local communities are the ignored environmental and social costs of the strip mining of coal. On the other hand, strip mining is an efficient, inexpensive¹ utilization of a plentiful and valuable resource.

Heretofore, the regulation of strip mining has been premised on the assumption that a cheap supply of coal is an overriding priority and that the nature of strip mining precludes the *prevention* of environmental disruption. Therefore, states regulating strip mining have done so on the theory that proper reclamation techniques can acceptably limit the extent of the long run damage.

The growing number of advocates for a ban on strip mining, outside and within Congress,² dispute this defense of strip mining, and point to the increased devastation caused by strip mining throughout the country. As a corollary, proponents of a ban reject the importance attached to strip mining coal with respect to the "energy crisis" and cite the large reserves of underground coal³ and the export of 56.6 million tons of coal in 1971.⁴ Additionally, many question the necessity to expend such vast amounts of energy.

On the other hand, there is concern in the Nixon administration and in industry alike over the danger of reliance on foreign fuel sources to combat the energy crisis.⁵ Dwindling reserves of oil and natural gas, insufficient nuclear potential for the near future, and the projections for increasing energy demands, establish coal as America's only plentiful fuel resource. Underground mining is more dangerous and expensive than strip mining; thus the increase in strip mining and the parallel decrease in underground mining in recent years. To further complicate matters, the Clean Air Act of 1970⁶ restricted the level of sulfur particles in the air. Because coal mined in the Eastern United States has a high sulfur content, industry is turning to the Western United States which have reserves of about 25 billion tons of low sulfur coal.⁷ Ironically, strip mining may be the only way to efficiently mine this low sulfur coal.

Nevertheless, the adverse environmental effects of strip mining, the haphazard implementation of state acts, and the failure of federal regulations governing federal and Indian lands, have caused environmentalists,⁸ industry,⁹ and labor¹⁰ to call for the enactment of a federal law governing strip mining.

On October 12, 1972, the House of Representatives passed a bill aimed at regulating strip mining.¹¹ The bill, H.R. 6482, died in the Senate in the closing days of the session,¹² but was nevertheless the closest Congress has come to an effective strip mining policy. This article will analyze H.R. 6482 in terms of the potential effect which similar legislation could have on the coal industry and current state laws.

I. OVERVIEW OF H.R. 6482

H.R. 6482 (hereafter the federal proposal, the House bill, or the Act) proposes to regulate the strip mining of coal and the surface effects of underground coal mining; to reclaim land previously damaged by strip mining; and to encourage States to adopt their own programs within federal guidelines.¹³

All coal mining operations whose products enter, or indirectly or directly affect, interstate commerce are subject to the federal proposal.¹⁴

A. *Administration*

The Secretary of the Interior is charged with administering the federal program and is granted the rule making and enforcement authority.¹⁵

The House bill sets up a grant program with the states in which the Secretary is authorized to make a grant to "any state which submits a regulation program within two years following the effective date of (the) Act for the purpose of assisting each state in developing, administering, and enforcing reclamation programs. . . ." ¹⁶

B. *Permit System*

The procedural mechanism of the federal proposal is based on the permit system, which is contained in most state legislation governing strip mining. The permit application must specify mining plans, the credentials of the operator, the future use of the land, and other criteria, as will be discussed below.¹⁷ After approval of the permit, the operator must post a performance bond¹⁸ and notify the appropriate tax officials of his intention to mine coal on the land covered by the permit.¹⁹ Upon completion of the reclamation process, the public is afforded an opportunity for a hearing at which the operator must show he has reclaimed the land as specified by the terms of his permit and the purpose of the federal act.²⁰

C. *Sanctions*

The House bill proposes a battery of official and private sanctions. Officially, inspectors, who are required to visit each operation twice monthly on an irregular and rotating basis,²¹ are given the power to issue citations for violations and suspend all operations if the violation endangers health or safety.²² If the operator is not in compliance after notification has been given and the prescribed time has elapsed, the Secretary is required to hold a hearing to revoke the operator's permit.²³ If the permit is revoked, the Secretary is required to issue a cease and desist order, which also causes the performance bond to be forfeited.²⁴ Furthermore, any violations cited by the inspector shall be assessed as a civil penalty against the operator.²⁵ In addition to the above remedies, the Attorney General is authorized to seek to enjoin any surface coal mining operation "to enforce compliance with or restrain violations of any provision of the Federal Act."²⁶

In addition to the official remedies, any resident of the United States who notifies the appropriate official of a violation of the Act may bring an action of mandamus to enforce the Act if the Secretary or administering official does not act within a reasonable

time.²⁷ Secondly, the House bill allows any resident of the United States to bring suit for damages resulting from the failure of any operator to comply with the provisions of the Act.²⁸ This provision substantially eases the plaintiff's burden of proof by allowing recovery on the basis of the operator's violation of the statute rather than common law negligence or nuisance. However, mere compliance with the law may not constitute due care if the operator is not acting reasonably.²⁹ Thus a plaintiff is not confined to recovery on statutory violations alone.

D. *Reclamation Fund*

The federal proposal also sets up a revolving Coal Mine Lands Reclamation Fund³⁰ in order to meet the expense of reclaiming land previously damaged by strip mining. The Fund would be capitalized with an initial authorization of \$100,000,000³¹ and thereafter be replenished by the required \$500 permit application fee,³² a special reclamation fee of \$100 per acre which must be paid before a permit is issued,³³ and unused portions of bonds forfeited under the provisions of the Act.³⁴ Eventually, income would also flow from user fees, if any, for the use of the land or from proceeds from any eventual sale of the reclaimed land as specified in the federal proposal.³⁵

E. *State Programs*

Finally, under the terms of the House bill, the states have a chance to retain or regain jurisdiction over the regulation of strip mining and other surface effects of coal mining within the state. Initially, the state must submit a program for the regulation of surface mining which "is in conformity with or more stringent than the provisions" of the Federal Act.³⁶ If the Secretary also finds "that the state has sufficient available financial resources . . . to administer and enforce the state plan," the plan will be approved.³⁷ Though the Secretary retains the right to review and withdraw his approval of a state plan if the federal regulations and guidelines are not being observed, the state will still have considerable discretion in regulating strip mining.

The above description provides an overview of a proposed federal system to regulate the strip mining of coal. Below, this federal proposal will be analyzed in terms of the current state laws and

the technological and political considerations which must be taken into account when drafting a uniform regulatory system.

II. ADMINISTRATION BY THE DEPARTMENT OF THE INTERIOR

The decision to place the proposed federal strip mining program under the jurisdiction of the Department of the Interior may have important implications. Other bills have advocated the Environmental Protection Agency (EPA)³⁸ or an independent commission³⁹ to control the strip mining of coal. The EPA already administers air and water pollution control and thus it is arguable that environmental legislation would be more effective if it were coordinated by one agency. In addition, the EPA is oriented to the protection of the environment, rather than the management of resources, the traditional function of the Interior Department. Thus, it is important to decide at the outset whether federal strip mining legislation will be aimed at the protection of land or at the management of our coal resources.

This question becomes important when considering the ineffective enforcement by the Department of the Interior of the federal statutes governing strip mining on public and Indian lands, as will be seen later.⁴⁰

If, however, control of a federal strip mining program is placed in the Department of the Interior, the inclusion of the surface effects of underground mining within the ambit of the House proposal may raise a jurisdictional problem. Under the proposal, the operator of an underground mine must comply with the provisions of the Act and obtain a permit before commencing operations.⁴¹ However, underground mines are already regulated by the Federal Coal Mine Health and Safety Act of 1969,⁴² also administered by the Department of the Interior, which subjects operators to similar administrative and procedural safeguards as the House bill. Duplication and confusion could result unless the Secretary co-ordinated the administration and enforcement of the two bills.

III. PERMIT SYSTEM

The permit system seeks to place the burden of proof, and hence responsibility for the risks of strip mining, on the operator. Essentially, the burden is shifted by attaching certain conditions to the right to strip mine. These conditions include qualifications which

the operator must demonstrate and regulations which must be obeyed. In order to enforce the conditions, the Secretary or administering official retains the right to approve or later revoke the application pending determination of the operator's ability to meet the prescribed conditions.⁴³

The mining corporation cannot have any outstanding violations of either state or federal law on record⁴⁴ nor can any director, officer, or majority stockholder of the firm have any violations on record.⁴⁵ The latter requirement closes the loophole existing in most state legislation by which firms in violation of the state law on a previous operation can simply reincorporate before applying for their next permit.

A. *Performance Bond*

The House bill requires a bond to be posted after the permit is approved but before it is finally issued.⁴⁶

The performance bond is the most important qualification required in the permit process. The amount of the bond depends on the estimated cost of reclamation, but the bond is not to be less than \$500 per acre or \$5,000 in the aggregate.⁴⁷ Thus, the federal proposal establishes a minimum limiting the Secretary's discretion. Pennsylvania, which probably has had the most successful reclamation program in the country to date,⁴⁸ sets the performance bond solely on the estimated cost of reclamation,⁴⁹ as do Iowa⁵⁰ and New Mexico.⁵¹ The balance of the states regulating coal strip mining have established maximum or fixed bond requirements. The argument for the open ended maximum in Pennsylvania, Iowa, New Mexico and the federal proposal is that its flexibility allows for a more result-oriented approach to reclamation. For example, an open ended bond requirement allows such factors as proximity of the land to urban areas, the aesthetics of the locality, previous uses of the land, and the future potential of the land to be taken into account.

On the other hand, there are two reasons for setting the minimum bond in the federal proposal. First, a minimum would limit the Secretary's discretion and insure that he would not allow a grossly inadequate bond. That this may be a real danger is indicated by a 1972 General Accounting Office (GAO) report⁵² which reveals lax enforcement by the Department of the Interior of federal regulations governing strip mining on public and Indian lands.

The one active surface mine operation visited by the GAO had disturbed 138 acres of the 8,363 acres under lease. Only 13 of these acres had been reclaimed with another 13 underway. Yet, the total bond on this project was only \$22,000, far short of the estimated \$43,750 cost of reclaiming the disturbed land.⁵³ By contrast, the proposed \$500 per acre minimum would have adequately covered the cost as well as giving the operator an incentive to complete the reclamation. Even more appalling is the policy of the Bureau of Indian Affairs (BIA), a division of the Department of the Interior, which allows performance or compliance bonds to be reduced below a minimum, with the consent of the Indian landowner.⁵⁴ As a result, one operator included in the General Accounting Office Study filed a \$15,000 compliance bond to cover 15,030 acres spread over six leases.⁵⁵ Furthermore, cost data of strip mined land reclamation, although rare and varied,⁵⁶ indicate that costs are sufficiently high to justify a \$500 per acre minimum.

The second reason supporting the establishment of a minimum bond requirement in the federal proposal is uniformity. The federal proposal expressly states that its intent is not to pre-empt state statutes or regulations which are more stringent than the federal standard.⁵⁷ Thus if Congress did not set a minimum standard, the state bonding requirement would establish the minimum. In states such as Illinois⁵⁸ and West Virginia,⁵⁹ which have bond minimums of \$600 per acre, the state minimum would be adequate. However, in states such as Colorado (maximum of \$100 per acre)⁶⁰ and Alabama (maximum of \$150 per acre),⁶¹ the result would probably be an inadequate bond amount, unless the Secretary acted to establish a higher limit.

B. Public Liability Insurance

Under the House bill, an operator is required to have a certificate of public liability insurance.⁶² Of the states, only Pennsylvania requires public liability insurance,⁶³ although without such insurance many legitimate damage claims may be foreclosed. Thus, this qualification in the federal proposal gives force to the sanction allowing residents to sue for damages resulting from the violation of the strip mining regulations. The amount and the duration of the policy are two important considerations in setting up the terms of public liability insurance. Pennsylvania requires a minimum policy of \$100,000 to extend for the duration of the permit unless

the state administrator determines that the applicant will otherwise be able to pay.⁶⁴ The original version of H.R. 6482, introduced by Congressman Hays of Ohio in March, 1972, required a minimum policy of "not less than \$60,000 or \$1,000 per acre, whichever is greater, to be written for a term of at least five years after the mining ceases."⁶⁵ However, this was changed in the House Interior and Insular Affairs Committee. The present federal provision requires a policy "adequate" to compensate the federal government and persons damaged as a result of coal mining and reclamation operations. The policy need not extend for more than 18 months after the permit expires.⁶⁶

The present House bill gives the Secretary complete discretion in determining what is an "adequate" amount of insurance. By contrast, the original version of the bill limited the Secretary's discretion by setting a minimum policy while still allowing the Secretary to require greater coverage when warranted by the risks of a particular strip mining operation.

Similarly, in light of the possible long term, residual effects of strip mining, the original proposal of a five year minimum duration of the policy would appear to be more effective in encouraging the operator to eliminate possible sources of residual damages. Moreover, the provision allowing personal damage suits is rendered weaker to the extent that the duration of the insurance policy is shortened. On the other hand, the risks of strip mining tend to decrease after the initial months following the completion of mining.⁶⁷ Thus, the 18 month minimum would be an easier burden on the operator as well as being more commensurate with the risk in most situations. As a safeguard, though, and as a suggested compromise between the two proposals, the Secretary should have the discretion to withhold a fixed portion of the performance bond for a period of time after the operator has complied with the reclamation requirements, in the event that negligent or faulty work is discovered or damage claims arise. This measure, which is in force in Pennsylvania (where 5% of the bond may be withheld for 5 years⁶⁸), would provide additional protection to the government and local community without requiring all strip mining operators to carry liability insurance for a longer period of time.

C. *Approval of Permit Application and Bond Release*

Prior to final approval of the permit application and again before the release of the bond after the mining operation has been completed, the operator must advertise his ownership and the lo-

cation and boundaries of the intended site in a local newspaper of general circulation at least once a week for four successive weeks.⁶⁹ In addition, the applicant must "submit as part of his application copies of letters which he has sent to various local governmental bodies, planning agencies, and sewage and water treatment authorities or companies, in whose watershed the mining will take place, notifying them of his intention to mine a particular tract of land."⁷⁰ Any resident of the area who will be adversely affected by the proposed coal mining⁷¹ or release of bond⁷² may file a written objection; the Secretary must subsequently hold a public hearing in the locality within 60 days of receipt of this objection. Any officer or head of a Federal, state, or local governmental agency also may file a written objection.⁷³ "At this hearing, the applicant for a permit shall have the burden of establishing that his application is in compliance with the applicable State and Federal laws."⁷⁴

A similar procedure is followed upon completion of the reclamation process. The operator must establish that the land has been reclaimed according to the terms of the permit application and purposes of the Act.⁷⁵

This requirement that hearings be held both before and after the mining process represents a novel device in surface mining legislation. Primarily, it gives local residents and concerned government officials an opportunity to challenge the proposed surface mining and possibly alter the specified future use of the land. Additionally, it forces the operator to defend his application publicly, and thus helps to insure that no oversights will occur in the mining and reclamation process. More significantly, this provision opens the door for delay by those parties interested in discouraging surface mining. After the Secretary's decision, any aggrieved resident who participated in the administrative procedure as either an "applicant, protestant, or objector," is given the right of appeal to the appropriate U.S. District Court.⁷⁶ Although the appeal would not act as a stay of the Secretary's approval,⁷⁷ it could serve to introduce an uncertainty into the mining plans of the applicant. Nevertheless, a delay seems warranted in the context of the past effect of surface mining on local communities, the community interest in the future use of the land, and past failures to properly enforce strip mining laws.

D. Notification of Tax Officials

If the permit application is approved, the operator must notify the appropriate tax officials of his intent to mine the land under

permit.⁷⁸ Notification of the appropriate tax officials is designed to alleviate the decrease in the tax base which many strip mining communities have suffered.⁷⁹ Notice should allow officials to at least properly assess the land beforehand.⁸⁰ Although the tax base problem stems more from the diminished property values of improperly reclaimed land⁸¹ or deliberately low assessments to attract employers, notification should help to create more equitable assessments.

IV. REGULATIONS

The permit process governs the planning steps of strip mining. The second stage entails the actual mining operation; the third stage is the reclamation of the strip mined land. The latter two stages are governed by regulations designed to minimize the on-site, and to a limited extent, the off site, impact of strip mining approved at the permit stage.

The regulations governing the mining of the coal are negative, in that, by definition, damage to the land cannot be prevented but only limited. Conversely, the regulations governing reclamation are a positive effort to reconstruct the land in order to restore or possibly increase its pre-mining productivity.

The major environmental problems of strip mining are soil erosion, water pollution, and the disintegration of local communities. These problems will be analyzed in terms of their respective causes and regulatory solutions.

A. *Soil Erosion*

The destruction of vegetation and displacement of soil inherent in strip mining causes severe erosion if the earth is left ungraded, improperly drained, or unvegetated. Continuing erosion and loss of topsoil destroys soil fertility. The use of larger machinery aggravates the problem.⁸²

As the grade of the slope increases in contour mining, the incidence of erosion, landslides, and sedimentation (the end result of eroded particles of earth being washed into a stream) increases owing to the difficulty of retaining the loose overburden. It thus becomes important that the amount of overburden placed on the outer edge of the bench does not exceed the capacity of the slope to bear it.⁸³ The House bill states that no operator "may place any material in such a way that the normal erosion or slides brought

about by natural physical causes will permit the material to go outside of the permit area."⁸⁴ While this provision may be useful to protect adjoining property, it does little to prevent the degradation of the permit area itself. This is especially a problem where the operator has a large area under permit. Moreover, this provision does not include protection against slides or erosion caused by blasting or the use of poor drainage techniques. Surely if the operator is held responsible for natural results he should also be liable for results caused by his own mining operation.

The federal proposal also requires the Secretary to prescribe "such regulations as are necessary to prevent the creation of a permanent spoil bank upon a natural downslope in excess of 14 degrees. . . ."⁸⁵ This regulation seeks to prevent spoil from being thrown downhill in order to create more space for mining operations, a common practice. The efficacy and implementation of the regulation will depend on how the Secretary defines "permanent" and "natural" and on how soon the regulation is promulgated. Presumably, the Secretary will have to define how long, if at all, spoil can remain on the downslope without becoming a permanent spoil bank. Secondly, he will have to provide for measurement of the slope before mining commences in order to ascertain the "natural" slope of the hill. Unfortunately, the arbitrary selection of the 14 degree figure leaves slopes with natural downslopes of 14 degrees or less vulnerable to substantially the same difficulties which a permanent spoil bank on a 15 degree slope presents. Presumably the loose spoil is necessary to refill the cut regardless of how steep the slope, and throwing spoil downslope only creates additional problems of erosion and revegetation.

Nevertheless, the regulation against permanent spoil banks on natural slopes greater than 14 degrees could make a new contour mining technique obsolete. This technique, the slope reduction method, attempts to prevent slides by reducing the angle of the slope. The underbrush is removed downslope of the cut (creating additional revegetation problems) and the overburden from the initial cut is spread over the downslope so as to reduce the incline of the slope by as much as 5 to 7 degrees.⁸⁶ The downslope is then revegetated while mining operations are still in progress. Seemingly, under such a federal regulation, this technique could not be used on a hill where the natural or original downslope was initially greater than 14 degrees.

The above regulation probably recommends another new con-

tour mining technique, the box cut method, which is now being used in Pennsylvania to minimize the damage of contour mining.⁸⁷ Basically, box cutting is the area stripping technique adopted to steep terrain. The overburden is placed downhill only temporarily, on the first cut. On all successive cuts around the hillside the overburden is not thrown downslope but instead deposited in the void left by the previous cut. In all cuts after the first, an undisturbed mound on the edge of the cut (an outcrop barrier) is left to trap loose spoil and mine water and prevent its movement down the hill or into nearby streams.⁸⁸

Possibly one of the most significant and controversial provisions of the Congressional proposal prohibits contour mining on slopes greater than 20 degrees "unless the operator can affirmatively demonstrate that sedimentation, landslides, and acid or mineral water can be feasibly prevented and that the area can be reclaimed. . . ."⁸⁹ The language of the Virginia statute, from which this provision was originally adopted, is "minimize or prevent."⁹⁰ This was an important change as, almost by definition, sedimentation cannot be prevented any more than the disturbance of the earth can be prevented in strip mining. Therefore, read literally, the provision virtually prohibits strip mining on slopes greater than 20 degrees. However, the Secretary could define sedimentation to mean a particular concentration of soil particles in the water, in which case sedimentation could be "prevented" by limiting the amount of sedimentation to the limits prescribed by the Secretary. The burden of proof would be on the operator to establish that the mining operation will not cause sedimentation, landslides or acid or mineral water.

It is unclear why the 20 degree figure is used in this provision. West Virginia, for example, has banned strip mining on slopes over 33 degrees.⁹¹ It is interesting to note, however, Congressman Dent's cryptic hint in floor debate that, "If someone had not found in a certain state that more than 90% of the coal is under 20 degrees then we would never have had the 20 degree figure."⁹²

Thus, the federal proposal would regulate contour strip mining with three separate regulations. First, all operations would be prevented from placing on slopes overburden which slides or erosion could cause to go outside of the permit area. Second, mining on slopes greater than 14 degrees could not result in a permanent spoil bank being created downslope. Third, the burden is on the operator to establish that sedimentation, water pollution, and land-

slides can be prevented, and reclamation achieved, on slopes greater than 20 degrees.

A concept not included in the House bill, but one that should perhaps be considered, is a limit on the ratio of overburden depth to thickness of the coal seam.⁹³ Basically, such a ratio would seek to balance the economic gains and the environmental costs of strip mining. That is, a value would be put on land as well as on coal, and unless the value of the coal under the land was high enough in relation to the amount of earth which would be displaced in mining the coal, mining would be prohibited. The practical result would be a restriction of strip mining in the Eastern United States where 30 to 40 feet of overburden must sometimes be removed to reach an 18 inch seam of coal.⁹⁴ By way of contrast, coal in the Western United States generally lies in thick seams, from 50 to 217 feet deep, just below the surface of the earth.⁹⁵ However, the combined efforts of eastern coal industries seeking to maintain their share of the market and environmentalists battling to keep the western coal fields closed should foreclose the passage of such a provision.

Finally, the House bill requires both area and contour strip miners to segregate the topsoil, or a more suitable layer of soil, during the process of mining.⁹⁶ If the topsoil is not segregated, soil containing coal powder or small particles of coal is likely to become mixed with the top layer of the soil, along with a varying mixture of subsoils and rocks. Nothing will grow in soil containing coal owing to its acidity. Thus a fertile layer of topsoil is necessary not only for better growth but also to cover the subsoils containing acidic coal particles.

B. *Water Pollution*

Acid mine drainage, and excess sedimentation resulting from poor soil conservation, are two causes of water pollution. Acid mine drainage, unlike sedimentation, originates from both strip mined land and underground mines. The problem results from the presence of pyrite, a compound of iron and sulfur frequently encountered near coal deposits. When exposed to oxygen, pyrite oxidizes into acid, sulfates and iron oxides which, when proper precautions are not taken, either drain into surface streams or seep into the ground water.⁹⁷ The result is known as "yellowboy," which has polluted 5,700 miles of streams in Appalachia alone.⁹⁸ This

acidic water endangers aquatic life, is very corrosive, and reduces the recreational value of the water.⁹⁹

Suspended sediment in surface mined waterbeds is more than 1000 times that in similar drainage basins where there has been no significant mining.¹⁰⁰ This increased sediment load in streams reduces channel capacity and can lead to flooding. Also, sediment interferes with normal physical and biological processes and can result in serious adverse effects on water treatment and on fish and wildlife.¹⁰¹

The House bill requires control of drainage¹⁰² and the proper treatment of drainage "from mine workings, spoil waste accumulation, and leaking operations, where needed."¹⁰³ Unfortunately, the proposal leaves undefined that degree of treatment of the water which is to be considered proper. However, another section of the House bill incorporates by reference the applicable federal and state water pollution law in the following context:

If the Secretary finds that the overburden (earth removed to reach the coal) of any part of the area of land described in the permit application is such that deposits of sediment in streambeds, landslides, or acid or mineralized water pollution, in violation of state and federal water quality standards, whichever is higher, cannot feasibly be prevented, he shall delete such part of the land.¹⁰⁴

This provision applies only to the initial determination of what land is to be included within the permit area. The federal and state water quality standards are not made expressly applicable to the discharges of water from surface mined areas. However, the above provision implies that Congress intends either the federal or state water pollution standards to be used to determine what is to be the "proper" treatment of acidic or mineralized water. On the other hand, by incorporating the federal and state water quality provisions in the permit provision but not in regard to the proper treatment of water, Congress leaves this interpretation in doubt. In any event, Congress should redraft the provision to specify what the standard for proper treatment will be.

Even if the federal water quality standards are to apply, there are not yet any such standards relating to strip mining water pollution. The 1972 Federal Water Pollution Control Act¹⁰⁵ does not include standards for acid mine drainage, but it does authorize the appropriation of \$30,000,000 for studies by the EPA in cooperation

with the Appalachian Regional Commission and other federal agencies.¹⁰⁶ These studies will examine

comprehensive approaches to the elimination or control of acid or other mine water pollution resulting from active or abandoned mining operations and other environmental pollution affecting water quality within all or part of a watershed or river basin, including siltation from surface mining.¹⁰⁷

Until standards are developed on the federal level, it will be up to the states to determine what treatment will be required of water drainage from mining operations.

One approach to the acid mine drainage problem is exemplified by the West Virginia surface mining legislation which requires that all runoff water be impounded, drained or treated.¹⁰⁸ In addition, any sizeable accumulation of storm water in depressions or breakthrough of water caused by the operation must be tested and treated for acid and iron content.¹⁰⁹ This latter provision is very important because one of the major causes of water pollution is the failure to control surface run off following rainstorms.¹¹⁰ Congress should authorize the Secretary to establish standards specifically aimed at this source of acid mine drainage and sedimentation.

Incident to the prevention of water pollution, the House bill gives the Secretary the discretion to prohibit blasting where the water courses entering underground mines will be adversely affected by such a blast.¹¹¹ This represents a significant dilution of the original subcommittee bill which absolutely prohibited blasting "where the course or channel of any surface or subsurface stream will be changed as a probable result of the blast or where the banks of the stream will be ruptured, permitting water to enter the strip mining pit."¹¹² The present bill seems to shift the burden of responsibility for a mistake in judgment from the operator to the Secretary. In the original version the operator would be liable if any water entered the pit, or any course or channel was altered, because of blasting, and if this was the "probable result" of the decision to blast. Now the Secretary must make the initial decision. Unless he prohibits the blasting, it would seem that the operator will not be liable if underground watercourses are "adversely affected." Although the original version seems to be the better view, an alternative would be to prohibit blasting unless the Secretary approves. While this proposal would also place the burden of re-

sponsibility on the Secretary it would prevent all blasting until the Secretary had the opportunity to determine whether blasting at a particular site should be permitted.

Both versions fail to reflect the increase in sedimentation which results from heavy blasting. Because heavy blasting creates larger amounts of smaller particles,¹¹³ the dissipated soil is more easily carried to adjoining streams by either wind or run off. The Secretary should also be authorized to regulate blasting with respect to this problem.

C. *Reclamation*

Reclamation, of course, is the ultimate objective of the regulation of strip mining. The prerequisites for successful reclamation will be discussed below in the context of the House bill.

1. *Coordination of Mining and Reclamation*

The House bill incorporates the concept of simultaneous mining and reclamation.¹¹⁴ This process has been successfully used in West Germany for some time,¹¹⁵ and has been adopted in Kentucky¹¹⁶ and Indiana.¹¹⁷ The time element in reclamation is very important, because until the displaced earth has been replaced, and the plant cover has been established, the environmental risks increase. With this in mind, the House bill requires that the process of reclamation shall progress as soon as practicable after the extraction of coal. "All backfilling, grading and resoiling shall be completed before the necessary equipment is moved from the area."¹¹⁸ Unfortunately, "as soon as practicable" is an indefinite term. Without further clarification by Congress or the Secretary, such a standard will no doubt cause controversy and litigation. In effect, the provision recognizes the concept of simultaneous reclamation without providing any strict and objective standard by which to assure performance.

The Indiana¹¹⁹ and Kentucky¹²⁰ statutes and the original subcommittee bill¹²¹ provide such an objective standard by requiring that reclamation shall progress 300 yards behind the extraction of coal. However, there is a somewhat irrational inflexibility in this provision. For example, Kansas prohibits grading when the overburden is wet,¹²² a useful and sensible provision (which most states and federal proposals overlook), especially in rainy periods where grading can compact the soil and make it difficult for water to

penetrate the surface.¹²³ However, wet ground does not preclude mining as such, and therefore the 300 yard requirement may be unnecessarily arbitrary. On the other hand, if federal legislation was directed specifically at the length of time it takes to accomplish reclamation, flexibility and an objective standard could be incorporated into the law. Most states set a specific period, varying from 1 to 3 years, within which such reclamation must be completed.¹²⁴ Although the House bill does so indirectly by requiring a reclamation timetable to be set out in the permit application,¹²⁵ it sets out no specific guidelines for the Secretary or the mine operator.

2. Scope of the Reclamation Requirements

An important but easily overlooked aspect of reclamation regulations is how the particular state or federal act defines the term "land affected." The definition will determine the scope of the reclamation requirements by specifying what part of the permit area must be reclaimed. In Alabama, for example, "land affected" includes only that area from which the overburden is removed and which is occupied by spoil piles.¹²⁶ This means that the operator is not required to reclaim roads, refuse piles, or other undesirable by-products of strip mining. The House has avoided this loophole by defining "land affected" to mean:

the land from which coal is removed by surface mining, any land in which the natural land surface has been disturbed as a result of, or incident to, surface mining activities, and any land on which are conducted the surface activities of deep mining, including but not limited to private ways and roads appurtenant to any such land excavations, workings, refuse banks, spoilage banks, culm banks, tailings, repair areas, storage areas, processing areas, shipping areas, and areas on which structures, facilities, equipment, machines, tools, or other materials or property which result or are used in, coal mining operations are situated.¹²⁷

Once the operator's responsibilities are defined, effective guidelines must be promulgated. Two major problems with state regulation of strip mining in this respect have been the states' tendency to be technique, instead of result, oriented¹²⁸ and the states' failure to promulgate meaningful standards of compliance. Revegetation requirements are good examples of these weaknesses. Tennessee, for instance, provides that the cost of revegetation is not to exceed \$25 acre and that no more than one planting is required.¹²⁹ Ohio

requires revegetation "where possible."¹³⁰ Wyoming law states that "where practical, reasonable efforts must be made to encourage revegetation."¹³¹ Other states such as Oklahoma make the type of vegetation optional with the operator.¹³² Colorado actually relieves the operator of his obligation to revegetate if the land is unplanted for 10 years,¹³³ which actually encourages the operator to reduce soil fertility. Maryland allows the performance bond on the land to be released after an inspection of the revegetation only one week after planting.¹³⁴

The result oriented approach is better. For example, Indiana does not release \$75 per acre of the required performance bond until vegetation has been successfully established.¹³⁵ Illinois does not permit the release of bonds until results are achieved which are appropriate to the use of the area.¹³⁶ West Virginia gives the administrator of the reclamation program discretion to modify the reclamation and revegetation requirements to bring about a more desirable use of the land and defines the purpose of their reclamation regulations accordingly.¹³⁷ The House bill seems to take the result oriented approach by requiring a "stable and diverse vegetative covering" which must be approved by the Secretary before the performance bond is completely released.¹³⁸ The proposed vegetation must also be described in the permit application in the context of the operator's plan for the future use of the land. Both the proposed vegetative covering and future use of the land must be approved by the Secretary at the permit stage. The purpose of reclamation as cited in the House bill is "to restore the area of land affected to the same or an equally useful purpose as before any mining."¹³⁹ Presumably the regulations governing reclamation will be interpreted with reference to this stated purpose.

3. *Backfilling*

Implicit in backfilling, grading, and resoiling is the necessity of restoring the original contour of the land. The House proposal requires the restoration of the original contour except on natural slopes of greater than 14 degrees, or, if the original contour of the area of land affected was such that soil erosion, slides, acid drainage and highly mineralized drainage will probably occur in the opinion of the Secretary, before vegetation will grow.¹⁴⁰ In these instances, the operator is required to backfill and grade according to a plan of terracing and drainage set out in the permit application that will eliminate the probable damage.¹⁴¹

The flexibility implicit in the above provision should be extended to the beneficial hydrologic effects which are sometimes created by strip mining. For example, in the process of strip mining the ground is broken up, creating a more porous surface. Under certain circumstances, such a porous surface could trap water which might otherwise cause flooding.¹⁴² Furthermore, particularly in the Western United States, strip mining sometimes exposes previously non-existent water sources which could be used for recreational purposes.¹⁴³ With this possibility in mind, Kansas specifically encourages the formation of lakes in its reclamation requirements and reserves a right to stock such lakes with fish.¹⁴⁴ More emphatically, Washington stipulates special reclamation procedures for surface mining where excavation more than two feet below the water line will result in the establishment of a useful lake.¹⁴⁵

4. Prevention of Water Pollution

Acid water runoff continues to be a problem after the mining operation has ceased. The most effective means of preventing acid water pollution, aside from draining the area properly, is either to bury or flood the acid bearing materials so as to prevent oxidation. Under the House bill, the operator must "bury under adequate fill any toxic material, roof coal, pyrite, shale, or material determined by the Secretary to be acid producing, toxic, or creating a fire hazard¹⁴⁶ or serious thermal problem."¹⁴⁷ Most states regulating strip mining have similar provisions, but unlike the federal legislation, all specify the required depth of fill. This depth varies between 2 and 4 feet¹⁴⁸ depending on the state. Although the federal proposal gives the Secretary more discretion than arbitrary state regulations, it is submitted that "adequate" does not provide a suitable standard against which to measure the Secretary's determinations. Since the proposed federal legislation is not intended to pre-empt any state regulation which is at least as stringent as the corresponding federal requirement,¹⁴⁹ the particular state requirement would assure a minimum guideline if the Secretary did not promulgate a stricter standard. However, as pointed out earlier in connection with insurance and minimum bonding requirements, the federal law would probably be more effective if Congress initially established a minimum standard and then allowed the Secretary the discretion to raise the standard if necessary.

As to flooding the acidic material to prevent oxidation, the fed-

eral proposal states that depressions in the land are permitted to hold water only "where the retention of water is required or desirable for reclamation purposes with adequate provisions for drainage. . . ." ¹⁵⁰ Ordinarily, such depressions are required to be backfilled, graded, and revegetated, which buries the acidic material. By prohibiting depressions which will fill with water, subject to the Secretary's granting of an exception, the House bill closes a loophole which implicitly ¹⁵¹ or explicitly ¹⁵² exists in many state statutes. In these statutes, any depressed area is exempted from reclamation. This allows operators to circumvent an expensive aspect of reclamation and creates unnecessary and unwanted marshes and lowlands.

D. *Effect on Local Communities*

Aside from its immediate effect on the mined land, strip mining can disrupt neighboring communities. In West Virginia, nine of the ten counties with the highest 1969-1970 strip mining production experienced population decreases of 6.25% to 29% with the average being 17.6%. ¹⁵³ Similar population declines have been documented in Kentucky and Ohio, proportionate to increases in strip mining activity. ¹⁵⁴ After strip mining in Belmont County, Ohio, there was a 50% decrease in assessed value of buildings per acre as well as a decline in the value of land. ¹⁵⁵

1. *Reclamation*

Illinois is the only state that requires the operator to take the social environment of the area into consideration when formulating the reclamation plan. The Illinois statute requires operators to "look at alternative possibilities and the short and long term effect (of strip mining) on vegetation, wildlife, fish, land use, and land values, the local tax base, the economy of the region and the state, employment opportunities . . ." ¹⁵⁶ In fulfilling the purpose of this section, the Illinois Bureau of Mines and Minerals has formulated a rule under its administrative powers which allows the County Board within whose jurisdiction the mining is to take place to propose land uses different from those submitted by the operator. ¹⁵⁷ This gives the locality an important but not necessarily prevailing voice in the management of their local environment. By balancing state, local and industry interests, the Bureau of Mines and Min-

erals has a somewhat broader basis for determining the future use of the land.

By comparison, the House bill requires that the reclamation plan presented in the permit application include:

a statement of the *highest and best use* to which the land *was put* prior to the commencement of surface mining; (2) of the use which is proposed to be made of the land following reclamation; (3) of the manner in which mining operations will be conducted and whatever actions will be taken to prevent adverse environmental effects; and (4) that proper consideration has been given to insure that the plan is consistent with local environmental conditions and current mining and reclamation technologies. . . .¹⁵⁸ (emphasis added)

First, the "highest and best use" has been defined in condemnation proceedings to mean that use which will bring the greatest financial return or net profit.¹⁵⁹ As highest and best use is qualified by the word "was," the federal bill evaluates the most profitable previous use of the land. In most locations, particularly in Appalachia or the Western plains, this is likely to be infertile or wooded farmland, which has not been profitable in the past. The average value of the hilly farmland in Appalachia, for example, is probably less than \$50 an acre.¹⁶⁰

This standard, then, entirely ignores the aesthetic or other intangible values of the land, particularly as it concerns the local community. Consequently, a definition of highest and best use oriented toward protection of the land rather than its profitability may be a more appropriate standard for a bill which seeks to protect the interest of the local community. For example, a standard of aesthetics and of fertility could be allowed as alternatives to profit. Aesthetics could be interpreted by looking to such factors as woodlands, wildlife, and aquatic life. Logically, the "highest" of the three standards—aesthetics, fertility, and profitability—as measured by some appropriate set of indices, would become the governing standard for reclamation.

Second, the federal provision provides no standards by which to decide upon the use of the land following reclamation. Although the House bill requires that the use be consistent with local environmental conditions,¹⁶¹ in an area where there is a great deal of strip mining, this is not a very difficult standard to meet. Instead, the highest and best use standard, as modified above to include aesthetics, fertility, and profitability, should be adopted for the

post-mining use of the land. If this standard were adopted, the locality would have a stronger voice in the use of the land, both prior to the approval of the permit and at the time of the release of the bond, as they could point to an objective standard designed to protect their interests.

2. *Prohibition of Strip Mining*

In North Carolina, a permit may be denied if surface mining will have "an unduly adverse effect on wildlife or freshwater estuaries or marine fisheries."¹⁶²

The subcommittee version of the House bill provided that the Secretary could:

designate an area as unsuitable for strip mining because it is impossible to reclaim either by natural growth or by technological processes and, if strip mining is conducted in the area, the mining may cause stream pollution, landslides, accumulation of highly mineralized water, flooding, destruction of land for agricultural purposes, dislocation or disturbance of subsurface streams, destruction of aesthetic values, destruction of recreational areas, and destruction of the future use of the area and surrounding areas, thereby destroying or impairing the property rights of others, and in general creating hazards dangerous to life and property so as to constitute an imminent and inordinate peril to the welfare of the Nation.¹⁶³

The present version changed the above provision to read:

an area may be designated as unsuitable for surface coal mining if the Secretary finds that it is not economically or physically possible to reclaim the land or, if surface mining is already being conducted in such area, the mining will cause irrevocable or lasting injury to the environment of the area or an area adversely affected by such area.¹⁶⁴

Basically, this provision diluted all of the enumerated specifications of the subcommittee version into the vague phrase, "irrevocable or lasting injury." The word "irrevocable" signifies that the injury cannot be recalled or revoked.¹⁶⁵ In other words, the injury must be irreversible or unalterable. The word lasting reinforces this interpretation. Thus, if surface mining is already being conducted in the area in question, the area may not be designated as unsuitable unless the Secretary determines that permanent damage will be done to the environment. This standard is considerably stronger than that of the subcommittee version where evidence only had to

be shown that any one of the enumerated environmental dangers would occur, without requiring any estimates to be made as to whether actual irreparable or irrevocable damage would occur. In addition, the current proposal ignores the distinction between irreparable and irrevocable injury. The former concept is commonly applied in courts of equity.¹⁶⁶ Here, the Act would not authorize the Secretary to prevent strip mining in certain areas where the current (as opposed to permanent) environmental costs would be greater and perhaps even irreparable. Thus, the local community must overcome a difficult test to convince the Secretary that an area is unsuitable for strip mining. Even if this can be shown, the matter is still in the discretion of the Secretary.

However, the proposal would make available to localities another means to prohibit strip mining in their communities:

Nothing in this Act shall preclude or deny the right of any state or political division thereof to adopt and enforce standards relating to the conduct of coal mining surface operations and reclamation, except such state or political subdivision may not adopt or enforce any such standard which is less stringent than the corresponding Federal standard or regulation then being enforced under this Act in such state by the Secretary.¹⁶⁷

The House bill goes on to provide that:

The provisions of any state law (including standards or regulations established or issued thereto) in effect on the effective date of this Act, or which may become effective thereafter, which provide for the control and regulation of surface coal mining for which no provision is contained in the Act shall not be construed to be inconsistent with this Act.¹⁶⁸

The impact of these sections is that state or local governments can increase the standards of the federal bill, and that the state governments can regulate aspects of strip mining not covered by the federal provisions. However, most state laws regulating strip mining do pre-empt the field from local control due to the compelling state interest in uniform regulation, enforcement and competition. Nevertheless, most localities continue to hold the necessary power to pass restrictive zoning ordinances. Assuming that a zoning prohibition would not deprive the operator of enough of the value of his property so as to be a taking,¹⁶⁹ a locality or a region could prohibit or at least control the location of strip mining operations.

V. CONCLUSION

The paradox of regulating strip mining to preserve the land is readily apparent. Yet, in the midst of the energy crisis, H.R. 6482 did not choose to resolve the conflict of priorities and basically left the conflict of energy and the environment in the private sector. However, the federal proposal attached a heavier price and responsibility to this private decision. The cost of compliance will be passed on to consumers. A federal act such as H.R. 6482 will succeed to the extent that it requires real reclamation of the land.

The effectiveness of the administering government agency in enforcing the regulations will largely depend upon their own perception of their role. If the priority becomes management of coal resources under the land, rather than positive protection of the land, reclamation will probably be reduced to a technique-oriented failure.

However, the private sanctions and emphasis on local participation proposed in H.R. 6482 are important safeguards in the ultimate reclamation of land. Essentially, they give the public a voice in the economic decision of the operator and the relationship between the operator and the government. If this voice is effective, a more desirable basis for the trade off between energy and land may evolve.



FOOTNOTES

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¹ In strip mining, output per man day is roughly 100% higher, average recovery is 60% higher, and operating costs 25–30% lower, than in underground mining. SENATE COMM. ON INTERIOR AND INSULAR AFFAIRS, 92d Cong., 1st Sess., *THE ISSUES RELATED TO SURFACE MINING* 1 (Comm. Print 1971).

² H.R. 7695, 92d Cong., 1st Sess. (1971). Introduced by Congressman Ken Hechler of West Virginia, this bill to abolish strip mining was co-sponsored by 88 members of the House of Representatives.

³ "While there are ample underground reserves, to produce the 264 million tons of surface coal mined last year (1970) would require 132 additional underground coal mines of 2 million tons annual capacity," according to Carl E. Bagge, President of National Coal Association. *Hearings on H.R. 60 and Related Bills Before the Subcomm. on Mines and Mining of the House Comm. on Interior and Insular Affairs*, 92d Cong., 1st Sess. 594 (1971). (Hereinafter referred to as the *House Hearings*.)

⁴ 163-Part II Cong. Rec. H9605 (daily ed. Oct. 11, 1972).

⁵ BUSINESS WEEK, Dec. 16, 1972, at 64.

⁶ Clean Air Amendments of 1970, 42 U.S.C.A. §1857 (Supp. 1971).

⁷ BUSINESS WEEK, Nov. 4, 1972, at 53.

⁸ *House Hearings*, *supra* note 3, at 375.

⁹ *Id.* at 583, 588, 593.

¹⁰ *Id.* at 342.

¹¹ 163-Part II Cong. Rec. H9610 (daily ed. Oct. 11, 1972). The bill passed 265-75.

¹² N.Y. Times, Oct. 15, 1972, §1, at 34, col. 3.

¹³ H.R. 6482 §2(b), (c), 92d Cong. 2d Sess. (1972). H.R. 6482 was introduced by Congressman Hays of Ohio on March 22, 1972. The bill was amended in the House Interior and Insular Affairs Committee and reported on September 28, 1972. (The amended version of H.R. 6482 will hereinafter be cited as H.R. 6482; the original version of H.R. 6482 will hereinafter be cited as H.R. 6482 (March 22, 1972).)

¹⁴ H.R. 6482 §4.

¹⁵ H.R. 6482 §§3(1), 15(1).

¹⁶ H.R. 6482 §34(f).

¹⁷ *See* text at note 43, *supra*.

¹⁸ H.R. 6482 §11(a).

¹⁹ H.R. 6482 §11(e).

²⁰ H.R. 6482 §8(f)(2).

²¹ H.R. 6482 §25(a).

²² H.R. 6482 §25(b).

²³ H.R. 6482 §25(b).

²⁴ H.R. 6482 §25(c).

²⁵ H.R. 6482 §32.

²⁶ H.R. 6482 §29.

²⁷ H.R. 6482 §30(c).

²⁸ H.R. 6482 §31.

²⁹ W. L. PROSSER, HANDBOOK OF TORTS, §35 (4th Ed.).

³⁰ H.R. 6482 §12(a).

³¹ H.R. 6482 §12(b).

³² H.R. 6482 §8(e).

³³ H.R. 6482 §11(d).

³⁴ H.R. 6482 §13(f).

³⁵ H.R. 6482 §13(h).

³⁶ H.R. 6482 §34(c).

³⁷ H.R. 6482 §34(c).

³⁸ S. 1498, 92d Cong., 1st Sess. (1971); H.R. 4456, 92d Cong., 1st Sess. (1971).

³⁹ H.R. 6482 (March 22, 1971), §5(a).

⁴⁰ *See* text at note 52, *supra*.

⁴¹ H.R. 6482 §8(a).

⁴² 30 U.S.C.A. §801 (Supp. 1972).

⁴³ 6482 §5(5). Alabama regulations governing strip mining do not allow a permit, once issued, to be revoked nor do the regulations prohibit the issuance of licenses to violators. 23 ALA. L. REV. 420, 434 (1970-1971). Also see this article for an interesting portrait of the role which the coal industry played in securing the passage of the Alabama law.

⁴⁴ H.R. 6482 §9(e).

⁴⁵ H.R. 6482 §9(f).

⁴⁶ H.R. 6482 §11(a).

⁴⁷ H.R. 6482 §11(a).

⁴⁸ *House Hearings*, *supra* note 3, at 102.

⁴⁹ PURDON'S PA. STAT. ANN. 52 §1396.4(c) (Supp. 1972-1973).

⁵⁰ IA. CODE ANN. 83A §23 (Supp. 1972).

⁵¹ N.MEX. STAT. ANN. 63-34-18 (Supp. 1972).

⁵² COMPTROLLER GENERAL OF THE UNITED STATES, ADMINISTRATION OF REGULATIONS FOR SURFACE EXPLORATION, MINING, AND RECLAMATION OF PUBLIC AND INDIAN COAL LANDS (1972). (Hereinafter cited as the GAO report.)

⁵³ *Id.* at 17.

⁵⁴ *Id.* at 18.

⁵⁵ *Id.* at 19.

The GAO study reports that when confronted by the Council of Environmental Quality's (CEQ) guidelines regarding the preparation of environmental impact statements, the BIA contended that the requirements were inapplicable to Indian Lands. A CEQ official said that, "The development of Indian lands should not be burdened with the preparation of environmental impact statements on coal exploration and mining activities." GAO report, *supra* note 52, at 30. However, mining activities in the Black Mesa area of Arizona accompanied by a coal company's (Peabody) reassurances to the Indians in official brochures and agreements that the land will be returned in "as good as condition as received, except for ordinary wear, tear, and depletion incident to mining activities," indicates otherwise. ISSUES RELATED TO STRIP MINING, *supra* note 1, at 175.

⁵⁶ Expenses for model projects indicate the average cost of reclamation is around \$1,000 per acre not including the segregation and replacement of topsoil. *House Hearings*, *supra* note 3, at 314-315.

⁵⁷ H.R. 6482 §34(a).

⁵⁸ ILL. SMITH-HURD ANN. STAT. 93 §208 (Supp. 1972).

⁵⁹ W. VA. CODE 20-6-16 (Supp. 1972).

⁶⁰ COL. REV. STAT. ANN. 92-13-8 (1969 Perm. Cum. Supp.).

⁶¹ CODE OF ALA. Tit. 26 §166(123) (Supp. 1971).

- ⁶² H.R. 6482 §8(d).
- ⁶³ PURDON'S PA. STAT. ANN. 52 §1396.4(a)(2)(J) (Supp. 1972-1973).
- ⁶⁴ PURDON'S PA. STAT. ANN. 52 §1396.4(a)(2)(J) (Supp. 1972-1973).
- ⁶⁵ H.R. 6482 (March 22, 1971) §9(f).
- ⁶⁶ H.R. 6482 §8(d).
- ⁶⁷ STANFORD RESEARCH INSTITUTE, A STUDY OF SURFACE COAL MINING IN WEST VIRGINIA, at 59 (Stanford Research Institute, 1972).
- ⁶⁸ PURDON'S PA. STAT. ANN. 52 §1396.4(g) (Supp. 1972-1973).
- ⁶⁹ H.R. 6482 §8(f)(1).
- ⁷⁰ H.R. 6482 §8(f)(1).
- ⁷¹ H.R. 6482 §8(f)(2).
- ⁷² H.R. 6482 §23.
- ⁷³ H.R. 6482 §8(f)(2).
- ⁷⁴ H.R. 6482 §8(f)(2).
- ⁷⁵ H.R. 6482 §23(d)(2).
- ⁷⁶ H.R. 6482 §8(f)(5).
- ⁷⁷ 30 U.S.C.A. §816(e).
- ⁷⁸ H.R. 6482 §11(e).
- ⁷⁹ 193 Cong. Rec. H12282-3 (daily ed. Dec. 10, 1971).
- ⁸⁰ *Id.*
- ⁸¹ *Id.*
- ⁸² U.S. ENVIRONMENTAL PROTECTION AGENCY, LEGAL PROBLEMS OF COAL MINE RECLAMATION, at 42 (U.S. Government Printing Office 1972). (Hereinafter cited as LEGAL PROBLEMS).
- ⁸³ *Id.*, at 39.
- ⁸⁴ H.R. 6482 §19.
- ⁸⁵ H.R. 6482 §18(c).
- ⁸⁶ *House Hearings, supra* note 3, at 590.
- ⁸⁷ APPALACHIA, February-March 1972, at 20.
- ⁸⁸ *Id.*
- ⁸⁹ H.R. 6482 §9(b).
- ⁹⁰ CODE OF VA. 1950 §45.1-199(e) (Supp. 1972).
For a discussion of this change, see 163-Part II Cong. Rec. H9607 (daily ed. Oct. 11, 1972).
- ⁹¹ W. VA. CODE 20-6-13 (Supp. 1972).
- ⁹² 163-Part II Cong. Rec. H9601 (daily ed. Oct. 11, 1972).
- ⁹³ *House Hearings, supra* note 3, at 376.
- ⁹⁴ *Id.*, at 506.
- ⁹⁵ NEWSWEEK, Oct. 9, 1972, at 80.
- ⁹⁶ H.R. 6482 §18(a)(1).
- ⁹⁷ ENVIRONMENTAL SCI. AND TECH., March 1972, at 213.
- ⁹⁸ LEGAL PROBLEMS, *supra* note 82, at 30.
- ⁹⁹ *Id.*, at 31.
- ¹⁰⁰ STANFORD RESEARCH INSTITUTE, *supra* note 67, at 56-57.

- ¹⁰¹ *Id.*
- ¹⁰² H.R. 6482 §10(c)(1).
- ¹⁰³ H.R. 6482 §10(c)(2).
- ¹⁰⁴ H.R. 6482 §9(b).
- ¹⁰⁵ Federal Water Pollution Control Amendments, 33 U.S.C.A. §1251 (Supp. 1973).
- ¹⁰⁶ Federal Water Pollution Control Amendments, 33 U.S.C.A. §1257 (Supp. 1973).
- ¹⁰⁷ Federal Water Pollution Control Amendments, 33 U.S.C.A. §1257 (Supp. 1973).
- ¹⁰⁸ W. VA. CODE 20-6-14(4) (Supp. 1972).
- ¹⁰⁹ W. VA. CODE 20-6-7 (Supp. 1972).
- ¹¹⁰ U.S. DEPT. OF THE INTERIOR, SURFACE MINING AND OUR ENVIRONMENT, at 63, (U.S. Government Printing Office 1967).
- ¹¹¹ H.R. 6482 §20(b).
- ¹¹² H.R. 6482 (March 22, 1972) §19(b)(1)(2).
- ¹¹³ STANFORD RESEARCH INSTITUTE, *supra* note 67, at 150.
- ¹¹⁴ H.R. 6482 §18(a)(3).
- ¹¹⁵ 64 OHIO J. SCI. 75 (1964).
- ¹¹⁶ KY. REV. STAT. ANN. §350.100(1) (Supp. 1971).
- ¹¹⁷ BURNS IND. STAT. ANN. §46.1521 (Supp. 1972).
- ¹¹⁸ H.R. 6482 §18(a)(3).
- ¹¹⁹ BURNS IND. STAT. ANN. §46.1521 (Supp. 1972).
- ¹²⁰ KY. REV. STAT. ANN. §350.100(1) (Supp. 1971).
- ¹²¹ H.R. 6482 (March 22, 1972) §17(a)(3).
- ¹²² KAN. STAT. ANN. §49-408(e)(3) (Supp. 1971).
- ¹²³ *House Hearings*, *supra* note 3, at 592.
- ¹²⁴ OKLA. STAT. ANN. 45 §725 (Supp. 1971-1972) (1 year). IA. CODE ANN. 83A §725 (Supp. 1972) (2 years) COL. REV. STAT. ANN. §92-13-6-(n)(i) (Perm. Cum. Supp. 1969) (3 years).
- ¹²⁵ H.R. 6482 §10(g).
- ¹²⁶ CODE OF ALA. Tit. 26 §166(117)(A) (Supp. 1971).
- ¹²⁷ H.R. 6482 §3(d).
- ¹²⁸ ENVIRONMENTAL SCI. AND TECH., Jan. 1972, at 29.
- ¹²⁹ TENN. CODE ANN. 58 §1529(3) (Supp. 1968).
- ¹³⁰ BALDWIN'S OHIO REV. CODE §1513.16(E) (Supp. 1970).
- ¹³¹ WYO. STAT. ANN. §30-96.6(d) (Supp. 1971).
- ¹³² OKLA. STAT. ANN. 45 §725 (Supp. 1971-1972).
- ¹³³ COL. REV. STAT. ANN. §92-13-5(n)(iii) (Perm. Cum. Supp. 1969).
- ¹³⁴ ANN. CODE OF MD. 66C §668 (Supp. 1970).
- ¹³⁵ BURNS IND. STAT. ANN. §46.1522 (Supp. 1972).
- ¹³⁶ ILL. SMITH-HURD STAT. ANN. 93 §208 (Supp. 1972).
- ¹³⁷ W. VA. CODE 20-6-10 (Supp. 1972).
- ¹³⁸ H.R. 6482 §18(a)(3).
- ¹³⁹ H.R. 6482 §18(b).

¹⁴⁰ H.R. 6482 §18(a)(2).

¹⁴¹ H.R. 6482 §18(a)(2).

¹⁴² ISSUES RELATED TO SURFACE MINING, *supra* note 1, at 93.

¹⁴³ *Id.*

¹⁴⁴ KAN. STAT. ANN. §49-408 (Supp. 1971).

¹⁴⁵ REV. CODE OF WASH. ANN. §78.44.090(1) (Supp. 1971).

¹⁴⁶ LEGAL PROBLEMS, *supra* note 82, at 49.

¹⁴⁷ H.R. 6482 §18(a)(4).

¹⁴⁸ CODE OF ALA. Tit. 26 §166(121)(2) (Supp. 1971) (2 feet). ILL.

SMITH-HURD ANN. STAT. 93 §206(c) (Supp. 1971) (4 feet).

¹⁴⁹ H.R. 6482 §34(a).

¹⁵⁰ H.R. 6482 §18(a)(3).

¹⁵¹ TENN. CODE ANN. 58 §1529 (Supp. 1968).

¹⁵² ILL. SMITH-HURD ANN. STAT. 93 §206(K) (Supp. 1971).

¹⁵³ 193 Cong. Rec. H12282-3 (daily ed. Dec. 10, 1971).

¹⁵⁴ *Id.*

¹⁵⁵ *Id.*

¹⁵⁶ ILL. SMITH-HURD ANN. STAT. 93 §205(g) (Supp. 1971).

¹⁵⁷ Rule 602, Chap. VI, RULES AND REGULATIONS PERTAINING TO THE SURFACE MINED LAND CONSERVATION AND RECLAMATION ACT, (Illinois Dept. of Mines and Minerals 1972).

¹⁵⁸ H.R. 6482 §10(a).

¹⁵⁹ *Freiberg v. South Side Elev. Ry. Co.*, 77 N.E. 920, 922, 221 Ill. 508 (1906); *Nat. Bank of Conn. v. Planning and Zoning Commission of Town of Trumbell*, 239 A.2d 528, 530, 156 Conn. 99 (1968).

¹⁶⁰ LEGAL PROBLEMS, *supra* note 82, at 118.

¹⁶¹ H.R. 6482 §10(a)(4).

¹⁶² GEN'L STAT. OF N.C. §74-51(b) (Supp. 1971).

¹⁶³ H.R. 6482 (March 22, 1972) §8(a).

¹⁶⁴ H.R. 6482 §7(a).

¹⁶⁵ BLACK'S LAW DICTIONARY (4th ed. rev. 1968).

¹⁶⁶ *Fox v. King*, 70 F. Supp. 721 (D. W. Va. 1947). "Irreparable injury does not mean that the injury is beyond the possibility of repair or beyond the possibility of compensation and damages, but it must be of such constant and frequent recurrence that no fair or reasonable redress can be had for the injury in a court of law," *Id.*, at 721.

¹⁶⁷ H.R. 6482 §34(a).

¹⁶⁸ H.R. 6482 §35(b).

¹⁶⁹ *Goldblatt v. Hempstead*, 369 U.S. 590 (1962). "The mere fact that a zoning ordinance depreciates the value of a complainant's property is not enough to establish its invalidity." *City of St. Paul v. Chicago St. P., M. & O. Ry. Co.*, 413 F.2d 762 (8th Cir. 1969); cert. denied, 396 U.S. 985 (1969).