Spring 1969

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Recommended Citation

Fred P. Bosselman, *The Control of Surface Mining: An Exercise in Creative Federalism*, 9 Nat. Resources J. 137 (1969).

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natural resources journal

Published four times a year by The University of New Mexico School of Law

VOL. 9

APRIL 1969

No. 2

THE CONTROL OF SURFACE MINING: AN EXERCISE IN CREATIVE FEDERALISM

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Economic and technological changes have impelled the mining industry toward increasing reliance on surface rather than underground mining as the most economical method of extracting minerals from the earth.¹ As surface mining has increased in complexity and scope, an inevitable consequence has been a massive rearrangement of the surface features of the land that is being mined.

It is indicative of the scorn for public relations shown by the mining industry of the pre-Ladybird era that the refuse dumped upon the earth in the process of surface mining has historically been known as "spoil," a term more commonly used to define plunder taken from an enemy in war. But today most mining executives, who cringe at both the engineering and public relations techniques of their predecessors, are now spending large sums to improve both their conservation practices and their euphemisms—yesterday's "spoil piles" have become today's "new land."²

To the public, however, the huge scars left on the landscape by past surface mining operations are more impressive than promises of future improvement.³ The result has been a loud and effective popular outcry for governmental regulation of the surface mining industry and its effect on the landscape.

The response to this outcry has been felt at all levels of government. The resulting contest, in which federal, state, and local

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1. In 1965 surface mining produced about four-fifths of all the solid fuels and ores in the nation. U.S. Dep't of the Interior, *Surface Mining and Our Environment* 42 (1967).

2. Seastrom, *New Land Orchards*, in *Proceedings, Pennsylvania State University Coal Mine Spoil Reclamation Symposium* 129, 130 (1965) [hereafter referred to as *Pennsylvania State Symposium*].

3. Reporter Ben A. Franklin recently described the industry's reclamation efforts as "pocket handkerchief parks on a broad badland of unreclaimed razorback ridges of strip mining spoilbanks. . . ." N.Y. Times, July 16, 1967, at F13, col. 1.

authorities each vie for position while the conservation groups and affected industries push and shove from the sidelines, is an interesting test of the ability of federalism to produce regulatory systems at three levels of government which neither duplicate each other nor leave gaping loopholes.

I

THE EFFECTS OF THE INDUSTRY ON THE ENVIRONMENT

Regulation of the surface mining industry can only be understood in the economic context of the surface mining industry as a whole, the benefits that it produces, and the harm that it causes.

The term "surface mining" refers to processes by which minerals are uncovered from the surface of the earth and then extracted. It is distinguished from "deep mining," in which a shaft is constructed to the mineral vein and the mineral is extracted through the shaft.⁴ Typically, the surface mining process begins with the use of heavy equipment to remove the overburden and allow access to the minerals. The equipment may range from a bulldozer used in a small sand and gravel operation to a mammoth shovel over fifteen stories high used to move 200 cubic yards of overburden at a bite in a large coal mine. When the overburden is removed, the minerals are extracted, usually by smaller mechanical equipment.⁵ In some cases blasting may be necessary.⁶ When the minerals have been extracted, the land consists of excavated areas plus piles or ridges of deposited overburden (spoil). If the mine is deep in relation to its surface area, the process may be called open pit mining or quarrying.⁷ In hilly areas surface mining is often conducted by the "contour method;" the overburden above the outcrop is removed and dumped

4. It is recognized, of course, that the distinction between surface and deep mining is one of degree. See Emery, *What Surface is Mineral and What Mineral is Surface*, 12 Okla. L. Rev. 499 (1959); Wiltsee, *A Proposed Interstate Mining Compact*, in Proceedings of the Ky. Dep't of Natural Resources Symposium on Strip Mine Reclamation 31, 35 (1965) [hereafter referred to as Kentucky Symposium]. Technological advances increasingly blur the distinction. For example, Kennecott Copper Company has proposed the use of an underground nuclear blast to mine low-grade copper ore. The blast would be set off 1,200 feet underground and is expected to create a pile of ore 440 feet high and 220 feet wide. Wall St. Journal (Midwest ed.), Oct. 12, 1967, at 5, col. 3.

5. U.S. Dep't of the Interior, *supra* note 2, at 37.

6. See Phelps, *Current Practices of Strip Mining Coal*, in Proceedings of Univ. of Ariz., College of Mines Symposium Surface Mining Practices 1, 5 (Krumlauf ed., 1960); Kochanowsky, *The Coal Stripping Operation*, Pennsylvania State Symposium 72, 76 (1965).

7. U.S. Dep't of the Interior, *supra* note 2, at 33. This is obviously an overgeneralized description of a highly complex process that has many variations. For a more detailed description of the various surface mining methods see U.S. Dep't of the Interior, *supra* note 2, at 30-37.

down the hill below the outcrop. The minerals are then removed, leaving a steep "highwall" and a flat "bench."⁸

Although surface mining is used to remove many types of minerals, its most common uses, and those which have created the greatest problems, are the mining of coal, sand, gravel and stone,⁹ and it is these industries that will receive primary consideration here.¹⁰ The extraction of other minerals by surface mining is usually on a localized basis, as in the case of phosphates,¹¹ iron¹² and copper.¹³ While these industries are subject to some of the same problems as the rest of the surface mining industry, this article will not deal with their special characteristics which may require individualized consideration.

All types of surface mining have a direct impact on the immediately surrounding area and also, in more indirect fashion, on larger areas. Surface mining's immediate effects may be classified into five categories: air pollution, water pollution, safety and health hazards, noise and vibration, and aesthetics.

8. The process is vividly described in Caudill, *An Offense Against America*, 68 Audubon 356 (Sept.-Oct., 1966).

9. U.S. Dep't of the Interior, *supra* note 1, at 110.

In the future the use of surface mining in the production of oil may be a substantial problem. Initial development of the Athabasca Sands in Alberta through surface mining is already underway. *See* Oil & Gas J., Oct. 23, 1967, at 69. *See also* Oil & Gas J., June 17, 1968, at 52; *Hearings on S.3132, S.3126 and S.217 Before the Senate Committee on Interior and Insular Affairs*, 90th Cong., 2nd Sess., at 56.

10. In some instances surface mining is also accompanied by certain industrial processes. Coal, sand and gravel are customarily washed and transferred to rail cars or trucks for shipment. In addition, the presence of these minerals may attract manufacturing processes dependent upon them such as brickmaking, cement manufacture and mine-mouth electrical generating plants. *See* A. Bauer, *Simultaneous Excavation and Rehabilitation of Sand and Gravel Sites* 16-24 (N.S.G.A., 1965). This article does not attempt to cover the additional problems created by manufacturing processes. Because it is generally held that the right to operate a surface mine does not necessarily carry with it the right to operate a processing plant, such uses may be regulated separately. *See* *Paramount Rock Co. v. County of San Diego*, 180 Cal. App. 2d 217, 4 Cal. Rptr. 317 (Dist. Ct. App., 1960); *Appeal of Mignatti*, 403 Pa. 144, 168 A.2d 567 (1961). *Cf.* *Hadacheck v. Sebastian*, 239 U.S. 394 (1915). *But see* *Silliman v. Falls City Stone Co.*, 305 S.W.2d 322 (Ky. Ct. App., 1957).

11. Of the 84,436 tons of phosphate mined in 1965 over 72,419 tons came from Florida. U.S. Dep't of the Interior, *supra* note 2, at 115. Phosphate spoils are rich in minerals and make good soil. Miller, *The Impact of Surface Mining on Land and Land Resources*, in *Surface Mining—Extent and Economic Importance*, Council of State Governments 20, 22 (1964). *Hearings on S.3132, S.3126 and S.217, supra* note 9, at 189-202, 222-63.

12. Iron mining is a particular feature of northern Minnesota, where in 1965 over half the iron ore was mined. U.S. Dep't of the Interior, *supra* note 2, at 116. *See* Zube, *A New Technology for Taconite Badlands*, *Landscape Architecture* 26 (Jan., 1966). *See Hearings on S.3132, S.3126 and S.217, supra* note 9, at 163-75, 263-75.

13. Over seventy per cent of the copper ore is mined in Arizona and Utah and almost ninety per cent from the five leading states. U.S. Dep't of the Interior, *supra* note 1, at 115.

The air pollution problems resulting from surface mining are caused by dust and other fine particulate matter generated by the mining process.¹⁴ These problems can result in an extremely disagreeable nuisance for residences and businesses in the immediate area;¹⁵ the pollution is localized, however, and amounts to no substantial proportion of the regional air pollution problem.¹⁶

In many parts of the country the mining industry is the primary cause of water pollution problems,¹⁷ and water pollution is often said to be the most serious of the problems caused by surface mining.¹⁸ Acid-water pollution typically results from the uncovering of materials which, when exposed to air or surface water, form acidic solutions of intensity sufficient to destroy fish life and create problems of odor and water purification.¹⁹ The control of acid-mine pollution is a technical problem that remains to be solved.²⁰

14. See generally Industrial Hygiene Foundation of America, Inc., *Evaluation of Dust and Noise Conditions at Typical Sand and Gravel Plants* (N.S.G.A., undated).

15. Consolidated Rock Products Co. v. City of Los Angeles, 57 Cal. 2d 515, 370 P.2d 342, 20 Cal. Rptr. 638, *appeal dismissed*, 371 U.S. 36 (1962). See Industrial Hygiene Foundation of America, Inc., *supra* note 13, at 19; City of San Diego Planning Dep't, *Planning for Sand and Gravel in San Diego* 40 (1966).

16. Surface mining does not ordinarily cause the type of chemical air pollution that affects property at substantial distances from the site or that constitutes severe hazards to health. Brooks, *Strip Mine Reclamation and Economic Analysis*, 6 Natural Resources J. 13, 23 (1966); U.S. Dep't of the Interior, *supra* note 1, at 56.

17. See, e.g., Bramble, *Reclamation of the Landscape*, in *Beauty for America*, Proceedings of the White House Conference on Natural Beauty 320 (1965); *Hearings Before a Special Subcomm. on Air and Water Pollution of the Senate Comm. on Public Works*, 89th Cong., 1st Sess., pt. 1, at 34 (May, 1965) [hereafter referred to as *Hearings on Air and Water Pollution*].

18. "Most problems associated with strip mining are either directly or indirectly related to water." Johnson, *Research in Strip-Mine Reclamation*, Kentucky Symposium 11, 16. An Interim Report by the Secretary of the Interior to the Appalachian Regional Commission, Study of Strip and Surface Mining in Appalachia 26 (June 30, 1966).

19. ". . . I was 12 years old before I learned that creeks flowed in some colors other than black or orange." Address by J. M. Quigley, Proceedings of the National Symposium on the Control of Coal Mine Drainage, Div. of Sanitary Eng'r, Bureau of Environmental Health, Pennsylvania Dep't of Health, Harrisburg, Pa. 8 (1962) [hereafter referred to as Symposium on the Control of Coal Mine Drainage]. See also Sanitary Water Board, Pa. Dep't of Health, *Control of Acid Drainage from Coal Mines* 11 (1958); Klingsmith, *Technical Aspects of Control of Drainage from Active Mines*, Symposium on the Control of Coal Mine Drainage 35-38. Note, however, the following comments: "It is sometimes suggested, uncharitably, that it would be better for the State's economy to supply at public expense a few pounds of fish for each sportsman than to shut down entirely coal stripping projects along a stream which was never of much account 'fishwise' in any event." Dixon, *Report of the Mineral Law Section*, 34 Pa. Bar Ass'n Q. 456, 458 (1963).

20. Environmental Pollution, a Challenge to Science and Technology, *Report of the Subcomm. on Science, Research and Development to the Comm. on Science and Astronautics* 29, U.S. House of Reps., 89th Cong., 2d Sess. (1966): "Millions of dollars have already been spent in abortive attempts to deal with the problem. . . . Mine drainage, whatever its effect on environmental quality, should not have funds spent on action programs until more palatable and sensible solutions can be devised." See Klashman,

The extent of acid-water pollution caused by mining is closely related to the type of minerals found in the soil. Many areas of the country are thus not affected by this problem because the overburden contains no significant amounts of acid-forming minerals.²¹ But even where such minerals are present, careful surface mining operations can often insure that they are buried in such a manner that they do not come into contact with air or water.²²

Much of the acid-water pollution problem is caused by abandoned mines in which acid-forming materials have been allowed to remain on the surface.²³ Some of these are abandoned surface mines, but a substantial portion of the acid pollution problem is also caused by abandoned shaft mines.²⁴

Sedimentation is another type of water pollution caused by certain types of surface mining.²⁵ Sedimentation resulting from surface mining is frequently the cause of flooding in downstream areas.²⁶ The methods of controlling sedimentation, frequently through water impoundment to allow settling, are usually easier than the control of acid-water pollution.²⁷

Improvement of Acid Polluted Streams by Water Resources Development, Symposium on the Control of Coal Mine Drainage 75; Sanitary Water Board, *supra* note 19; U.S. Bureau of Mines, *Mine Water Research: Neutralization* (Report of Investigations 6987, 1967); R. Meiners, *Strip Mining Legislation*, 3 Natural Resources J. 442, 462 (1964).

21. An Interim Report by the Secretary of the Interior to the Appalachian Regional Commission, *supra* note 18, at 23. See U.S. Fish and Wildlife Service, *Extent of Acid Mine Pollution in the United States Affecting Fish and Wildlife* (Fish and Wildlife Circ. 191, 1964). In some areas the pollution may be caused by caustic solutions rather than acidic. Klingesmith, *supra* note 19, at 37. Uranium mining wastes may create a danger of radioactive water pollution. See Federal Water Pollution Control Administration, *Disposition and Control of Uranium Mill Tailings in the Colorado River Basin* (March, 1966); *Hearings on S.2947 Before the Comm. on Public Works*, Federal Water Pollution Control Act Amendments and Clean River Restoration Act of 1966, 89th Cong., 2d Sess., pt. 1, at 15-18 (July 11, 1966).

22. Sanitary Water Board, *supra* note 19, at 14; Klingesmith, *supra* note 19, at 38; Smith, *Strip Mine Reclamation and Water Pollution*, Kentucky Symposium 1-2; Meiners, *supra* note 20, at 462.

23. Kentucky Dep't of Natural Resources, *Strip Mining in Kentucky* 47 (1965).

24. U.S. Dep't of the Interior *supra* note 1, at 63. See also *Hearings on Air and Water Pollution*, *supra* note 17, at 34, 35. In some cases strip mining operations succeed in sealing off abandoned shaft mines that had been causing acid pollution. Jones, *Coal for Today, Timber for Tomorrow*, The Northern Logger 1-2 (June, 1964).

25. An Interim Report by the Secretary of the Interior to the Appalachian Regional Commission, *supra* note 18, at 23-24. U.S. Dep't of the Interior, *supra* note 1, at 55.

26. H. M. Caudill, *Night Comes to the Cumberlands* 322-23 (1962).

27. See generally Kentucky Dep't of Natural Resources, *supra* note 23, at 44-47. See also Jones, *supra* note 24, at 3; G. D. Beal, *Common Fallacies About Acid Mine Water*, Sanitary Water Board, Pa. Dep't of Health 5-9 (1953); Federal Interdepartmental Task Force on the Potomac, *Potomac Interim Report to the President* 10 (Jan., 1966); 6 *Air/Water Pollution Report* 298 (1968).

In addition to polluting flowing water, surface mining often upsets the hydrologic

Safety and health hazards of various types frequently result from surface mining operations. Such operations are characterized by steep slopes and, in many cases, by deep pools of standing water, which constitute an attraction and a hazard for young children.²⁸ In hilly areas landslides are an everpresent danger for those who live in the valleys.²⁹

In agricultural areas farmers complain that grazing cattle often fall on the precipitous and unstable terrain of strip mining areas,³⁰ that the areas harbor foxes and other predators which prey on agricultural livestock,³¹ and that mosquitoes breed on the stagnant pools.³²

In addition, surface mining operations involve heavy equipment transporting large quantities of materials from the mine to market, spreading dust and debris, and increasing traffic hazards on roads and highways in the area.³³

The process of surface mining is inherently noisy; there is no quiet way of moving tons of earth and rock. The operation of surface mining equipment can typically be heard with annoying clarity at a distance of several hundred yards from the site,³⁴ and it is difficult to decrease the noise level except by increasing the distance between the listener and the source of the noise.³⁵

The blasting associated with quarrying operations may cause

environment by lowering the water table in surrounding areas. See H. D. Graham, *The Economics of Strip Coal Mining* 50 (Bureau of Economic and Business Research, Univ. of Ill., Bull. No. 66, 1948). But sometimes surface mining has beneficial hydrologic effects. U.S. Dep't of the Interior, *supra* note 1, at 64. *Hearings on S.3132, S.3126 and S.217, supra* note 9, at 315.

28. See Note, *Reclamation of Strip Mine Spoils*, 50 Ky. L.J. 524-536 (1962).

29. In Appalachia massive landslides have occurred on an estimated 1,400 mines of stripping contour. An Interim Report by the Secretary of the Interior to the Appalachian Regional Commission, *supra* note 18, at 22. U.S. Dep't of the Interior, *supra* note 1, at 24. Cf. Feiss, *Coal Mine Spoil Reclamation Scientific Planning for Regional Beauty and Prosperity*, Pennsylvania State Symposium 12, 21.

30. *Hearings on S.3132, S.3126 and S.217, supra* note 9, at 77.

31. See, e.g., Graham, *supra* note 27, at 50-51.

32. See City of San Diego Planning Dep't, *supra* note 15, at 41. But see Graham, *supra* note 27, at 70.

33. K. L. Schellie & D. A. Rogier, *Site Utilization and Rehabilitation Practices for Sand and Gravel Operations* 9 (N.S.G.A., 1963).

The safety of mine laborers themselves has historically been treated in a separate manner through a system of existing regulation which seems to have been unaffected by, and to cause no effects on, the other types of regulation herein discussed. In general, strip mining entails less risk for mine employees than underground mining. Graham, *supra* note 27, at 20; Feiss, *Surface Mining—Minerals, Metals and Divots*, in *Surface Mining—Extent and Economic Importance*, Council of State Governments 2, 6 (1964); Testimony of E. R. Phelps, *Hearings on S.3132, S.3126 and S.217, supra* note 9, at 124.

34. City of San Diego Planning Dep't, *supra* note 15, at 39.

35. See Industrial Hygiene Foundation, *supra* note 14, at 22. But see City of San Diego Planning Dep't, *supra* note 15, at 39.

annoying vibrations for a substantial distance, although the extent of actual harm resulting from blasting is a matter of frequent contention.³⁶

Perhaps the most serious but least tangible effect of surface mining is in the amorphous area of aesthetics. It is generally agreed that an 80-foot high pile of gray rubble rising from the flat countryside like the tunnel of some monstrous mole is aesthetically undesirable.³⁷ Nor can an aesthetic case be made for the denuding of mountains and the destruction of scenic valleys by the gashes of contour mines.³⁸ Disagreement arises, however, when an attempt is made to determine the extent to which the aesthetic disadvantages of surface mining should be weighed as an important factor in determining where its location should be permitted.³⁹ The current public mood indicates, however, that aesthetics will be a strong factor in regulatory decisions, perhaps to a greater degree than would have been anticipated by unemotional cost-benefit analysis.

Surface mining also affects the economy of the nation in a more indirect fashion. To the extent that strip mining leaves land in an unusable condition, it reduces the total available supply of land for productive uses. With the booming population growth of the nation, the existing supply of land in the urbanized regions of the country is proving inadequate to handle all of the uses which society deems desirable.⁴⁰ To the extent that surface mining is carried on in such areas, it reduces the supply of land available for other uses.

In agricultural areas, also, the amount of high quality arable land is a finite quantity; to the extent that such land is withdrawn

36. Phelps, *supra* note 6. City of San Diego Planning Dep't, *supra* note 15, at 40.

37. "Vegetation of any kind is an improvement over no vegetation." McQuilkin, *Reclamation for Aesthetics*, Pennsylvania State Symposium 97, 100.

"Personal interviews brought from several people the statement that strip mining is 'downright wicked'." Graham, *supra* note 27, at 43.

See also Faltermayer, *How to Wage War on Ugliness*, *Fortune*, May, 1966, at 130, 132.

38. The Pennsylvania Power & Light Company has expended its own funds to screen spoil piles from highways because it believed prospective industries were repulsed by the general appearance of the area. Davis, *Mine-Spoil Revegetation Research in Pennsylvania—A Story of Cooperation in Action*, Symposium on the Control of Coal Mine Drainage 58, 65-66.

"... strip mining on steep, mountainous terrain is wholly inconsistent with the preservation of natural beauty and the natural balance of life." Caudill, *supra* note 8, at 359.

39. See Brooks, *supra* note 16, at 24-25. Compare Hon. R. Ottinger, *Reclamation of the Landscape*, in *Beauty for America*, Proceedings of the White House Conference on Natural Beauty 332 (May 24-25, 1965) with S. M. Colby, *Reclamation of the Landscape*, *id.* at 343.

40. "[U]rban land is scarce, costly and getting scarcer and more costly every day." D. O'Harrow, *The Urban Future* 5 (N.S.G.A., 1962).

for surface mining and not reclaimed for agricultural use it brings closer the day when such land will be in short supply.⁴¹

In addition, extensive surface mining can have a catastrophic impact on the tax base of individual counties by creating derelict, non-taxpaying land that makes it difficult for the county to meet its obligations.⁴²

II PRESSURE POINTS

Successful regulation depends upon the application of just the right amount of pressure at the right time and place to alleviate the industry's impact on the environment. There are three crucial points at which regulatory pressure can be applied to the surface mining industry: (1) at the time of selecting the mining sites, (2) at the time of choosing the method of operating the mine, and (3) at the time of picking the method of reclaiming the land.

A. Selecting the Site

The selection of a site is the initial step in the surface mining process and a crucial one. The indispensable prerequisite, of course, is the presence of minerals of a quality and quantity to justify their extraction, and under feasible conditions of depth, geology, drainage, etc.⁴³ The suitability of the land for other purposes also affects the selection of sites for surface mining. If, because of its location, land is valuable for urban uses, it becomes less feasible to use the land for surface mining.⁴⁴ A third factor of great importance is the proximity of markets and methods of transportation, because transportation costs are very significant elements in the total de-

41. See E. Higbee, *The Squeeze: Cities Without Space* 168 (1960); J. Gottmann, *Megalopolis* 261-63, 321-22 (1961); Brown, *The World Outlook For Conventional Agriculture*, 158 *Science* 604 (Nov. 3, 1967). G. F. Deasy & P. R. Griess, *An Approach to the Problem of Coal Strip Mine Reclamation*, 33 *Mineral Industries* 1, 6 (Oct., 1963); Brooks, *supra* note 16, at 19; Graham, *supra* note 27, at 43; Ehrlich, *The Coming Famine*, 77 *Natural History* 6 (May, 1968).

42. See Note, *Reclamation of Strip Mine Spoils*, 50 *Ky. L.J.* 524, 532 (1962); Caudill, *Paradise Is Stripped*, N.Y. Times, March 13, 1966 (magazine) at 26, 83; Graham, *supra* note 27, at 57-61. *Hearings on S.3132, S.3126 and S.217*, *supra* note 9, at 284-86; 113 Cong. Rec. A5976 (daily ed. Dec. 5, 1967).

43. O'Harrow, *supra* note 40, at 8.

44. In some cases deep mining methods can be used to extract minerals while preserving the surface of the land for other uses, but in many other cases valuable minerals remain in the ground because the value of the surface of the land makes it uneconomic to extract them. See, e.g., Colorado Sand and Gravel Producers Ass'n, *First Complete Aerial Photo Map of Denver Metropolitan Area With an Outline of our Diminishing Gravel Resources* (1957).

livered price of the extracted minerals.⁴⁵ The nuisance aspects of surface mining must also be considered in determining mining locations; the more densely populated the area around the mine the more people will be affected by noise and dust.⁴⁶

Ideally, site selection should be regulated to insure the optimal location of mining sites on the basis of a comprehensive plan taking all these factors into consideration.⁴⁷ In practice, however, to the extent there is any public control over site selection it is usually motivated by everybody's desire to keep the mine out of their area. Increasingly, however, regional planners are becoming aware of the need for regulation both to preserve valuable mineral resources as well as to control the nuisance aspects of surface mining, and some preliminary attempts are being made to regulate land use in such a way as to maintain the accessibility of mineral resources.⁴⁸

B. Choosing the Mode of Operation

Many of the harmful effects of surface mining can be controlled by regulating the way in which the mine is operated, particularly if the regulation can be imposed before equipment is purchased and operations begun.⁴⁹ For example, the noise of heavy equipment can be somewhat alleviated through the choice of proper equipment and through the planning of excavation timing to create sound barriers using the spoil material;⁵⁰ properly planned burial of acid-forming materials can prevent water pollution;⁵¹ proper location and fencing of pits can alleviate safety hazards,⁵² and even better forms of regulation might be devised if ingenuity were applied at an early stage.

At this time, however, regulation of operating methods is prac-

45. See Bauer, *supra* note 10, 14-15.

46. Ironically, however, current zoning practices are designed to put more people in the vicinity of nuisances by encouraging apartments in those areas which are not deemed suitable for single-family housing. *Muhly v. County Council*, 218 Md. 543, 147 A.2d 735 (1959). See R. Babcock & F. Bosselman, *Suburban Zoning and the Apartment Boom*, 111 U. Pa. L. Rev. 1040, 1060-61 (1963).

47. O'Harrow, *supra* note 40, at 10-11.

48. See e.g., W. Harrison, A Special Report on the Geology of Marion County, Indiana (1958); K. Rainey, *A Regional Approach to Planning and Development Is Necessary to the Solution of the Problems of the Coal Regions*, Pa. State Symposium 7; Address by G. Allen, Annual Convention of the National Sand and Gravel Ass'n, Feb. 7, 1962.

49. See generally, C. Johnson, Practical Operating Procedures for Progressive Rehabilitation of Sand and Gravel Sites (1966).

50. Industrial Hygiene Foundation, *supra* note 14, at 22.

51. Sanitary Water Board, *supra* note 19, at 14; Klingsmith, *supra* note 19, at 38; R. Smith, *Strip Mine Reclamation and Water Pollution*, Ky. Symposium 1-2.

52. See Colo. Rev. Stat. Ann. § 92-10-1 (1960).

ticed only to a very limited extent, and in relatively primitive fashion. In fact, the operations of most mines are unregulated except for state safety regulations designed for the protection of mine labor.⁵³

C. *Determining the Reuse of the Land*

Reclamation is a term rather loosely used to cover a wide variety of methods of improving the condition of the residual material that remains after minerals have been extracted by the surface mining process. In its strictest sense reclamation can mean the careful grading of the land and replacement of the topsoil in such a manner that one would not be aware that any mining had taken place.⁵⁴ Unfortunately, however, the term's coinage has been devalued by operators who throw a few grains of annual rye at a pile of gray slag and then depart alleging that they have "reclaimed" the land. As Senator Nelson described it, some reclamation "is really a kind of a green lie. When you look at it closely it is crabgrass and quack grass and brush. . . ."⁵⁵

Reclamation varies greatly depending on the future reuse that is planned for the reclaimed land. In most cases, the reclamation process involves two operations. The first is grading: ordinarily, surface mining of level land leaves the land in a series of steeply sloped ridges plus one or more long, narrow bodies of impounded water.⁵⁶ Even the most rudimentary reclamation usually requires some degree of leveling of the sharp tops of the ridges in order to obtain access to the area by vehicles or animals.⁵⁷ In many cases any growth of vegetation and retention of soil is impossible without intensive grading and terracing to reduce soil erosion.⁵⁸ Of course

53. See Va. Code Ann. §§ 45.1-34 to -101.

54. "[T]he ultimate objective should be to restore them [the mined lands] to a use similar to that of the lands contiguous to them." An Interim Report by the Secretary of the Interior to the Appalachian Regional Commission, *supra* note 18, at 46. Compare testimony of Secretary Udall at *Hearings on S.3132, S.3126 and S.217*, *supra* note 9, at 49.

See also J. Cunningham, *The Pennsylvania Strip Mine Reclamation Program*, Ky. Symposium 21, 22. In fact the displaced overburden swells and can never be leveled quite to the original grade. Phelps, *supra* note 6, at 9.

55. *Hearings on S.3132, S.3126 and S.217*, *supra* note 9, at 43. U.S. Dep't of the Interior, *supra* note 1, at 42, 74.

See also An Interim Report by the Secretary of the Interior to the Appalachian Regional Commission, *supra* note 18, at 26-29, 32.

56. U.S. Dep't of the Interior, *supra* note 1, at 34-35.

57. Deasy & Greiss, *supra* note 41, at 4. In the national survey conducted by the Department of the Interior only 24% of the sampled sites had received any grading at all. U.S. Dep't of the Interior, *supra* note 1, at 76.

58. P. Struthers, *Rapid Spoil Weathering and Soil Genesis*, Pa. State Symposium 86, 88.

if crops are to be grown, land must be leveled sufficiently to allow agricultural equipment to be operated.⁵⁹

Where hilly or mountainous land is mined using the contour technique, the result is long sinuous slashes winding around the sides of hills and valleys.⁶⁰ The highwall rises at a steep gradient above the ruined area, which may contain impounded water, while below lies a landslide-prone slope of tree stumps and mud.⁶¹ In such areas reclamation grading requires the restoration of something approaching the original slope, a much more difficult operation than on flat land.⁶²

The second part of the reclamation process is the establishment of vegetation.⁶³ In the typical surface mining operation the topsoil, being removed first, is dumped on the bottom of a pile, which is subsequently covered by subsoil and then by large quantities of rock and minerals.⁶⁴ This bare rubble will not ordinarily support plant life until many years of weathering produces a new and rudimentary form of soil,⁶⁵ and if acid-forming minerals are contained in the rock it may never be possible to establish vegetation.⁶⁶

The extent to which it is physically possible to establish vegetation depends on a number of factors. If during the original excavation the topsoil and subsoil are retained separately and spread back over the rock when the mining is completed, the growth of vege-

59. The Department of the Interior survey found only 5% of the sampled sites had been graded to the degree necessary for agricultural equipment. U.S. Dep't of the Interior, *supra* note 1, at 76.

If the land is not to be used for row crops, complete leveling may be undesirable because it causes greater soil compaction. See Graham, *supra* note 27, at 68-70; L. Sawyer, *The Strippers*, Landscape Architecture 21, 22 (Jan., 1966); L. Sawyer, *Restoration of Areas Affected By Coal Mining*, Symposium on the Control of Coal Mine Drainage 52, 56; D. Hall, *Strip Mine Reclamation Under the 1964 Act (Western Ky.)*, Ky. Symposium 9, 10.

60. See note 8, *supra*. About one-half of the surface-mined coal is extracted by the contour methods. U.S. Dept. of the Interior, *supra* note 1, at 54.

61. Miller, *supra* note 11, at 21; An Interim Report by the Secretary of the Interior to the Appalachian Regional Commission, *supra* note 18, at 22.

62. H. Pyles, *Reclamation of the Landscape*, in *Beauty for America*, Proceedings of the White House Conference on Natural Beauty 317 (May 24-25, 1965); Bauer, *supra* note 10, at 33; Caudill, *supra* note 42, at 84; Feiss, *supra* note 29, at 18.

63. See generally, Schellie & Rogier, *supra* note 33, at 41-74.

64. Graham, *supra* note 27, at 19 G. Limstrom & G. Deitschman, *Reclaiming Illinois Strip Coal Lands by Forest Planting* 208, Univ. of Ill. Agricultural Experiment Station Bull. 547 (1951); G. Limstrom, *Forestation of Strip-Mined Land in the Central States* 3, Agriculture Handbook No. 166 (U.S.D.A., 1960).

65. L. Sawyer, *The Strippers*, Landscape Architecture 21, 22 (Jan., 1966).

66. In the national survey conducted by the Department of the Interior 48% of the examined spoil banks were too acid to grow good vegetation. U.S. Dep't of the Interior, *supra* note 1, at 56. See Davis *supra* note 38, at 61; An Interim Report by the Secretary of the Interior to the Appalachian Regional Commission, *supra* note 18, at 28.

tation becomes much more feasible.⁶⁷ Other artificial methods, such as hydraulic seeding, may also be used to promote the growth of vegetation.⁶⁸ Where the grades are steep, it is difficult to establish vegetation before it erodes away.⁶⁹ Perhaps of primary importance is the condition of the soil in the area to be mined—stoniness and acidity are deterrents to plant growth.⁷⁰

Regardless of external conditions, however, it is uniformly true that the earlier in the mining process that reclamation plans are made, the more feasible reclamation becomes, while on land that has already been mined by primitive methods reclamation is much more difficult.⁷¹

There are a number of beneficial uses which may be made of reclaimed land. Perhaps the most valuable is to make the land available for the growing of crops. While there have been occasional experiments in which mined land has been made to produce reasonable quantities of corn and other grains,⁷² the economics of this type of reclamation is probably advantageous only in special situations.⁷³ More generally feasible is the reclamation of land for the growth of less demanding crops such as alfalfa;⁷⁴ reclaimed land has also

67. See C. Crompton, *The Restoration of Waste Slate Heaps*, 33 Town and Country Planning 344, 346 (Sept., 1965); City of San Diego Planning Dep't, *supra* note 15, at 49; E. Stearn, *Surface Mining's Conservation Program Pays Off*, Coal Mining and Processing (April, 1964).

68. J. Oxenham, *Reclaiming Derelict Land*, Faber and Faber Ltd., 24 Russell Square, London 115-16, 124, 137-40 (1966); Urban Land Institute, *New Engineering Concepts in Community Development*, 12 Technical Bull. 59 (1967).

69. G. Sullivan, Presentation Before the Illinois Mining Institute 9 (Springfield, Ill., Oct. 1963); An Interim Report by the Secretary of the Interior to the Appalachian Regional Commission, *supra* note 18 at 26-28. See also *supra* note 58.

70. Jones, *supra* note 24, at 1; M. Heddleson, E. Farrand & R. Ruble, Strip Mine Spoil Reclamation 11, 14 Pa. State Univ. College of Agriculture (undated); R. Krause, *Spoil Bank Goes From Waste to Fodder*, Coal Mining and Processing (May, 1964); Limstrom, *supra* note 64, at 3-12. Eastern Region, U.S. Forest Service, A Digest: Strip Mine Reclamation 2-5 (1962).

71. F. Griffith, M. Magnuson & R. Kimball, *Demonstration and Evaluation of Five Methods of Secondary Backfilling of Strip-Mine Areas* 16, Bureau of Mines Report of Investigations No. 6772 (1966); Miller, *supra* note 11, at 23; Johnson *supra* note 49, at 5.

See Pyles, *supra* note 62, at 318-19; Bauer, *supra* note 10, at 33; U.S. Dep't of the Interior, *supra* note 1, at 37.

72. See A. Grandt, *Reclamation for Pasture and Agricultural Crops*, Pa. State Symposium 124.

73. *Id.* at 128; R. Donley, *Some Observations on the Law of the Strip-Mining of Coal*, 11 Rocky Mt. Mineral Law Institute 123, 124, 126 (1966).

74. A. Grandt & A. Lang, *Reclaiming Illinois Strip Coal Land with Legumes and Grasses*, Univ. of Ill. Agricultural Experiment Station Bull. 628 (1958). Grandt, *supra* note 72, at 124.

been used for orchards, nurseries, and tree farms.⁷⁵ Still more common is the use of reclaimed land for the grazing of cattle, which requires less grading than is necessary for the growing of crops.⁷⁶

In many cases the most economical and useful method of reclamation is to convert the land to recreational use.⁷⁷ The man-made lakes can be used to support wildlife or for boating and swimming, while the rolling topography can be a natural asset for many purposes.⁷⁸ If the land is in proximity to urban areas, a wide variety of other uses may be considered.⁷⁹

III

THE EFFECT OF REGULATION ON INDUSTRY

The impact of these various forms of regulation—site selection, mode of operation, and reclamation—is felt in a variety of ways. While the “surface mining industry” may be thought of as a single industry in terms of its effect on the environment, it cannot be thought of as a single industry when considering the impact of regulation. The two major mined commodities, aggregates (sand, gravel, and stone) and coal, are affected by regulation in much different ways.

A. Aggregates

Sand, gravel, and crushed stone are the elements that form the primary ingredients of concrete, the major structural element of streets and highways and of most large buildings.⁸⁰ These minerals are sufficiently common to be relatively inexpensive, but because of their great weight the cost of transporting them constitutes a large segment of the total cost of concrete construction. The average

75. See W. Sturgill, *Strip Mine Reclamation Under the 1964 Act (Eastern Ky.)*, Ky. Symposium 4, 7. Grandt, *supra* note 72, at 130-31. Note, *Reclamation of Strip Mine Spoils*, 50 Ky. L.J. 524, 540 (1962).

76. See Phelps, *supra* note 6, at 8.

77. U.S. Dep't of the Interior, *supra* note 1, at 64.

78. See generally, National Sand and Gravel Ass'n, *Case Histories: Rehabilitation of Worked-out Sand and Gravel Deposits* (1961).

79. Schellie & Rogier, *supra* note 33, at 15-24. See also D. Laird, *The Potential Industrial Use of Abandoned Strip Mines in Allegheny County, Pa.* (unpublished thesis), Univ. of Ill., Dep't of City Planning (1961). The use of strip mine excavations to dispose of solid wastes offers an intriguing possibility of joint planning to solve two different problems. See *Strip Mining Heals Its Own Scars*, Business Week, Nov. 13, 1965, at 140, 146. Cf. U.S. Dep't of the Interior, *supra* note 1, at 52.

80. See State of Ill. Bd. of Economic Development, *Atlas of Illinois Resources*, § 2, Mineral Resources 24, 26 (1959); E. Davison, *Are the Sand and Gravel Reserves of the United States Adequate for Future Needs?* 1 N.S.G.A. (1965).

cost of sand and gravel runs only about \$1.16 per ton,⁸¹ but the average cost of moving it to construction sites is about 20¢ per ton-mile.⁸² Thus, if it had been necessary to move each of the 680,000,000 tons of sand and gravel used by the construction industry in 1966 just one more mile, the cost of construction through the nation would have increased by \$136,000,000.⁸³

It is apparent, therefore, that when sources of sand and gravel are removed greater distances from construction sites the increased costs are paid for by the public in the form of increased costs of public roads and buildings. The economic benefits of having supplies of sand and gravel close to urban areas constitute a substantial dollar amount which must be weighed in the balance against whatever injuries to the environment are caused by the sand and gravel industry.⁸⁴

Because of the key importance of site location to the sand and gravel producer, it is frequently economic for him to spend substantial sums to alleviate the nuisance characteristics of his operation rather than move to a more distant site.⁸⁵ Furthermore, if his site is located in an urbanizing area it often has a high potential value for other uses once the minerals are exhausted.⁸⁶ For these reasons the crucial regulatory decision for the sand, gravel, and stone producer is the grant or denial of permission to use a particular site. In exchange for such permission he may be willing to undertake substantial modifications in his operations and a large degree of land reclamation.⁸⁷

B. Coal

The other major product of surface mining, coal, occupies a much different economic position. Formerly the nation's most commonly

81. National Sand and Gravel Ass'n, *Production of Sand and Gravel in 1966*, at 5 (1967). The average price of crushed stone is \$1.42 per ton. *Hearings on S.3132, S.3126 and S.217*, *supra* note 9, at 149.

82. Letter from Vincent P. Ahearn, Jr., Assistant Managing Director, National Sand and Gravel Ass'n, to author, Aug. 28, 1967.

83. National Sand and Gravel Ass'n, *Production of Sand and Gravel in 1966*, at 4 (1967). *See also* City of San Diego Planning Dep't, *supra* note 15, at 18-21.

84. *See* Colorado Sand & Gravel Producers Ass'n, *First Complete Aerial Photo Map of Denver Metropolitan Area With an Outline of Our Diminishing Gravel Resources* (1957).

85. D. R. Jenson, *Selecting Land Use for Sand and Gravel Sites* (1967). *See also* Cong Rec. 214-15.

86. *See* Schellie & Rogier, *supra* note 33, at 15-24.

87. *See* State v. Local Control of Land Use, address by V. P. Ahearn, Jr., 49th Annual Convention of the National Sand and Gravel Ass'n, Feb. 25, 1964.

used fuel for heating and transportation purposes, coal has gradually been replaced by other fuels in a technological revolution that shows no sign of abating.⁸⁸ At present the major use of coal is as a low-cost, low-quality fuel in the generation of electric power and for other heavy industrial uses.⁸⁹ The past decade has seen a substantial reduction in the delivered cost of coal for power generation as the coal and railroad industries have fought to maintain their position in this highly competitive fuel market.⁹⁰ Even this price reduction, however, may not be sufficient as increasingly efficient nuclear power plants enhance their economic advantages at a faster rate than anyone had predicted. During the first half of 1967, plans were announced for 23 new electric generating plants to be powered by nuclear fuel.⁹¹ While coal expects to rebound, there is little question that the coal industry is in a dangerously competitive position in which it must cut its costs to the bone in order to remain alive.

The nation's coal reserves are extensive and widely distributed; a company seeking to open a new mine usually can find a number of alternative sites located in under-populated areas where permission to mine could not reasonably be refused.⁹² Thus control over site selection is not as crucial to the coal producer as to the producer of aggregates. To the extent, however, that government regulation increases the cost of mining through control over operations and reclamation it seriously weakens coal's ability to compete, and threatens the possibility of substantial economic dislocation in coal mining areas.⁹³ For this reason, the regulatory decision which is most crucial to the coal industry is the extent to which governmentally imposed requirements increase the cost of operations.

88. In 1920 coal produced 80.4% on a Btu basis of the total energy produced by mineral energy fuels and electricity from water and nuclear power. By 1965 coal's share had dropped to 27.8%. National Coal Ass'n, Bituminous Coal Data, 1966, at 91 (1967).

89. U.S. Bureau of Mines, 1-2 Minerals Yearbook, 1966, at 690 (1967).

90. Federal Power Comm'n, National Power Survey, pt. 1, at 59 (1964).

91. Press release issued by Chicago Operations Office, U.S. Atomic Energy Commission, July 13, 1967. See also W. Davis & F. Karlson, Nuclear Energy in the United States and Western Europe (October, 1967); Hogerton, *The Arrival of Nuclear Power*, Scientific American, Feb., 1968, at 21.

92. See U.S. Bureau of Mines, 2 Minerals Yearbook, 1965, at 44 (1967); Illinois Dep't of Mines and Minerals, 1966 Annual Coal, Oil and Gas Report 118; Illinois State Geological Survey, Strippable Coal Reserves of Illinois (1963). But see Federal Power Comm'n, National Power Survey, pt. 1, at 54 (1964).

93. To discourage strip mining also has the effect of encouraging deep mining, a much more hazardous occupation. Of the 250 fatal accidents to mine labor in 1965 only 19 occurred at surface mines. U.S. Bureau of Mines, 2 Minerals Yearbook, 1965, at 35 (1967). See Weiss, *supra* note 33, at 6. Cf. L. Mumford, *The Myth of the Machine: Technics and Human Development* 239-40 (1967).

C. Cost Impact

It is thus apparent that the differing economic positions of aggregates and coal also result in a completely different pattern of absorption of the cost of regulation. The demand for aggregates being relatively inflexible and unaffected by competing products, any increase in cost is borne by society in the form of increased costs of new construction.⁹⁴ Because the demand for coal is highly flexible, however, increases in the cost of coal are likely to result in switches to alternate fuel sources causing substantial decreases in the amount of coal mined.⁹⁵ Thus, an increase in the cost of surface mining of coal may have less direct impact on the consumer than an increase in the costs of surface mining of aggregates, but may cause much greater economic dislocation. All of these factors must be weighed in determining the overall impact of any regulation of surface mining.⁹⁶

Although the various mining industries are highly susceptible to injury from unwise regulation, they have not always paid adequate attention to their public image. Some leaders in the coal⁹⁷ and sand/gravel industries⁹⁸ have proclaimed the importance of "cleaning up" mining operations to prevent overreaction in the regulatory sphere, but it is questionable whether the industry as a whole has really responded.⁹⁹

94. See Land Management and the Extractive Industries, Address by J. A. Carver, Convention of the National Sand and Gravel Ass'n, Feb. 8, 1966.

95. But as David Brower put it, if the alternative to strip coal mining is Grand Canyon dams, the strip mines might be preferable. Brower, *Reclamation of the Landscape*, in *Beauty for America*, Proceedings of the White House Conference on Natural Beauty 350 (May 24-25, 1965). Cf. Sturgill, *supra* note 75, at 4.

96. See generally, Brooks, *supra* note 16. See also Brower, *supra* note 95.

97. In many instances reclamation of coal lands has been found to be profitable purely on an economic basis, i.e., the reclaimed land may be sold for a price exceeding the cost of reclamation. Irrespective of immediate dollars and cents, however, the many coal industry leaders have recognized the dangers inherent in an aroused public and are promoting reclamation as an important long range factor of their overall public relations program. See Mahoney, *The Industry and Regulatory Laws—Current and Future*, Pennsylvania State Symposium 44; Sullivan, *supra* note 29, at 8-9; A.B.A. Rep. of the Comm. on Coal, Section of Mineral and Natural Resources Law 4-7 (1963); *Strip Mining Heals Its Own Scars*, Business Week, Nov. 13, 1965, at 140.

98. See E. K. Davison, *Reclamation of the Landscape*, in *Beauty for America*, Proceedings of the White House Conference on Natural Beauty 330 (May 24-25, 1965). Because sand and gravel are usually excavated at shallower depths and often at locations in close proximity to urban areas, the reclamation of sand and gravel sites is often easier than the reclamation of coal mining land, and such property can frequently be reclaimed at a profit for a wide variety of uses. See Bauer, *supra* note 10, at 2-3; Jensen, *supra* note 85.

99. See the news report by R. A. Wright of the poorly attended session on public relations at the 1967 meeting of the American Mining Congress. N.Y. Times, Sept. 24, 1967, § F, at 17, col. 3. See also address by Assistant Secretary of Interior J. Cordell Moore, Kentucky Strip Mining Symposium, Owensboro, Kentucky, July 13, 1967: "Not

The inability of industry leaders to control the many operators has created substantial public pressure upon governmental agencies to exert greater control over the industry. This pressure has been felt at state, local, and federal levels, and there have been responses at each level.

IV

THE DIVISION OF REGULATORY POWER

A. State Regulation

State action in enforcing reclamation did not begin until 1939 when West Virginia passed a statute imposing nominal reclamation requirements.¹⁰⁰ During the late 40's and early 50's a number of other states passed surface mining legislation.¹⁰¹ Such state legislation was quite "mild" in nature, containing numerous exemptions,¹⁰² and was typically motivated by the industry's desire to convince local governments that something was being done about the surface mining problem, thus deterring them from the adoption of strict regulatory ordinances.¹⁰³ Overall, state reclamation legislation may have reduced rather than increased the total amount of reclamation undertaken because it may have successfully deterred many local governments from imposing their own reclamation requirements.¹⁰⁴

More recently, however, efforts have been made by conservation groups to strengthen the state legislation in almost every state in which surface mining is a substantial industry.¹⁰⁵ In some cases these

enough men who guide the destiny of the mining industry have been conservationists, and the conservation efforts of those mining industry leaders who do understand the problem have been insufficient"

100. W. Va. Acts 1939, ch. 84.

101. Law of May 31, 1945, Pa. Laws. 1198; Ohio Laws 1947, p. 730; Ky. Act. 1954, ch. 8 (For citations to statutes currently in effect see note 106, *infra*.)

Indiana passed a very limited act in 1941. Ind. Acts 1941, ch. 68. Illinois passed a law in 1943 which was subsequently held invalid. Ill. Laws 1943, Vol. 1, p. 912. Northern Ill. Coal Corp. v. Medill, 397 Ill. 98, 72 N.E.2d 844 (1947). Cf. Maryland Coal & Realty Co. v. Bureau of Mines, 193 Md. 627, 69 A.2d 471 (1949). Both Indiana and Illinois have now adopted new statutes. See note 106, *infra*. See generally Donley, *supra* note 73, at 153-68.

102. See Meiners, *supra* note 20, at 450, 455; *Report of the Mineral Law Section*, 34 Pa. Bar Ass'n Q. 456, 459 (1963); Deasy & Greiss, *supra* note 41, at 5; Caudill, *supra* note 26, at 316.

103. Harris-Walsh, Inc. v. Borough of Dickson City, 420 Pa. 259, 216 A.2d 329 (1966). See Ahearn, *supra* note 87, at 2; Address by S. J. Schulman, Empire State Sand, Gravel and Ready Mix Ass'n, Messena, New York, Sept. 21, 1962.

104. Cf. Caudill, *supra* note 42, at 84; *Hearings on S.3132, S.3126 and S.217*, *supra* note 9, at 204.

105. See Breathitt, *Strip Mining in Kentucky*, Kentucky Symposium 45. A.B.A. Rep. of the Comm. on Coal, Section of Mineral and Natural Resources Law 7 (1966). N.Y. Times, July 16, 1967, at 46, col. 3. Ade, *Strip Mining in Pennsylvania*, National Parks Magazine, March, 1967, at 15-17.

efforts have been successful in substantially toughening the reclamation requirements.¹⁰⁶

In addition to reclamation, the field of water pollution control is another one in which state agencies are the primary regulatory authorities. The federal Water Quality Act of 1965 delegated to the states the power to set and enforce standards of water quality with the Interior Department authorized to prod lagging states and mediate interstate disputes.¹⁰⁷ Mine-caused pollution is typically handled by a state agency with overall responsibility for water pollution control rather than being treated as a separate problem.¹⁰⁸

The legal power of the states to impose reasonable reclamation requirements has been upheld by the courts and now seems clearly established.¹⁰⁹ In the area of water pollution control the constitutional impediments to state control of interstate waters seem to have been overcome by the 1965 Act.¹¹⁰

B. Local Regulation

The selection of appropriate sites for surface mining activities and the control of mining operations are largely free from state or federal control, being traditionally handled on the local level.¹¹¹

A wide variety of forms of regulation are available to local governments. Well planned local regulation of the surface mining industry will have two goals: The primary goal is the protection of surrounding property from undue adverse effects from the surface mining process through control of site selection, and by regulation

106. See especially W. Va. Code Ann. §§ 20-6-1 to -32 (Supp. 1968).

The other currently effective strip mining regulatory statutes are: Ill. Rev. Stat. art. 93. §§ 180.1-15 (Supp. 1969); Ind. Stat. Ann. §§ 46-1501 to -1528 (Repl. 1965, Supp. 1968); Iowa Code Ann. §§ 83A.1-29 (Supp. 1969); Ky. Rev. Stat. §§ 350.010-.250 (1963, Supp. 1968); Md. Code Ann. art. 66C §§ 657-74 (Supp. 1968); Ohio Rev. Code §§ 1513.01-.27 (1966); Okla. Stat. Ann. tit. 45 §§ 701-13 (Supp. 1968); Pa. Stat. Ann. tit. 52 §§ 681.1-22, 1396.1-21 (1966, Supp. 1969); Tenn. Code Ann. §§ 58-1522 to -1539 (Repl. 1968); Va. Code Ann. §§ 45.1-162 to -179 (Repl. 1967, Supp. 1968).

The Council of State Governments is encouraging the adoption of an Interstate Mining Compact to promote the pooling of experience of state regulators. See Wiltsee, *supra* note 4, at 31; State Government News, June, 1966, at 1. The Compact has been enacted in Kentucky and Pennsylvania. Ky. Rev. Stat. §§ 350.300-.990 (Supp. 1968); Pa. Stat. Ann. tit. 52 §§ 3252-3257 (Supp. 1969).

107. 33 U.S.C. § 466g(c) (Supp. II, 1965-66).

108. U.S. Public Health Service, Suggested State Water Pollution Control Act (rev. ed., 1965), forms the basis for most state statutes. But see Pa. Stat. Ann. tit. 52 §§ 682-688 (1966, Supp. 1969). See generally, Carmichael, *Forty Years of Water Pollution Control in Wisconsin: A Case Study*, 1967 Wis. L. Rev. 350.

109. *Dufour v. Maize*, 358 Pa. 309, 56 A.2d 675 (1948), noted in 96 U. Pa. L. Rev. 703 (1948). See Note, *Reclamation of Strip Mine Spoils*, 50 Ky. L.J. 524, 545 (1962).

110. 33 U.S.C. § 466g(c) (Supp. II, 1965-66); see also 42 U.S.C. § 1962-1962d-11 (Supp. II, 1965-66).

111. See U.S. Dep't of the Interior, *supra* note 1, at 101-02.

of mining methods. The secondary goal is to insure that sites for extraction of sand, gravel and other necessary products are located within reasonable distance of construction sites in order to minimize construction costs.

Local regulation of surface mining usually raises constitutional questions relating to whether the regulation is so severe as to constitute a taking of private property without just compensation or in violation of due process of law. In the early cases the owner of land containing undeveloped minerals typically argued that these minerals were property owned by him, and that if the government prohibited their extraction it constituted a taking of his property without compensation.¹¹² As early as half a century ago, however, the United States Supreme Court adopted what was generally interpreted as a very permissive view toward regulation of surface mining,¹¹³ and as recently as 1964, in one of its extremely rare decisions in the field of land use control, the Court continued its benevolent attitude toward the regulation of surface mining by local governments.¹¹⁴ In general, it may be said that the regulation of surface mining is not unconstitutional *per se*. An ordinance which simply prohibits surface mining, however, while it may be upheld in a densely developed area, is unlikely to survive judicial scrutiny where the jurisdiction encompasses any substantial amount of rural or undeveloped area.¹¹⁵

112. *Village of Terrace Park v. Errett*, 12 F.2d 240 (6th Cir. 1926), *cert. denied*, 273 U.S. 710; *Ex parte Kelso*, 147 Cal. 609, 82 Pac. 241 (1905); This argument has been most effective when the mineral rights are held by a separate owner. See Michaelman, *Property, Utility, and Fairness: Comments On the Ethical Foundations of "Just Compensation" Law*, 80 Harv. L. Rev. 1165, 1193 (1967). Compare *United States v. Twin City Power Co.*, 350 U.S. 222 (1956), *reh. denied*, 350 U.S. 1009, *cert. denied*, 356 U.S. 918 (1958), with *United States v. Virginia Electric & Power Co.*, 365 U.S. 624 (1961).

113. *Hadacheck v. Sebastian*, 239 U.S. 394 (1915) (The regulation prohibited the operation of a brickmaking plant but permitted the mining of clay on the property.) Cf. *Commonwealth v. Tewksbury*, 11 Met. (52 Mass.) 55 (1846); *Hodges v. Perine*, 24 Hun. 516 (N.Y. Sup. Ct. 1881).

114. *Goldblatt v. Town of Hempstead*, 369 U.S. 590 (1962). See also *Consolidated Rock Products Co. v. City of Los Angeles*, 57 Cal.2d 515, 370 P.2d 342, 20 Cal. Rptr. 638 *appeal dismissed*, 361 U.S. 36 (1962).

115. The prohibition of surface mining in developed residential districts is commonly upheld. *Goldblatt v. Town of Hempstead*, 369 U.S. 590 (1962); *Madis v. Higginson*, 434 P.2d 705 (Colo. 1967); *Village of Spillertown v. Prewitt*, 21 Ill.2d 228, 171 N.E.2d 582 (1961); *Smith v. Juillerat*, 161 Ohio St. 424, 119 N.E.2d 611 (1954). But where counties or municipalities have attempted blanket prohibitions of surface mining regardless of the character of the area the courts have usually held the attempt invalid. *Exton Quarries, Inc. v. Zoning Bd. of Adjustment of West Whiteland Twp.*, 425 Pa. 43, 228 A.2d 169 (1967); *City of Warwick v. Del Bonis Sand & Gravel Co.*, 99 R.I. 537, 209 A.2d 227 (1965); *East Fairfield Coal Co. v. Booth*, 166 Ohio St. 379, 143 N.E.2d 309 (1957); *Midland Elec. Coal Corp. v. Knox County*, 1 Ill.2d 200, 115 N.E.2d 275 (1953).

A technique more sophisticated than simple prohibition is a "mining ordinance" specifically regulating the detailed methods of operation of the surface mining industry.¹¹⁶ Such ordinances raise the initial question of whether local governments have authority to regulate surface mining, either by statute or under a general grant of police power. It appears that the answer to this question will vary with the "home rule" philosophy of the particular jurisdiction.¹¹⁷

Another legal question raised by a mining ordinance is whether it conflicts with state regulation of such subjects as reclamation of mined land, mine safety practices which affect employees, and water pollution control. When local governments enact "similar" regulations a question is raised as to whether the state intended to preempt the field and prevent such regulation by local governments.¹¹⁸ The difficult factual question, of course, is to decide when local regulations are "similar" to state regulations.¹¹⁹ If the subject matter of the regulations is found to be "similar," but the local government is attempting to require compliance with a stricter standard than is required by the state legislation, the courts must construe the state statute to determine whether the state intended that local governments be permitted to exercise such power.¹²⁰

It has been suggested that local governments employ exactly the same standards for reclamation as the state government, merely adding their own enforcement powers to assist those of the state agency.¹²¹ Whether this is permissible depends on the language of

116. See, e.g., Torrance, Calif., Ordinance 1581, Mar. 2, 1965; County of San Mateo, Calif., Ordinance 1416, Sept. 6, 1960; Montgomery County, Md., Ordinance 4-114, Oct. 10, 1961.

117. See generally, 1 Antieau, *Municipal Corporation Law* ch. III (1965).

118. *Harris-Walsh, Inc. v. Borough of Dickson City*, 420 Pa. 259, 216 A.2d 329 (1966). See 6 McQuillin, *Municipal Corporations* 394-98 (3d ed., 1949); *Conflicts Between State Statutes and Municipal Ordinances*, 72 Harv. L. Rev. 737, 744-47 (1959).

119. *Cranberry Lake Quarry Co. v. Johnson*, 95 N.J. Super. 495, 231 A.2d 837, (1967) *cert. denied*, 50 N.J. 300, 234 A.2d 407. See Antieau, *supra* note 117, at 279-31; *Cf. In re Lane*, 58 Cal. 2d 99, 372 P.2d 897, 22 Cal. Rptr. 857 (1962), *noted in* 50 Calif. L. Rev. 740 (1962); Note, *Pre-emption By State Over Penal Ordinances*, 38 N.D.L. Rev. 509 (1962). Regardless of abstract rules of statutory construction, much depends on the form in which the local government casts its legislation. To the extent that local government phrases its legislation in a way that attempts to differentiate its subject matter from that of state legislation, its chances of court approval are increased.

120. Compare *Dep't of Licenses v. Weber*, 394 Pa. 466, 147 A.2d 326 (1959) with *Harris-Walsh, Inc. v. Borough of Dickson City*, 420 Pa. 259, 216 A.2d 329 (1966). See *Borough of Verona v. Shalit*, 96 N.J. Super. 20, 232 A.2d 431 (1967). Antieau, *supra* note 117, at 290; Note, *Conflicts Between State Statutes and Municipal Ordinances*, 72 Harv. L. Rev. 737, 748-49 (1959); Comment, *The State v. The City: A Study in Pre-emption*, 36 S. Cal. L. Rev. 430 (1963).

121. See Note, *Reclamation of Strip Mine Spoils*, 50 Ky. L.J. 524, 561 (1962).

the statute and the law of the particular jurisdiction.¹²²

The other common method of local control of surface mining is as part of a comprehensive zoning regulation. The advantage of using the zoning technique, as opposed to the mining ordinance, is that it eliminates any question as to the authority of the municipality to regulate surface mining, and reduces the possibility that the ordinance might be held to conflict with state regulations.¹²³ It also allows the municipality to use zoning's existing administrative procedures and precedents as a means of exercising control, and to take into consideration other aspects of overall planning which might be improper subjects of consideration in a mining ordinance.¹²⁴

Zoning has a number of disadvantages, however. It is severely restricted in its ability to regulate existing uses. While a municipality has been permitted to put an existing quarry out of business through a mining ordinance,¹²⁵ the courts have generally refused to allow zoning ordinances even to prevent the expansion of existing mining operations.¹²⁶

In most cases, however, the crucial legal question, whether a mining ordinance or a zoning ordinance is involved, is the reasonable-

122. See McQuillin, *supra* note 118, at 400-11; Antieau, *supra* note 117, at 286-87; Note, *Pre-emption By State Over Local Penal Ordinances*, 38 N.D.L. Rev. 509, 511-13 (1962).

123. Harris-Walsh, Inc. v. Borough of Dickson City, 420 Pa. 259, —, 216 A.2d 329, 336 (1966) (concurring opinion). See generally, Long v. City of Fort Worth, 333 S.W.2d 644 (Tex. Civ. App. 1960); Brady v. Board of Appeals of Westport, 348 Mass. 515, 204 N.E.2d 513 (1965).

In some states the zoning power may be restricted by special state legislation. See E. Solberg, *Suggestions for Planning and Zoning in Appalachia*, Economic Research Service, U.S.D.A. 9-11 (1967).

124. See Bologno v. O'Connell, 7 N.Y.2d 155, 164 N.E.2d 389, 196 N.Y.S.2d 90 (1959).

125. Goldblatt v. Town of Hempstead, 369 U.S. 590 (1962). Cf. Plymouth Coal Co. v. Pennsylvania, 232 U.S. 531 (1914); Miller v. Schoene, 276 U.S. 272 (1928).

126. Gibbons & Reed Co. v. North Salt Lake City, 19 Utah 2d 329, 431 P.2d 559 (1967); Fredal v. Forster, 9 Mich. App. 215, 156 N.W.2d 606 (1967); County of DuPage v. Gary-Wheaton Bank, 42 Ill. App. 2d 299, 192 N.E.2d 311 (1963); County of DuPage v. Elmhurst-Chicago Stone Co., 18 Ill.2d 479, 165 N.E.2d 310 (1960); Town of Wayland v. Lee, 331 Mass. 550, 120 N.E.2d 641 (1954); Hawkins v. Talbot, 243 Minn. 549, 80 N.W.2d 863 (1957); Moore v. Bridgewater Twp., 69 N.J. Super. 1, 173 A.2d 430 (1961); Town of Somers v. Camarco, 308 N.Y. 537, 127 N.E.2d 327 (1955).

Contra, Town of Billerica v. Quinn, 320 Mass. 687, 71 N.E.2d 235 (1947) (presumably overruled).

But see Bither v. Baker Rock Crushing Co., 438 P.2d 988 (Ore., 1968); Town of Waterford v. Grabner, 155 Conn. 431, 232 A.2d 481 (1967); Teuscher v. Zoning Bd. of Appeals, 154 Conn. 650, 228 A.2d 518 (1967); Davis v. Miller, 163 Ohio St. 91, 126 N.E.2d 49 (1955) (may not be extended to lot across highway); Dolomite Products Co. v. Kipers, 23 App. Div. 2d 339, 260 N.Y.S.2d 918 (1965), *aff'd*, 19 N.Y.2d 739, 225 N.E.2d 894, 279 N.Y.S.2d 19 (may not be extended to tract across railway).

See generally 2 Anderson, *American Law of Zoning* 413-16 (1968); Annot., 10 A.L.R.3d 1226, 1272-80 (1966).

ness of the ordinance as applied to the particular facts of the case. The courts have found some ordinances reasonable¹²⁷ and others not.¹²⁸ While there is some indication that a court will look more closely at the reasonableness of a specific application of a zoning regulation than of a regulation designed to promote public safety,¹²⁹ the cases do not indicate that this is typically the controlling factor.

To summarize, if (a) control of existing uses is especially important, (b) the question of reasonableness is likely to be acute, and (c) the local government has statutory or "home rule" author-

127. *Goldblatt v. Town of Hempstead*, 369 U.S. 590 (1962); *Consolidated Rock Products Co. v. City of Los Angeles*, 57 Cal.2d 515, 370 P.2d 342, 20 Cal. Rptr. 638, *appeal dismissed*, 371 U.S. 36 (1962); *Calve Brothers Co. v. City of Norwalk*, 143 Conn. 609, 124 A.2d 881 (1956); *Abramson v. Zoning Bd. of Appeals*, 143 Conn. 211, 120 A.2d 827 (1956); *LaSalle Nat'l Bank v. County of Cook*, 60 Ill. App. 2d 39, 208 N.E.2d 430 (1965); *Village of Spillertown v. Prewitt* 21 Ill.2d 228, 171 N.E.2d 582 (1961); *Tankersley v. County Bd. of Appeals*, 230 Md. 379, 187 A.2d 302 (1963); *Town of Lexington v. Simeone*, 334 Mass. 127, 134 N.E.2d 123 (1956); *Raimondo v. Board of Appeals*, 331 Mass. 228, 118 N.E.2d 67 (1954); *Butler v. Town of East Bridgewater*, 330 Mass. 33, 110 N.E.2d 922 (1953); *Town of Seekonk v. John J. McHale & Sons, Inc.*, 325 Mass. 271, 90 N.E.2d 325 (1950); *Town of Burlington v. Dunn*, 318 Mass. 216, 61 N.E.2d 243, *cert. denied*, 326 U.S. 739 (1945); *Township of Bloomfield v. Beardslee*, 349 Mich. 296, 84 N.W.2d 537 (1957); *Wolster v. Borough of Upper Saddle River*, 41 N.J. Super. 199, 124 A.2d 323 (1956); *L. P. Marron & Co. v. Township of Mahwah*, 39 N.J. 74, 187 A.2d 593 (1963); *Fred v. Mayor & Council of Borough of Old Tappan*, 10 N.J. 515, 92 A.2d 473 (1952); *New York Trap Rock Corp. v. Town of Clarkstown*, 1 App. Div. 2d 890, 149 N.Y.S.2d 290 (1956), *aff'd*, 3 N.Y.2d 844, 144 N.E.2d 725, 166 N.Y.S.2d 82; *rehearing denied*, 3 N.Y.2d 938, 146 N.E.2d 188, 168 N.Y.S.2d 6 (1957); *appeal dismissed*, 356 U.S. 582 (1958); *Incorporated Village of Upper Brookville v. Faraco*, 282 App. Div. 943, 125 N.Y.S.2d (1953); *Bernhard v. Caso*, 19 N.Y.2d 192, 225 N.E.2d 521, 278 N.Y.S.2d 818 (1967); *Leichter v. Barrett*, 208 Misc. 577, 144 N.Y.S.2d 309 (1955); *Village of Willoughby Hills v. Medred*, 27 Ohio Op. 2d 154, 189 N.E.2d 164 (1961), *appeal dismissed*, 173 Ohio St. 378, 182 N.E.2d 317 (1962); *Miesz v. Village of Mayfield Heights*, 29 Ohio App. 471, 111 N.E.2d 20 (1952); *Smith v. Juillerat*, 161 Ohio St. 424, 119 N.E.2d 611 (1954).

128. *Gibbons & Reed Co. v. North Salt Lake City*, 19 Utah 2d 329, 431 P.2d 559 (1967); *Town of Stow v. Marinelli*, 352 Mass. 738, 227 N.E.2d 708 (1967); *Herman v. Village of Hillside*, 15 Ill.2d 396, 155 N.E.2d 47 (1958); *Midland Electric Coal Corp. v. Knox County*, 1 Ill.2d 200, 115 N.E.2d 275 (1953); *Certain-Teed Products Corp. v. Paris Twp.*, 351 Mich. 434, 88 N.W.2d 705 (1958); *Buckley v. City of Bloomfield Hills*, 343 Mich. 83, 72 N.W.2d 210 (1955); *Cleveland Builders Supply Co. v. City of Garfield Heights*, 102 Ohio App. 69, 136 N.E.2d 105 (1956); *East Fairfield Coal Co. v. Booth*, 166 Ohio St. 379, 143 N.E.2d 309 (1957); *Exton Quarries, Inc. v. Zoning Bd. of Adjustment* 425 Pa. 43, 228 A.2d 169 (1967); *City of Warwick v. Del Bonis Sand & Gravel Co.*, 99 R.I. 537, 209 A.2d 227 (1965); *Town of Caledonia v. Racine Limestone Co.*, 266 Wis. 275, 63 N.W.2d 697 (1954).

129. *See Bulk Petroleum Corp. v. City of Chicago*, 18 Ill. 2d 383, 164 N.E.2d 42 (1960).

The classic experience is that of the Village of Hempstead, N.Y. Its attempt to use a zoning ordinance to control the operations of a quarry was held invalid by the New York Supreme Court. *Town of Hempstead v. Goldblatt*, 19 Misc. 2d 176, 189 N.Y.S.2d 577 (1959). But it was subsequently successful in forcing the complete cessation of operations at the quarry through a separate mining ordinance. *Goldblatt v. Town of Hempstead*, 369 U.S. 590 (1962). See 1 Anderson, *American Law of Zoning* 470-71 (1968).

ity to enact an ordinance created specifically to control the mining industry, the local government may be on safer ground with such a separate mining ordinance. But where preemption may be a problem and comprehensive planning factors may be highly important, then zoning may be the preferred method.¹³⁰

When zoning is used to regulate surface mining a number of different techniques may be employed. The two most common methods of controlling site selection are through the use of a special district for surface mining activities¹³¹ and through the use of the special exception or special use permit for surface mines.¹³²

The nuisance problems of mining operations can be regulated through the use of performance standards designed to control all industrial processes including surface mines;¹³³ additional specific limitations may be applied to surface mines regulating, *e.g.*, the hours that machinery may be operated, the fencing of dangerous areas, etc.¹³⁴

The secondary goal of surface mining regulation—the use of zoning to preserve land for surface mining use—is a relatively new phenomenon for which there is little direct precedent. The most direct way of accomplishing such a result would be “exclusive zon-

130. Zoning can also be used in combination with a mining ordinance. *Cf., e.g.*, *City of Hillsdale v. Hillsdale Iron & Metal Co.*, 358 Mich. 377, 100 N.W.2d 467 (1960).

131. *Kozesnik v. Township of Montgomery*, 29 N.J. 584, 151 A.2d 537 (1959); earlier opinion: 24 N.J. 154, 131 A.2d 1 (1957); related case: *DePew v. Township of Hillsborough*, 31 N.J. 157, 155 A.2d 766 (1959); Address by Schulman, *supra* note 103, at 9.

For examples of zoning ordinances regulating surface mining by special districts, see *City of San Diego Planning Dep't* *supra* note 15, at 63-71. Marion County, Indiana, Gravel-Sand-Borrow District Ordinance, Feb. 8, 1966. City of Los Angeles, California, Zoning Code § 13.03 (1966).

132. For examples of zoning ordinances regulating surface mining by special permit see *Town of Orangetown, N.Y.*, Zoning Ordinance § 4.32(c) (1966); *County of Henrico, Va.*, Zoning Ordinance §§ 7.24, 11.21, 12.21, 13.21, 14.23, 17.8 (1966); E. Miller, *Penn Township—An Example of Local Governmental Control of Strip Mining in Pennsylvania*, *Economic Geography* 256 (July, 1952). See generally J. McCarty & G. Duggar, *Local Regulation of Excavations, Grading and Quarrying in California* 6-8, Bureau of Public Administration, Univ. of Calif. (1956).

133. See generally R. Garrabaut, *Performance Standards for Industrial Zoning: An Appraisal*, 15 *Urban Land* No. 6, at 1 (June, 1956); National Research Council of Canada, *Annotated Bibliography: Performance Standards for Space and Site Planning for Residential Development* (1961).

134. See *Los Angeles County, California*, Zoning Ordinance § 275 (1966); *County of Santa Clara, California*, Planning Commission Resolution No. 6178 (1961); B. Sanders, *Zoning for Urban Pits and Quarries*, 24 *Tennessee Planner* 115, 121 (1965); Bauer, *supra* note 10, at 28; Ahearn, *Land Use Planning and the Sand and Gravel Producer* 20-24 (N.S.G.A., 1964).

ing" of particular areas in which surface mining and no other intensive use would be permitted.¹³⁵

As a practical matter the preservation of land for surface mining uses is often achieved by zoning land exclusively for industrial uses in an area in excess of that immediately demanded by industry.¹³⁶ If economically productive mineral deposits are located in such an area and if industrial development is slow, these deposits will remain available for a considerable period.

Another method of reserving mining sites is to permit residential development in mineral resource areas but to reduce allowable densities to rural levels.¹³⁷ This would amount to a program of development timing in which low density residential uses would be permitted until such time as development of the sand and gravel deposits becomes economically feasible.¹³⁸

As this sampling indicates, modern zoning is a highly flexible regulatory method offering a considerable variety of zoning techniques for control over the selection of mining sites and the methods of mining operations.

C. Federal Regulation

Federal regulation of strip mining has historically been minimal. As the owner of extensive lands the federal government has certain rights to control mining operations on those lands, but has only recently begun to exercise them.¹³⁹ Only about 3%, however, of

135. See Ahearn, *supra* note 87, at 4; City of San Diego Planning Dep't, *supra* note 15, at 63-71.

Consideration might also be given to the formation of a Soil Conservation District to adopt regulations to protect mineral resources. See Note, *Reclamation of Strip Mine Spoils*, 50 Ky. L.J. 524, 564 (1962); J. Beuscher, *Land Use Controls—Cases and Materials* 399 (3d. ed., 1964); U.S. Dep't of the Interior, *supra* note 2, at 78; Brooks, *supra* note 16, at 34.

136. See *Gruber v. Mayor & Twp. Comm.*, 39 N.J. 1, 186 A.2d 489 (1962); *Camboni's Inc. v. County of DuPage*, 26 Ill.2d 427, 187 N.E.2d 212 (1962); *People ex rel. Skokie Town House Builders v. Village of Morton Grove*, 16 Ill.2d 183, 157 N.E.2d 33 (1959); *State ex rel. Berndt v. Iten*, 259 Minn. 77, 106 N.W.2d 366 (1960); *Lamb v. City of Monroe*, 358 Mich. 136, 99 N.W.2d 56 (1959).

137. See Urban Land Institute, *The Effects of Large Lot Size on Residential Development* (Technical Bull. 32, 1958).

138. See generally H. Fagin, *Regulating the Timing of Urban Development*, 20 Law & Contemp. Prob. 298 (1955); J. Reys, *The Zoning of Undeveloped Areas*, 3 Syracuse L. Rev. 292 (1952).

139. 31 Fed. Reg. 6834 (1966). For a history of federal regulation of mining on federal lands see J. Howerton, 1967—*A Critical Year for Mined Land Reclamation Regulation*, 1 Natural Resources Lawyer, No. 4, at 70 (Oct. 1968). See also F. Barry, *Federal and State Regulation and the Legislative Picture*, Pennsylvania State Symposium 35, 36. Address by Hon. Wayne Aspinall, 1967 Metal Mining and Industrial Minerals Convention, American Mining Congress, Denver, Colo., Sept. 10, 1967, at 6-10 (mimeo. ed.). See generally Meiners, *supra* note 20, at 459-61.

the land being surface mined is under federal ownership.¹⁴⁰ The federal government has also affected site selection on federal lands to a degree.¹⁴¹ The Tennessee Valley Authority, as the nation's largest consumer of coal, has recently instituted the practice of obtaining contractual requirements from its suppliers that certain reclamation practices be instituted,¹⁴² and some land has been reclaimed under the "Appalachia" program.¹⁴³ In the main, however, the federal government has affected only the fringes of the surface mining industry.

Pursuant to Congressional direction in 1965 the Department of the Interior conducted an extensive investigation of strip mining, first in the Appalachian states¹⁴⁴ and then in the nation at large.¹⁴⁵ As a result, the Department of the Interior proposed new federal legislation which would increase the federal funds available for the reclamation of derelict mined land and polluted waters, but which would impose only nominal regulatory requirements on future mining except in those states which have not adopted their own mining regulations.¹⁴⁶ Senator Lausche of Ohio, who was for years an adamant foe of irresponsible surface mining, had also sponsored a bill which would enact the substance of the Interior Department's recommendations into law,¹⁴⁷ and hearings were held in the Spring of 1968.¹⁴⁸ Whether or not the federal legislation passes, it appears likely that no substantial change will be instituted in the current

140. U.S. Dep't of the Interior, *supra* note 1, at 78.

141. *See generally* Mineral Leasing Act, 30 U.S.C. § 181 (1927). *Cf.* Comment, *North Cascades National Park: Copper Mining v. Conservation*, 157 Science 1021 (Sept. 1, 1967).

142. *See* A. Wagner, *The Tennessee Valley Authority*, Kentucky Symposium 23. Tennessee Valley Authority, *An Appraisal of Coal Strip Mining* (1963). *Compare* Caudill, *supra* note 26, at 318-21.

143. *Hearings on H.R. 14921 Before a Subcomm. of the Senate Comm. on Appropriations*, 89th Cong., 2d Sess. 191 (1966).

144. An Interim Report by the Secretary of the Interior to the Appalachian Regional Commission, *supra* note 18.

145. U.S. Dep't of the Interior, *supra* note 1.

146. The bill is S.524 in the 91st Congress, which is identical to S.3132 in the 90th Congress. *See* 115 Cong. Rec. 654 (daily ed. Jan. 22, 1969).

See also The President's Council on Recreation and Natural Beauty, *From Sea to Shining Sea* 138-41 (1968); U.S. Dep't of the Interior, *supra* note 1, at 90. The Interior Department proposes to require the state legislation to comply with certain federal standards, but would not give federal authorities control of actual enforcement or administration. *See* Address by Assistant Secretary J. Cordell Moore, Kentucky Strip Mining Symposium, Owensboro, Ky., July 13, 1967, at 7 (mimeo ed.).

Action by the federal government has been slowed by the typical squabbling between various federal agencies seeking jurisdiction over any surface mining program. *See Hearings on S.3132, S.3126 and S.218, supra* note 9, at 43-58, 94-95.

147. S. 217, 90th Cong., 1st Sess. (1967).

148. *Hearings on S.3121, S.3126 and S.217, supra* note 9.

practices. The primary responsibility for regulation of surface mining will remain with the state and local governments.

V

WHAT HAS FEDERALISM CREATED?

We are currently witness to "creative federalism" in the process of creation. In response to the stimulus of increased public pressure for control over the surface mining industry, the federalistic governmental process is creating regulatory power and dividing it among the various units of government through some Darwinian process that, magically, seems likely to result in a reasonably rational pattern of governmental control over surface mining. While, in general, the prognosis is favorable, there are at least two gaps that appear in the current pattern of regulation:

1. *More thorough consideration should be given to the future use of mined land.* The present state reclamation statutes typically provide that the mine operator files with the state conservation department a plan of reclamation showing a proposed reuse of the land after the mining is completed.¹⁴⁹ The future use of the land is then negotiated between the operator¹⁵⁰ and the state conservation agency without any consultation with the local government or with any other state agency. The mine operator is interested in saving money. All too often the state conservationist is primarily interested in getting some sort of quick cover on those embarrassing piles of rubble. The result has been a tendency toward immediate planting of cheap grass or seedling trees on the bare rock so that the operator and the state agency could transfer those acres to the column titled "undergoing reclamation." The long range results, however, are shown by the recent survey by the Department of the Interior—only 15% of the sampled sites were adequately covered by vegetation to provide protection for the sites.¹⁵¹

Reclamation should involve a longer range and much more comprehensive look at the land. Such a careful evaluation will often

149. See, e.g., Ky. Rev. Stat. § 350.090 (1966); Ohio Rev. Code § 1513.16(F) (1968). The ability to pre-plan depends on the extent to which the location of the minerals is pinpointed prior to excavation. This varies with the extent of test-bore drilling and with geological conditions. See *Hearings on S.3121, S.3126 and S.217*, *supra* note 9, at 258.

150. In many cases the problem of the future reuse of the land is complicated by the fact that the operator is not the owner of the land. See U.S. Dep't of the Interior, *supra* note 1, at 103.

151. U.S. Dep't of the Interior, *supra* note 1, at 56.

improve the final result. For example, in some instances a delay permitting land to settle and weather before planting might improve the land's prospect of ultimate rehabilitation.¹⁵² In other cases consideration should be given to using a tract of land for crops or orchards rather than, as state conservation agencies are likely to favor, game preserves and recreation areas.¹⁵³ Advice might be obtained regarding other uses which, with a slight increase in time and investment, might greatly increase the value of the land to the operator.¹⁵⁴ Those sites which can be seen from areas used by the public—60% of the Interior Department's sample¹⁵⁵—might be accorded different treatment than isolated areas.¹⁵⁶ These and many other factors could be considered if a team of conservationists, land planners, agronomists, resource economists, landscape architects and other professionals were given adequate time and budget to plan the reuse of the land on a long range basis.¹⁵⁷

The local governments should also be consulted. At present the interests of the local governments are being neglected in the decision-making regarding the reuse of mined land. In many cases whole counties have been impoverished by the creation of vast derelict acreage.¹⁵⁸ If the land is not returned to productive, tax-paying use the remaining landowners in the jurisdiction must bear a highly inequitable burden of taxation to maintain local services.

The control of land use has traditionally been the province of local government. While state participation is necessary to insure that each local government doesn't insist that each spoil pile be turned into an industrial park, there is no excuse for denying local governments any voice whatsoever in the future use of large tracts of private land within their jurisdiction.

In summary, the long-range interests of the state are best served if the state conservation agency does not assume the sole burden of regulating the future use of mined land. While the professional expertise of conservationists is essential to the supervision of the reclamation process, the conservationist is not the only expert in the reuse of land. This power might best be given to a committee

152. See Sawyer, *supra* note 59, at 22. But see Davis, *supra* note 38, at 61.

153. See, e.g., J. Roseberry & W. Klimstra, *Recreational Activities on Illinois Strip-Mined Lands*, 19 J. of Soil & Water Conservation 107 (1964).

154. See generally The Kentucky Dep't of Natural Resources, *supra* note 23, at 55; Schellie & Rogier, *supra* note 33, at 15-24; Laird, *supra* note 79.

155. U.S. Dep't of the Interior, *supra* note 1, at 52.

156. See Faltermayer, *supra* note 37, at 132; McQuilkin, *supra* note 37, at 104.

157. Deasy & Greiss, *supra* note 41, at 6.

158. See note 42, *supra*.

appointed by the state planning agency, the conservation agency, and the local governments, assisted by a competent staff representing a number of professions. More thorough study by such a staff would greatly increase the likelihood that the long-range rehabilitation of the land would be productive.

2. *The state should exercise more control over the selection of mining sites.* Whereas local government has too little to say about the reuse of mined land, it has too much to say about whether land should be mined in the first place. This is particularly true in metropolitan areas. As urban development spreads farther and farther out into the countryside surrounding metropolitan areas the deposits of sand, gravel, and other low value minerals become covered by urban uses, and the sources of such minerals are pushed farther and farther away from urban centers, thus increasing costs for the construction of roads, buildings, and public improvements.¹⁵⁹ But each local government tends to look to the others to solve the problem. Each wants the cheap concrete but not the mine. So each local government "zones out" the available deposits of sand and gravel and encourages their permanent interment under residential subdivisions and shopping centers.

Responsible regulation of surface mining should not permit its extinction. Responsible regulation should not only control the harmful effects of surface mining but should conserve the availability of mineral resources.¹⁶⁰ This function must be assumed by the state because the parochial nature of local governments decreases the likelihood of any one of them voluntarily accommodating an unpopular strip mine needed to serve the larger area.

To accomplish effective state conservation of mineral resources requires, first, a comprehensive survey of the state's mineral resources to determine their location and amount.¹⁶¹ Second, the state must enact legislation authorizing the creation of conservation zones similar to those now employed in Hawaii.¹⁶² Within such zones the land could not be devoted to intensive use until the underlying mineral resources had been extracted.¹⁶³

Hawaii, with its high density of population and shortage of land is thus far the only state that has sufficiently appreciated the need

159. See notes 81-84, *supra*.

160. Sanders, *supra* note 134, at 116; See U.S. Dep't of the Interior, *supra* note 1, at 102.

161. See, e.g., State of Ill., Bd. of Economic Development, *supra* note 80.

162. See Hawaii Rev. Laws § 98.11-2 (1965).

163. Cf. Sanders, *supra* note 134, at 119; Ahearn, *supra* note 87, at 4; J. Dunn & J. Broughton, *A Mineral Conservation Ethic for New York State*, State Government, Summer, 1965, p. 191.

for conserving its land resources to adopt such legislation. But as population continues to increase it will become more and more apparent, at least in our more populous states, that some form of state legislation for the conservation of privately owned land resources is essential. The sooner this realization becomes translated into law the sooner we will be able to halt the indiscriminate burial of valuable mineral resources, and the spiralling costs that ensue.