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Structuring a Reclamation Program for Aboandonded Noncoal Mines

Paul Stokstad

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Structuring A Reclamation Program
For Abandoned Noncoal Mines*

Paul Stokstad**

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INTRODUCTION

Tens, perhaps hundreds, of thousands of abandoned noncoal mines—no one knows for sure how many—are scattered across the western United States. They cause many safety and environmental hazards: every year people are injured or killed when they wander into tunnels or fall down shafts; acidic drainage, which contaminates streams and groundwater with heavy metals, is a less visible, but in the long-term perhaps more serious, problem.

Existing laws have failed to provide a workable solution for cleaning up these mines. While a national program to clean up abandoned coal mines has existed for two decades, the cleanup of abandoned noncoal mines—for the most part metal, or “hardrock,” mines—has been haphazard and insufficient. Superfund, for example, has provided a mechanism for cleaning up a handful of the worst noncoal mines, and three states have been able to use extra money from the federal coal mining program to clean up their abandoned noncoal mines. A few other states have begun reclamation efforts on their own. But for the vast majority of abandoned noncoal mines nothing is being done.

In recent years Congress has come close to remedying this problem. Three years ago, in an effort to reform hardrock mining practices, Congress came close to passing several bills that would have improved environmental controls, imposed royalties on hardrock mining operations, and created reclamation programs for abandoned noncoal mines. The abandoned mine provisions were the least controversial part of these and other more recent bills, as there is broad consensus that a reclamation program for noncoal mines is seriously needed. The debate about abandoned mine cleanup has focused on how much such a program will cost and who will pay. There has been
little discussion, however, about exactly what shape an abandoned noncoal mine reclamation program should take.¹

This lack of attention is unfortunate. Structuring the most effective program possible is crucial because of the serious environmental problems abandoned mines cause, as well as the large amount of money at stake. The Federal Government has spent more than three billion dollars to clean up abandoned coal mines, making coal mine reclamation one of the larger public works programs of the last two decades.² A cleanup program for abandoned noncoal mines is likely to carry an equally hefty price tag.

While agreement exists as to the need for an abandoned noncoal mine cleanup program, there is little consensus on the form such a program should take. Recent reform bills, for example, have differed on such issues as whether the Federal Government or state governments should have primary responsibility for cleanup; how strictly the Federal Government should enforce priorities about which mines get cleaned up first; whether the program should clean up mines only on federal land, or on state and private lands as well; how cleanup money should be allocated among states; whether an inventory of abandoned mines should be conducted; and whether remining of abandoned sites should be encouraged.

This Comment will focus on these issues. Part I describes the abandoned noncoal mine problem. Part II evaluates the successes and shortcomings of the reclamation program for abandoned coal mines, as many of the lessons learned from that program are applicable to noncoal mine reclamation. Part III first relates the history of recent noncoal mining reform efforts in order to show that Congress is likely to revisit the abandoned mine issue in coming years; it then describes the range of structural alternatives that have been proposed in recent bills. Finally, Part IV suggests how the various structural choices should be resolved.

¹. See, e.g., WESTERN GOVERNORS' ASSOCIATION, INACTIVE AND ABANDONED NONCOAL MINES: A SCOPING STUDY 118 (1991) [hereinafter WGA REPORT] ("Once the funding issue is resolved, then other issues must be dealt with, such as: allocation of monies in an [inactive and abandoned mine] fund; project funding priorities; and administration of a new [inactive and abandoned mine] remediation program. These ancillary issues are not examined in this report.").

². See Office of Surface Mining (OSM) (visited Feb. 12, 1998) <http://www.osmre.gov/zovervw.htm> [hereinafter OSM Web-Page]. Publications often refer to the Office of Surface Mining Reclamation and Enforcement as either the “OSM” or the “OSMRE.”
I
DESCRIPTION OF THE ABANDONED NONCOAL MINE PROBLEM

After a century and a half of mining, the American West is littered with abandoned noncoal mine sites. While miners and environmentalists disagree about the exact dimensions of the abandoned mine problem, there is no question that abandoned mines pose serious safety hazards, health risks, and environmental problems. Remediation of these abandoned noncoal mines will cost billions of dollars. Although a few federal and state programs exist, their scope and funding are inadequate to solve this critical—and expensive—safety and environmental problem.

A. Number and Location of Mines

Information on abandoned noncoal mines is incomplete. There exists no master map or database of their locations or of the problems that they cause. Many sites remain unsurveyed. Some may not yet have been found. There is not even a definitive inventory of abandoned sites on federal land. What information is known has been


4. The phrase "remediating abandoned noncoal mines" raises at least three definitional issues. First, fine distinctions are sometimes drawn among the terms "remediation," "reclamation," "mitigation," and "cleanup." This paper will use these words in a general sense.

Second, some studies refer to both "inactive" and "abandoned" mines without distinguishing the terms. See, e.g., WGA REPORT, supra note 1. The distinction is potentially important because all recent bills have forbidden the expenditure of reclamation funds on mines for which someone has continuing reclamation responsibility, which may be the case with inactive mines that are not abandoned. See infra section III.B.3. No study, however, has assessed how many mines are inactive but not abandoned. This Comment will therefore use the term "abandoned" even when referring to the results of studies that considered both abandoned and inactive mines.

Finally, studies refer, often interchangeably, to "hardrock" and "noncoal" mines. The two terms are not identical. "Hardrock" is the narrower term, referring to the minerals, primarily metals, subject to disposition under the 1872 Mining Act. 30 U.S.C. §§ 21-54 (1996). The term "noncoal" is somewhat broader, as it includes minerals, such as phosphates, that the Mining Act does not include. Neither term encompasses oil and gas. This Comment will use the term "noncoal."

5. "All . . . studies agree on one thing—the extent of the noncoal [inactive and abandoned mine] problem, including the nationwide number of sites and what type of safety/environmental hazards are present at each, is not well known." STATUS REPORT, supra note 3, at 3.


7. See U.S. GENERAL ACCOUNTING OFFICE, FEDERAL LAND MANAGEMENT—INFORMATION ON EFFORTS TO INVENTORY ABANDONED HARD ROCK MINES, GAO/RCED-96-30 (1996) [hereinafter INVENTORY EFFORTS]. However, the Bureau of Land Management (BLM), the National Park Service (NPS), the Fish and Wildlife Service, and the For-
collected piecemeal by states. Data from different states, however, are not comparable because states use different definitions of abandoned mines and different methods for collecting data.  

Most states, moreover, have not undertaken field research, making their inventories less reliable. This often results in an underestimation of the number of sites needing reclamation.

Nevertheless, the total number of abandoned mines is clearly vast. The Mineral Policy Center (MPC), a non-profit organization dedicated to the reform of the 1872 Mining Act, has made the only attempt to combine all the disparate pieces of data into a single number. The MPC estimates that there are about 363,150 unreclaimed abandoned noncoal mines across thirty-two states that pose a threat to human health or the environment. While this number is probably an upper limit, there is no question that there are at least tens of thousands, and likely hundreds of thousands, of abandoned mine sites.

These mines vary greatly—in size, location, mineral type, mining method used, and type and severity of hazard—but some generalizations are possible. There are many more small abandoned mines that need minor work than large ones that need major work. Most of the abandoned noncoal mines are metal mines located in the West, where most hardrock mining occurred. The problem is not solely a Western one, however; almost all states have at least a few abandoned

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See Inventory Efforts, supra note 7, at 7; see Status Report, supra note 3, at 2-4. Studies have differed in terms of what features they count as a single mine site. At the U.S. Bureau of Mines, for example, "[a]n abandoned mine with several features, such as adits, shafts, surface workings, a mill and tailings pond, is recorded as a single mineral location. Conversely, states frequently count each feature separately . . . ." Deborah J Shields et al., Distribution of Abandoned and Inactive Mines on National Forest System Lands 2, U.S. Forest Service General Technical Report RM-GTR-260 (April 1995).

See Status Report, supra note 3, at 3, fig. 2. Only two states have completed detailed site assessments through field reconnaissance. See id. Some states have listed their confidence level in their inventories as being as low as 10%. See id. at 7.

See Lyon et al., supra note 6, at 6. This figure represents the MPC's total estimate of 557,650 sites, see id. at 4, less the estimated 194,000 sites "which are believed to pose no safety hazards or threats to water quality." See id. at 29.

The MPC estimates that there are 231,000 sites that will require landscaping or revegetating, 116,300 that pose safety hazards, 14,400 that are contaminating surface water, 500 that are contaminating groundwater, and 50 that are Superfund sites. See id. at 6. The number of small mines may be even larger, as states that have done comprehensive studies have often found that their earlier inventories underestimated the number of small sites. See Status Report, supra note 3, at 7.

The same is true of Superfund mine sites in particular, about two thirds of which are located in western states. See id. at 7, 11.
noncoal mines.\textsuperscript{13} Florida, for example, estimates that it has 62,080 acres of abandoned or inactive noncoal mines.\textsuperscript{14} Abandoned mines tend to be located in remote, sparsely populated areas, though this also is not always the case\textsuperscript{15} and is becoming less true as the population of the West grows and spreads.\textsuperscript{16} Often the mines have been abandoned for a long time, but some, such as the Summitville Superfund site in Colorado, were abandoned only recently.\textsuperscript{17}

Thousands of abandoned mines are located on federal lands. The most recent estimate places about 25,000 sites on Forest Service lands,\textsuperscript{18} including 1,500 with significant acid drainage problems.\textsuperscript{19} There are also about 2,500 abandoned mine sites on National Park Service land.\textsuperscript{20} Though these are large numbers, they are small in comparison with the total number of abandoned mines, suggesting that most abandoned mines are found on state and private lands.

Saying that most mines are on state and private land, however, does not convey the full complexity of the situation. Mining districts tend to have complicated land ownership patterns.\textsuperscript{21} To some extent this reflects the patchwork pattern of land ownership found through-

\textsuperscript{13} See Unreclaimed Hardrock Mines: Joint Oversight Hearing Before the Subcomm. on Energy and Mineral Resources and the Subcomm. on Oversight and Investigations of the House Comm. on Natural Resources, 103d Cong. 30 (1993) [hereinafter Hardrock Mine Hearings] (statement of Gregory E. Conrad, Executive Director, Interstate Mining Compact Commission) (stating that, all but two of thirty-two states surveyed found significant environmental impacts on land and water from abandoned noncoal mines).

\textsuperscript{14} See WGA Report, supra note 1, at vii.

\textsuperscript{15} See Hardrock Mine Hearings, supra note 13, at 3 (statement of Hon. George Miller).

\textsuperscript{16} Cf. WGA Report, supra note 1, at 4, (asserting that urban sprawl and population growth into rural areas has increased potential hazards of abandoned mines to the general public.).

\textsuperscript{17} See Lyon et al., supra note 6, at 22-23. The Summitville gold mine, in southwestern Colorado, opened in 1986. See id. By 1992 it had become an environmental catastrophe, with a “leaky mine pond [that] threatened to spill 160 million gallons of cyanide solution into the headwaters of the Rio Grande.” Mark Obmascik, Mine Cleanups Start to Pay Off, But Positive Results Have a Price, DENVER POST, Nov. 12, 1995, at A-01. The operator and its parent company declared bankruptcy, and the Environmental Protection Agency has since spent $104 million cleaning up the site. See id.

\textsuperscript{18} See Inventory Efforts, supra note 7, at 6.

\textsuperscript{19} See id. at 8. The Forest Service estimates that about 10% of the mines on its land have “a high potential to be hazardous waste sites.” See id. at 9.

\textsuperscript{20} See id. at 4. The MPC has reported a somewhat lower estimate of 1,936 abandoned mines in national parks. Lyon et al., supra note 6, at 18. Between 5% and 10% of these mines pose an environmental threat. See Inventory Efforts, supra note 7, at 8. About one-third of National Park Service areas contain abandoned mines. See Todd Wilkinson, Undermining the Parks: An Antiquated Mining Law Endangers National Parks and their Visitors, NAT'L PARKS, Jan./Feb. 1991, at 28. The Bureau of Land Management has not produced an estimate for the lands it manages. See Inventory Efforts, supra note 7, at 4.

\textsuperscript{21} See Reauthorization of the Federal Water Pollution Control Act: Hearings Before the House Subcomm. on Water Resources and Environment, Comm. on Transportation and Infrastructure, 104th Cong. 1633, 1634 (1995) (testimony of Paul Frohardt, Administrator,
out the West. But in part it is the peculiar result of the patenting provisions of the 1872 Mining Act. Under that law, miners who prove that they have discovered a valuable mineral deposit on federal land can patent (take title to) the land that they mine. This has resulted in mines that are located on small private inholdings within larger blocks of federal land, the environmental and safety hazards of which often cross onto the adjacent federal lands.

B. Safety and Environmental Problems Caused by Abandoned Mines

Abandoned noncoal mines can threaten both human health and safety and the environment. The least serious, but most pervasive, problem posed by abandoned mines is landscape disturbance. Open pits and tailings piles are ugly scars on the land. In some places pollution from tailings has prevented any vegetation from growing back on abandoned mine sites. These aesthetic concerns are most important in places, such as wilderness areas or National Parks, which have been set aside in part for their beauty.

More pressing are the safety risks that abandoned mines pose. The vast variety of mining techniques has produced an equally great range of hazards. Hikers fall into open pits and concealed shafts. Unstable tailings piles cause landslides. Swimmers drown in pits or quarries filled with water that are deceptively deep or conceal underwater structures. Mine tunnels can have oxygen-deficient air, explosive gases, or unstable roofs; some abandoned uranium mines can pose radiation hazards. Undetonated explosives have been found at aban-

Colo. Water Quality Control Comm'n, on behalf of the Western Governor's Association) [hereinafter Infrastructure Hearings].


23. See INVENTORY EFFORTS, supra note 7, at 11. See also Hearings Before the Senate Subcomm. on Forests and Public Land Management, Comm. on Energy and Natural Resources, 104th Cong. 47, 51 (1995) (testimony of James W. Carter, Director, Utah Division of Oil, Gas and Mining) [hereinafter Public Land Hearings]; see also Hardrock Mine Hearings, supra note 13, at 60 (statement of Hon. George Miller).

24. See Lyon et al., supra note 6, at 17.

25. In some places, structures associated with abandoned mines may have historical value. This Comment will not address how abandoned mine reclamation should interact with the goals of and the laws governing historic preservation.
Abandoned mine sites. These combined risks cause numerous injuries and several deaths each year. The exact number is unknown, as no national statistics are kept. Some states do keep track, however: Colorado attributed sixteen fatalities to abandoned mines between 1955 and 1989, while Arizona averages one death per year. These numbers are likely to grow as increased outdoor recreation and urban sprawl put more people in contact with the sites.

Abandoned mines also cause widespread, long lasting environmental damage. Acid drainage is perhaps the most serious problem. This occurs when run-off passes through disturbed land or sulfur-rich tailings piles and reacts with sulfur and oxygen to create sulfuric acid. The acidic water can encourage the growth of bacteria that further accelerate the acidification process. Acid drainage from mines is typically 20 to 300 times more acidic than acid rain; at the abandoned Iron Mountain Mine in California, it is “as caustic as battery acid.” Because mine dumps have historically been located near watercourses, acidic runoff often drains directly into streams, impacting

26. For a list of safety hazards, see Lyon, et. al., supra note 6, at 38; INVENTORY EFFORTS, supra note 7 at 8; DANGERS AWAIT THOSE WHO VENTURE ONTO ABANDONED MINE SITES, ENGINEERING AND MINING J., June 1989, at 16J; Wilkinson, supra note 20, at 31.
27. See STATUS REPORT, supra note 3, at 5.
28. See WGA REPORT, supra note 1, at 4.
29. See id.; but see Lyon et al., supra note 6, at 4 (stating that Colorado had 22 fatalities in recent years). These numbers, of course, are small in comparison with the number of people who die every year from more familiar accidents, such as car crashes. At first blush, especially to an environmentalist, these safety problems may also appear much less serious than the health problems potentially caused by the environmental problems discussed below. According to a recent study, however, states are more concerned with these physical safety hazards than they are about environmental damage. See STATUS REPORT, supra note 3, at 5. The states’ perception of risk should be accorded respect, because of how little is known about the actual risks posed by various hazards, and because even if the perceptions were objectively inaccurate, evaluation of risk for policy purposes must necessarily consider non-quantifiable factors. See infra notes 208-209 and accompanying text.
30. See WGA REPORT, supra note 1, at 4.
31. See id. at 10. Contaminated drainage is even more of a problem at hardrock mines than it is at coal mines. See id.
32. For a discussion of the particular problems caused by tailings piles, see ROGER DOLZANI ET AL., ANALYSIS OF THE WYOMING ABANDONED MINE LAND RECLAMATION PROGRAM 98 (U.S. Bureau of Land Management, 1994).
33. See Lyon et al., supra note 6, at 41.
36. See Hardrock Mine Hearings, supra note 13, at 31 (statement of Gregory E. Conrad, Executive Director, Interstate Mining Compact); see WGA REPORT, supra note 1, at 3, 10.
them for an average of ten miles from the site.\textsuperscript{37} This kills fish, and in the worst cases, virtually everything else in the stream.\textsuperscript{38}

The acid drainage can also leach and transport contaminants. These include chemicals such as cyanide, which miners use to leach minerals from ore,\textsuperscript{39} as well as other contaminants—including arsenic, asbestos, cadmium, copper, iron, lead, mercury, sulfur, and zinc\textsuperscript{40}—naturally present in the host rock and released when the rock is exposed to air, water, or acid drainage. These pollutants are carried into waterways, where they precipitate downstream as the acid runoff is diluted.

The result is contaminated surface water and groundwater. The MPC reports that mine wastes have polluted 12,000 miles of rivers and streams, and 180,000 acres of lakes and reservoirs.\textsuperscript{41} A Colorado official recently testified before Congress that abandoned mines are the "single largest source of adverse water quality impacts in several western states."\textsuperscript{42} The problem, once again, is not just a Western one; heavy metals from mines, for example, are reportedly contaminating the aquifer that supplies ninety percent of Florida residents with drinking water.\textsuperscript{43}

Only a small percentage of all abandoned mining sites cause these severe environmental problems.\textsuperscript{44} This is especially true in arid areas where, although wind-borne contaminants can occasionally be a problem,\textsuperscript{45} there is less surface water and groundwater tables are too deep to be easily contaminated by abandoned mines.\textsuperscript{46} Even where pollution is not a problem, erosion from disturbed land can clog streams with sediment, harming aquatic life by blocking out light and consequently altering the water temperature.\textsuperscript{47} Sedimentation also

\begin{itemize}
\item \textsuperscript{37} See Lyon et al., supra note 6, at 16.
\item \textsuperscript{38} See Kleinmann, supra note 34, at A22.
\item \textsuperscript{39} See Lyon et al., supra note 6, at 14.
\item \textsuperscript{40} See id. at 4.
\item \textsuperscript{41} See id.
\item \textsuperscript{42} Infrastructure Hearings, supra note 21 (testimony of Paul Frohardt, Administrator, Colo. Water Quality Control Comm'n).
\item \textsuperscript{43} See Lyon et al., supra note 6, at 5.
\item \textsuperscript{44} See id. at 6 (14,900 abandoned mines out of a total of 557,650 may threaten contamination of surface water or groundwater). Industry claims that "[m]ost abandoned mine sites do not involve environmental impairment." Hardrock Mine Hearings, supra note 13, at 158 (statement of Debra W. Struhsacker, Consultant).
\item \textsuperscript{45} See, WGA REPORT, supra note 1, at 3.
\item \textsuperscript{46} See Hardrock Mine Hearings, supra note 13, at 158 (statement of Debra W. Struhsacker, Consultant); see STATUS REPORT, supra note 3, at 6. Arizona, New Mexico, and Nevada, for example, are too dry to have serious surface water contamination from metal mines. See DOLZANI ET AL., supra note 32, at 19. Colorado, Montana, Idaho, and California, on the other hand, "have serious surface and/or ground pollution associated with acid mine drainage and leaching of heavy metals." See id.
\item \textsuperscript{47} See Lyon et al., supra note 6, at 15.
\end{itemize}
makes streams more flood-prone.\(^4^8\) Taken together, these problems present a serious threat to the environment that will continue to worsen until they are dealt with on a comprehensive scale.

C. Cleanup Techniques and Problems

Remediating physical safety hazards at abandoned mines is often a fairly straightforward matter of plugging holes and removing hazardous structures.\(^4^9\) Cleaning up environmental problems is far more difficult, but some techniques do exist. The first goal of environmental remediation is to prevent any more contaminants from entering the water or air. To that end, tailings are moved away from contact with water, chemically neutralized, and then revegetated.\(^5^0\) There have also been recent experiments with a variety of unproved technologies for treating waste in place.\(^5^1\) The second goal is to remove contaminants that are already in the water. Where possible, this is usually achieved by pumping and treating the water, although there has been some recent success with the use of artificial wetlands as filters.\(^5^2\)

Engineers have only limited experience with some of these environmental cleanup techniques. These techniques usually cannot eliminate all impacts\(^5^3\) and sometimes make matters worse instead of better.\(^5^4\) Some problems, such as acid mine drainage, may have no good long-term solution.\(^5^5\) How well a particular technique will work, moreover, is often dependent on the characteristics of the particular site.\(^5^6\) No technology works everywhere,\(^5^7\) and what works well in Florida might not work at all in the Nevada desert or in the high mountains of Colorado. As a result, more research into reclamation techniques is needed.\(^5^8\)

\(^4^8\) See id.
\(^4^9\) See WGA REPORT, supra note 1, at 11. Some solutions, such as simply fencing off mine openings, may not be effective in the long run because of vandalism and deterioration. See id. The MPC has recommended more expensive, but longer lasting solutions, such as plugging mine openings with stone or cement. See Lyon et al., supra note 6, at 39-40. For a more detailed description of engineering solutions for safety hazards, see DOLZANI ET AL., supra note 32, at 66-95.
\(^5^0\) See WGA REPORT, supra note 1, at 10.
\(^5^1\) See id. at 11.
\(^5^2\) See id.
\(^5^3\) See Infrastructure Hearings, supra note 21, at 1634 (testimony of Paul Frohardt, Administrator, Colo. Water Quality Control Comm'n).
\(^5^4\) At Eagle Mine near Mintern, Colorado, cheap concrete plugs not only failed to stop leakage of toxic mine wastes, but caused a back-up that exacerbated the problem when it broke through. See Obmascik, supra note 17, at A-01.
\(^5^5\) See WGA REPORT, supra note 1, at 11.
\(^5^6\) See Infrastructure Hearings, supra note 21 (testimony of Paul Frohardt, Administrator, Colo. Water Quality Control Comm'n).
\(^5^7\) See WGA REPORT, supra note 1, at 11.
\(^5^8\) See id. at 12.
D. Cleanup Costs

Estimates of the cost of remedying the abandoned non-coal mine problem have varied widely. All of them are quite uncertain, because no one knows for sure how many mines there are, how hazardous they are, or how much particular cleanup techniques will cost. The only comprehensive estimate, done by the MPC, is that fully remediating all abandoned mine sites, including cleaning up surface and groundwater contamination, will cost between $32.7 billion and $71.5 billion.\(^{59}\)

Other studies have provided lower estimates for addressing only part of the problem. In a 1991 report, for example, the Office of the Inspector General, estimated that cleaning up readily apparent hazards at all abandoned non-coal mines, but ignoring offsite impacts such as groundwater contamination, would cost $11 billion.\(^{60}\) The Forest Service has estimated that cleaning up all of the abandoned mine sites on National Forest land would cost about $4.7 billion.\(^{61}\) The Bureau of Mines and the Colorado Center for Environmental Management estimated in a 1994 report that cleaning up abandoned noncoal sites in eleven western states, excluding groundwater contamination, would cost about $3 billion.\(^{62}\) These various figures, while not readily comparable, do make it clear that fully addressing the abandoned noncoal mine problem is certain to cost billions, and likely to cost tens of billions of dollars.

The great bulk of that cost is likely to come from the remediation of environmental problems. Even though there are many more safety hazard sites, those sites are much cheaper to remediate than are sites

\(^{59}\) See Lyon et al., supra note 6, at 3. The MPC estimate is for a cleanup that will "(1) remove the threat to public safety; (2) stabilize the site and halt environmental degradation, or avert potential degradation; (3) remove, treat, or isolate migration of sources of toxic pollution to the land, air, surface and groundwater; [and] (4) perform reclamation methods and activities that return the site to a land use as productive as before the commencement of mining." Id. at 35.

\(^{60}\) See id. at 28; U.S. DEPT. OF INTERIOR, AUDIT REPORT: NONCOAL RECLAMATION, ABANDONED MINE LAND RECLAMATION PROGRAM, OFFICE OF SURFACE MINING, RECLAMATION AND ENFORCEMENT, Report No. 91-I-1248 (1991) at 4 [hereinafter Audit Report]. The estimate of $11 billion was reached by multiplying an estimate of 2.2 million acres of unreclaimed noncoal mines by the average cost of $5,000 per acre that the OSM had spent reclaiming abandoned noncoal mines. See id. at 7-8.

\(^{61}\) See INVENTORY EFFORTS, supra note 7, at 10. For another estimate of the cost of cleaning up part of the abandoned mine problem, see U.S. GENERAL ACCOUNTING OFFICE, FEDERAL LAND MANAGEMENT: AN ASSESSMENT OF HARDROCK MINING DAMAGE, GAO/RCED-88-123 BR (1988). This study, which estimated the cost of cleanup for federal lands at $284 million dollars, excluded offsite impacts and was based upon a sampling of western states containing mining claims active between 1976 and 1986. See Lyon et al., supra note 6, at 27.

\(^{62}\) See STATUS REPORT, supra note 3, at 29.
with environmental contamination. The MPC estimated that remediating all the safety hazard sites would cost about $2 billion, while cleaning up surface and groundwater contamination would cost between $17 billion and $51 billion.

E. Lack of Statutes Adequate to Solve the Problem

Existing laws and programs are not successfully addressing the abandoned noncoal mine problem. The 1872 Mining Act, the main law governing mining on federal lands, contains no provisions for cleaning up abandoned mines. A few other federal laws provide cleanup money in some circumstances, but none are sufficient tools to solve the abandoned noncoal mine problem as a whole.

Although the Surface Mining Control and Reclamation Act of 1977—the main federal law for regulating the coal mining industry—has funded some reclamation of abandoned noncoal mines, it lacks the necessary provisions and funding to clean up a large percentage of noncoal sites. Money from SMCRA's Abandoned Mine Land (AML) program may only be spent on the reclamation of abandoned noncoal mines under two circumstances: where a state certifies that it has reclaimed all of its coal sites, or where the governor of the state declares that an abandoned noncoal mine site poses an emergency threat to public health and safety.

63. See id. at 23. Wyoming, for example, found that it cost between $500 and $15,000 to close an adit or shaft, Dolzan et al., supra note 32, at 3, but spent $500,000 remediating a single tailings pile contaminated with mercury, arsenic, and cyanide. See id. at 101-02. The MPC study assumed that, on average, safety hazards would cost $19,500 to fix, while surface water contamination would average between $1 million and $3 million, and groundwater contamination between $5 million and $15 million. See Lyon et al., supra note 6, at 6.

64. See Lyon et al., supra note 6, at 6.

65. The MPC refers to the existing laws as "more holes than net." Id. at 32-33. See also Hardrock Mine Hearings, supra note 13, at 2 (Statement of Hon. Richard Lehman); WGA Report, supra note 1, at vii ("no single existing option has been used extensively to address a large portion of [inactive and abandoned mines].").


67. For an evaluation of the strengths and weaknesses of existing programs that address abandoned mines, see generally WGA Report, supra note 1, at 60-128.


69. See infra Part II.A.

70. See 30 U.S.C. § 1240a (1996); U.S. General Accounting Office, Surface Mining: Management of the Abandoned Mine Land Fund, GAO-RCED 91-192 (1991) at 3 [hereinafter Management of the AML Fund]. Under § 1240a(f) certified states "impacted [by] coal or minerals development," may, with the permission of the Office of Surface Mining, use AML money to build "specific public facilities related to the coal or minerals industry." This last provision was meant to allow the building of new public facilities in coal mining towns in the West that were experiencing rapid growth. See John Davison Collins, The Abandoned Mine Reclamation Fund—A View from the West, 20 Land & Water L. Rev. 67, 73 (1985).
The problem with the state certification provision is that the AML program is badly underfunded. A 1986 Congressional Research Service report estimated that it will cost $33 billion to clean up all abandoned coal mines; the General Accounting Office has predicted that there will still be a $27 billion shortfall when funding expires in 2004. \(^{71}\) Thus few states are likely ever to clean up all their coal mines and have extra money to spend on abandoned noncoal mines. \(^{72}\) Only Wyoming, Montana, Texas and Louisiana have finished all their coal reclamation; \(^{73}\) of these, Wyoming is the only state that has spent significant amounts of AML funds on noncoal reclamation. \(^{74}\)

Not only is the total amount of money inadequate, but it is also not distributed in a way that facilitates noncoal mine reclamation. SMCRA allocates money to states in proportion to the amount of current coal mining that occurs there. \(^{75}\) Some states with serious abandoned mine problems, such as Utah, have little ongoing coal mining, and thus get little AML money. \(^{76}\)

Under the emergency provision, states can use AML money to remed[y] physical safety hazards and surface impacts \(^{77}\) at noncoal sites that the governor demonstrates could "endanger life and property,

\(^{71}\) See Hardrock Mine Hearings, supra note 13, at 10 (statement of James Duffus III, General Accounting Office). Such a rough comparison of the cost of cleanup with funding does not present the whole picture, however, because most of the abandoned coal mines are in the East, while most of the abandoned hardrock mines are in the West. Because some of the money from SMCRA is earmarked on a state-by-state basis, even though some eastern states are unlikely to finish cleaning up their coal mines, some money continues to go to western abandoned mine cleanup.

\(^{72}\) See, e.g., Lyon et al., supra note 6, at 32. Another problem is that AML money can only be spent on states that have SMCRA regulatory authority. See 30 U.S.C. § 1232(g)(1)(A)(i) (1996). That excludes western states that either have no program (Nevada, Arizona, and Nebraska), or a federally run program (Washington, Oregon, California, Idaho, and South Dakota). See Status Report, supra note 3, at 13.


\(^{74}\) As of March, 1997, Wyoming had completed $126.5 million of noncoal reclamation projects, Montana $2.8 million, Texas $3.7 million, and Louisiana nothing. See Office of Surface Mining (visited Feb. 12 1998) <http://www.osmre.gov/znoncoal.htm>. "Wyoming is scheduled to complete all of its AML site reclamation just after the turn of the century . . . ." Dolzan et al., supra note 32, at 5. A large part of the reason is that Wyoming, which had little metal mining, was accordingly "spared many of the serious environmental consequences (acid mine drainage, metals leaching, serious ground water contamination) associated with widespread metals mining and processing." Id. at 19.

\(^{75}\) See 30 U.S.C. § 1232(g)(1)(A) (1996) (allocating to each state 50% of the AML funds collected in that state).

\(^{76}\) See Collins, supra note 70, at 76.

\(^{77}\) Emergency money can be spent to "fill such voids, seal such abandoned tunnels, shafts, and entryways, and reclaim surface impacts of underground or surface mines" that meet the hazardous criteria. 30 U.S.C. § 1239 (1996).
constitute a hazard to the public health and safety, or degrade the environment. This "hazardous condition" exception has been strictly construed by the Office of Surface Mining (OSM) and only rarely used. Even where it is used, the requirement that there be a "significant, immediate" risk to public safety increases the likelihood that states will spend money only on safety problems, not environmental ones.

In addition to SMCRA, a few other federal laws address subsets of the abandoned noncoal mine problem. One example of a specialized cleanup program is the Uranium Mill Tailings Radiation Control Act of 1978 (UMTRCA). In addition to regulating active mills, it established a program to clean up twenty-four abandoned uranium mines through cooperative agreements between the Federal Government and the states. As of late 1996, cleanup of twenty-two of the original twenty-four sites had been completed at a cost of $1.5 billion; the program was praised as "one of the most successful environmental cleanup programs ever undertaken by the Federal Government." Compared to the cleanup of all abandoned mines, however, this project was quite straightforward since all the uranium sites presented similar engineering problems.

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA or "Superfund") likewise addresses only a narrow slice of the overall problem. Fifty-two abandoned mines have been placed on Superfund's National Priorities List (NPL). A few more mining sites may well be added to the NPL

79. See Collins, supra note 70, at 86-87; see MANAGEMENT OF THE AML FUND, supra note 70, at 3.
80. See WGA REPORT, supra note 1, at 110.
83. UMTRCA Surface Work Ending, 7 DEFENSE CLEANUP, Nov. 8, 1996. The two remaining sites, in North Dakota, are reportedly unlikely to be cleaned up because the state is reluctant to pay its 10% share of the cleanup cost. See id.
84. Hearing Before the Subcomm. on Energy and Power of the House Commerce Comm., 104th Cong. 32 (1996) (prepared statement of Howard Roitman, Division Director, Hazardous Materials and Waste Management Division, Colorado Department of Public Health and Environment) [hereinafter Energy and Power Hearing]. The program does merit some praise. The Department of Energy missed its original 1990 deadline by only seven years and finished 37% over budget in constant dollars—not a bad result compared to other environmental programs. See id. (statement of James Owendorf, Deputy Assistant Secretary for Environmental Restoration, Department of Energy). Much of that delay and increased cost can be attributed to increases in program scope. See id.
85. See WGA REPORT, supra note 1, at 117.
87. See Lyon et al., supra note 6, at 33. Statistics on the number of mining-related sites on the NPL vary depending on what sites are considered "mining-related."
eventually, but for several reasons CERCLA cannot be considered a comprehensive solution to the abandoned mine problem. First, CERCLA applies only to the cleanup of hazardous substances, and thus cannot be used to fix physical safety hazards. Moreover, even where abandoned mines do have serious problems with toxic contamination and acid drainage, they typically have a fairly low priority on the NPL since they are usually located in remote areas and do not pose an immediate public health hazard. Thus, only a few abandoned mine sites will ever be cleaned up under Superfund.

Nor are CERCLA abatement or natural resource actions likely to be useful for many abandoned mines. In abatement actions under section 106 of CERCLA, the Federal Government (or in certain circumstances, private citizens) can force responsible parties to clean up sites. But even though “responsible party” is defined very broadly, because the problems at abandoned mines were often created decades ago, it can be extremely difficult and expensive to locate solvent responsible parties to force cleanup. Moreover, as with Superfund-led cleanups, only sites that pose an “imminent and substantial endangerment to the public health and welfare” would be cleaned up, leaving a large part of the problem unresolved.

Natural resource damage claims under CERCLA section 107 might be able to address sites beyond those that pose an immediate risk to health. The Federal Government, however, may be barred by the statute of limitations from bringing many of these claims and the same problem of identifying responsible parties also exists. Finally,
even if CERCLA were to apply to more sites, its cleanup standards might be inappropriately strict for mine sites in remote areas.\(^9\)

The Clean Water Act\(^9\) (CWA) has been used to address some of the water pollution problems caused by abandoned mines. The Federal Government has made some CWA grants to states to develop innovative ways to deal with the nonpoint source pollution coming from noncoal mines.\(^9\) Section 402(P) of the 1987 Amendments created a program to deal with stormwater runoff and proposed regulations that would require tracking, and sometimes treatment, of discharges from abandoned mines. It is unclear what effect those regulations will have.\(^10\) But as the MPC has pointed out, these provisions address the symptom—polluted runoff—without curing the underlying problem by requiring the reclamation of the mines that are the source of the pollution.\(^10\)

Additionally, some federal land management agencies have taken a few baby steps towards remediating abandoned mines on the land they manage. The National Park Service has spent $2 million to mitigate about 400 sites, in addition to posting warnings and conducting a park-wide inventory program.\(^10\) The Bureau of Land Management has established a task force to inventory the mines located on its land; the inventory was expected to have been completed in 1997.\(^10\) The Forest Service also began an inventory in 1992.\(^10\) These piecemeal

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100. See id. For criticism of the use of the CWA Stormwater program for abandoned mines, see *Hearings on Clean Water Act Reauthorization Before the House Subcomm. on Water Resources and Environment of the Comm. on Transportation and Infrastructure*, 104th Cong. 599, 601 (1995) (testimony of Douglas McAllister, National Mining Association) (criticizing such use, especially where mines are being remediated under the SMCRA AML program, and stating that President Clinton’s January 1994 Clean Water Initiative, which addressed the Stormwater provisions, could cost billions of dollars). Industry would prefer that government inventory and prioritize the sites before anything else is done. See id.

101. See, e.g., Lyon et al., supra note 6, at 33.

102. See *Hardrock Mine Hearings*, supra note 13, at 77–78. The National Park Service spends $60,000 to $100,000 per year “stabilizing sites for human health and safety.” *Deep Pockets: Taxpayer Liability for Environmental Contamination*, House Subcomm. on Oversight and Investigations, Comm. on Natural Resources, 103d Cong. 7 (1993) (Comm. Print No. 2) [hereinafter *Deep Pockets*].


104. See *Deep Pockets*, supra note 102, at 7. Neither that report, nor the GAO report, nor the hearings state that the Forest Service or the BLM have begun remediating mines.
cleanups by federal agencies, however, have not made a significant dent in the abandoned noncoal mine problem on federal lands.\textsuperscript{105}

A few states have also begun to address the abandoned mine problem. As of 1993, eight states\textsuperscript{106} had programs that directly funded (apart from any SMCRA AML money) cleanup of abandoned mines.\textsuperscript{107} The most extensive program exists in Florida, which as of 1994 had spent about $88 million cleaning up abandoned phosphate mines.\textsuperscript{108} More typical are states such as South Dakota, which spent a total of $31,000 by 1991,\textsuperscript{109} and Arizona, which is spending $20,000 a year to address a problem estimated to cost over $650 million to clean up completely.\textsuperscript{110} These state programs are usually focused on addressing physical safety hazards, not environmental problems.\textsuperscript{111} The MPC has fairly characterized them as inadequate.\textsuperscript{112}

\textsuperscript{105} See Hardrock Mine Hearings, supra note 13, at 11-12 (statement of Joyce Fleischman, Acting Inspector General, Dept. of the Interior) (stating that the BLM is "not ensuring timely reclamation"; Office of Surface Mining has made "little progress" in non-coal reclamation).

\textsuperscript{106} The eight states were California, Florida, Idaho, Montana, Nevada, New Mexico, South Dakota, and Wyoming. See WGA REPORT, supra note 1, at 113; Schneider, supra note 97, at A1 (describing new New Mexico law as "the toughest mine-cleanup law in the country"). For brief descriptions of seven of these programs, see WGA REPORT, supra note 1 at 113-14. For a summary chart of state reclamation laws, see STATUS REPORT, supra note 3, at 16-18.

\textsuperscript{107} In the 1970s, almost all mining states passed laws requiring that new mines be reclaimed when they close. See WGA REPORT, supra note 1, at 113. These state abandoned mine programs provide funding for mines that were closed before these reclamation laws were passed. See id.

\textsuperscript{108} See STATUS REPORT, supra note 3, at 40. The Florida program has been praised as "efficient" and "effective." DOLZANI ET AL., supra note 32, at 121. It is funded by a state tax on phosphate production. See id. For brief state-by-state descriptions of current mining, reclamation laws, reclamation to date, and inventories, see WGA REPORT, supra note 1, at 23-57 and see STATUS REPORT, supra note 3, at 31-68.

\textsuperscript{109} See WGA REPORT, supra note 1, at 36.

\textsuperscript{110} See id. at 24.

\textsuperscript{111} See STATUS REPORT, supra note 3, at 20.

\textsuperscript{112} See Lyon et al., supra note 6, at 33. The Montana Conservation Director described the Montana program as "woefully underfunded." Hardrock Mine Hearings, supra note 13, at 263 (statement of Bruce Farling). Montana spends less than $1 million annually to address an abandoned mine problem "conservatively" estimated at $1 billion. See id. A few other state environmental laws have also been used on a "limited basis"; these include "water quality laws, air quality laws, state Superfund laws, and other hazardous materials laws." STATUS REPORT, supra note 3, at 19. It is not even clear that states are regulating on-going mines well enough to prevent active mines from being abandoned. See id. at 15; see also Thomas J. Hilliard, States' Rights, Miners' Wrongs, (Mineral Policy Center et al., Washington, D.C.) July 1994 (describing "failure" of state regulation to prevent water pollution by mining).
II
THE EXPERIENCE WITH CLEANING UP ABANDONED COAL MINES

The nation’s effort to clean up abandoned coal mines over the last two decades provides useful guidance for structuring an effective noncoal mine reclamation program. Many of the safety hazards and environmental problems of abandoned coal mines are also found at abandoned noncoal mines. But perhaps even more important are the political lessons to be learned from the Federal Government’s attempt to enlist support of individual states for a reclamation program intended to benefit the nation as a whole.

A. Description of the Surface Mining Control and Reclamation Act (SMCRA)

SMCRA was passed in 1977 to regulate environmentally destructive practices in the coal mining industry and to clean up areas damaged by past coal mining. The regulatory program requires that surface mines receive permits, file bonds to pay for any unperformed reclamation work, and meet environmental performance standards. These programs are run by the states, with some federal oversight. SMCRA also contains an Abandoned Mine Lands (AML) program to clean up abandoned coal mines. The Act created an Abandoned Mine Reclamation Fund, administered by the Office of Surface Mining in the Department of Interior (OSM) and funded by per-ton taxes on surface and underground coal production. States can use the money in the fund for a broad range of reclamation-related activities, for land acquisition, administrative expenses, and “all other necessary expenses to accomplish the purposes” of the Act. As of March 1997, $4.6 billion has been collected of which $3.5 had been appropriated by Congress.

AML spending must reflect five priorities spelled out in the Act. The top priority is “protection of public health, safety, general welfare, and property from extreme danger of adverse effects of coal

116. See 30 U.S.C. §§1231-1243 (1996). The AML program has been described as a “carrot,” added to SMCRA to make the regulatory program acceptable to states. See Collins, supra note 70, at 68. One indication of that is that states could not receive AML funding until their laws were brought into conformity with SMCRA. See id.
119. See OSM Web-Page supra note 2.
120. See 30 U.S.C. § 1233. Funding guidelines have changed recently, allowing “more extensive public facilities work.” DOLZANI ET AL., supra note 32, at 4.
mining practices." Priority two is "protection of public health, safety, and general welfare from adverse effects of coal mining." In practice, there is little distinction between these two top priorities. They translate into such work as closing mine entrances, addressing urban subsidence, and controlling fires at abandoned coal mines. The third priority is environmental restoration. The fourth and fifth priorities are the protection and repair of public buildings damaged by coal mining, and the development of publicly owned land affected by coal mining. Nearly all AML funds have been spent on priority one and two projects, leaving little money for environmental problems such as acid mine drainage.

Only states with approved regulatory programs are eligible to receive AML grants. To be approved, a state must submit to the OSM a State Reclamation Plan that describes, among other things, areas that need reclamation and criteria for identifying and ranking specific projects. The OSM must approve the plan if it finds that the state has the "ability and necessary State legislation to implement the provisions of" the AML program. The OSM has approved reclamation plans from twenty-six states and Indian tribes.

Once the OSM has approved a State Reclamation Plan, states have "exclusive responsibility and authority to implement" its provi-
When making grant requests, states must submit proposals describing the projects and estimating the cost, but do not have to provide detailed plans and still retain broad discretion in choosing reclamation methods. The OSM must monitor the “progress and quality” of state programs.

Allocation of funds to states is structured to reflect both reclamation needs and the area where the revenue was collected. The allocation of funds among the states has been the most controversial aspect of the SMCRA AML program. The basic political problem was that most of the abandoned coal mines were located in the East, whereas most of the growth in coal mining was expected to occur in the West. Thus western states, which expected to eventually be home to coal companies footing much of the tax burden, were unhappy about seeing most of that money going to remedy environmental problems (and provide jobs) in eastern states. The resulting compromise requires that fifty percent of the money raised in a particular state go to remediation in that state (called the “state share”). The other half of the money is divided between funding for several other smaller programs related to reclamation and discretionary funds to be spent wherever in the country the need is the greatest (called the “discretionary” or “Secretary’s” share).

131. 30 U.S.C. § 1235(d) (1996). Despite this statutory command of state independence, there was considerable federal oversight in the late 1970s—including uniform reclamation guidelines and regulations requiring evaluation of state AML projects. See Collins, supra note 70, at 84. But these regulations were deleted by the Reagan administration the early 1980s. See id.
134. See Management of the AML Fund, supra note 70, at 7.
136. See McElfish & Beier, supra note 114, at 256-58, 262-63.
137. See Collins, supra note 70, at 71-72. In the mid 1980s the OSM estimated that Wyoming would be the single largest contributor to the AML fund. See id. at 72. This concern on the part of western states was also the source of the provision that allows non-coal projects to be addressed (only using state-share money) once all coal areas are remedied. See id. at 73. The western states did not want to lose their share of the pie once the relatively small number of abandoned coal mines in the West had been cleaned up.
139. These two programs are the Small Operator Assistance Program (SOAP), 30 U.S.C. §1257(c), and the Rural Abandoned Mine Land Program (RAMP), 30 U.S.C. §1236. See McElfish & Beier, supra note 114, at 256.
B. Criticisms and Evaluation of the SMCRA Abandoned Mine Lands Program

1. Conflict Over National Inventory and Allocation of the Discretionary Fund

Creating an inventory of abandoned mine land sites has been a problem-plagued task.\textsuperscript{141} When SMCRA was passed in 1977, the extent of the abandoned coal mine problem was still unclear because at that time only a few states had done any inventory work. SMCRA then required all states to inventory their abandoned coal mine sites to receive AML funds.\textsuperscript{142} The Federal Government compiled and standardized these state inventories into a national database of abandoned coal mine sites. That federal inventory, however, has been criticized for containing inadequate information. One problem is that it generally includes only priority one and two projects, leaving federal managers unaware of priority three sites that, while not posing a risk to human health, safety, or welfare, nevertheless cause environmental damage.\textsuperscript{143} Thus the initial compilation of state inventories may have led to an underestimation of the abandoned coal mine problem.\textsuperscript{144}

A larger controversy has centered around the use of the federal inventory in the allocation of discretionary share money. Until 1991, each state’s share of the discretionary funds was calculated “by a formula based on the state’s historic coal production and abandoned mine land reclamation needs as shown in the national inventory.”\textsuperscript{145} Which mines were included in the national inventory, and what priority they were assigned, thus affected the distribution of hundreds of millions of dollars.

There were numerous complaints that inadequate and inconsistent information may have led to the misallocation of funds.\textsuperscript{146} Various states complained that the national inventory omitted mines in


\textsuperscript{142} “Each State Reclamation Plan shall generally identify the areas to be reclaimed . . . .” 30 U.S.C. § 1235(e).

\textsuperscript{143} See PREMATURE APPROVAL, supra note 73, at 4.

\textsuperscript{144} See McElfish & Beier, supra note 114, at 257-58.

\textsuperscript{145} PREMATURE APPROVAL, supra note 73, at 2. The “reclamation needs,” however, included only priority one and two sites. UPDATED INVENTORY, supra note 141, at 3 (AML lands that “present environmental restoration problems that do not threaten public health, safety, or the general welfare are included in the inventory but are not used to allocate funds.”).

\textsuperscript{146} See McElfish & Beier, supra note 114, at 257-58.
their states, thus underestimating their reclamation needs.\textsuperscript{147} Another large problem was the inconsistency of data from state to state. SMCRA contains no explanation of which "lands to be reclaimed" should be included in state inventories. Because of differences in methodologies used in state inventories, the federal inventory was criticized as not presenting "an accurate picture of the relative reclamation needs of one state versus another."\textsuperscript{148} Moreover, given that states had a financial stake in painting a dire picture of their reclamation needs, it is not surprising that there were charges of intentional misclassification to increase funding.\textsuperscript{149} As a result of this controversy, the rules for allocation of the discretionary share were changed. Under current law, the discretionary share is to be allocated solely based on historical coal production in states.\textsuperscript{150}

SMCRA's funding mechanism has also come under fire for not being a dedicated fund. The AML grant program has had to compete with other OSM programs within the Department of the Interior's budget.\textsuperscript{151} This problem has had two consequences. One is that the amount appropriated for the AML program has always been substantially below the amount raised. As of 1997, $1.1 billion more has been collected than spent.\textsuperscript{152} The other consequence is that funding levels for particular states have varied substantially from year to year, making it hard for them to maintain consistency in their reclamation programs.\textsuperscript{153}

2. Conflict Over Reclamation Priorities and Federal Oversight

In considering requests for funding, the OSM has been strict in insisting that states follow the federal "health and safety before environment" priority structure.\textsuperscript{154} Ninety-three percent of projects funded between 1977 and 1990 were priority one or two.\textsuperscript{155} A recent GAO report supported the OSM's approach, concluding that the

\begin{itemize}
  \item \textsuperscript{147} See Collins, supra note 70, at 82.
  \item \textsuperscript{148} \textit{UPDATED INVENTORY}, supra note 141, at 3.
  \item \textsuperscript{149} See McElfish & Beier, supra note 114, at 258. The Western Governors' Association called the inventory data "drastically skewed." WGA \textit{REPORT}, supra note 1, at 17.
  \item \textsuperscript{150} See 30 U.S.C. § 1232(g)(5). All of these disputes over allocation of funds have led to a quite complicated statute. See generally 30 U.S.C. § 1232(g).
  \item \textsuperscript{151} See Collins, supra note 70, at 79 (citing letter from James Harris, Director of OSM under President Reagan).
  \item \textsuperscript{152} See OSM Web-Page, supra note 2.
  \item \textsuperscript{154} Collins, supra note 70, at 85.
  \item \textsuperscript{155} See \textit{MANAGEMENT OF THE AML FUND}, supra note 70, at 6.
\end{itemize}
RECLAMATION OF NONCOAL MINES

agency has been flexible enough to allow lower priority projects to proceed where that makes sense from an efficiency standpoint.\textsuperscript{156}

Western states, industry organizations, and environmental groups, however, have urged a broader interpretation of the "health and safety before environment" priority,\textsuperscript{157} arguing that the OSM's strict interpretation of "health and safety" has prevented states from undertaking large-scale environmental restoration at coal sites that do not pose direct or immediate threats to human health and safety.\textsuperscript{158} The OSM could reasonably interpret the priority one and two language of "protection of public health, safety, and general welfare" to allow states to address serious environmental problems such as acid mine drainage and groundwater contamination, since those environmental problems, even if they occur in remote areas, pose the risk of eventually adversely affecting human health.\textsuperscript{159} Doing so might also be good public policy, since it is possible that these kinds of environmental contamination may eventually harm more people than the physical safety hazards usually addressed under priorities one and two.

The OSM has not followed the "coal before noncoal" priority structure as strictly as it has the "health and safety before environment" priority structure. The GAO found that while the OSM was careful to require that all priority one and two sites had been reclaimed before it certified a state to work on noncoal projects, its procedures did not ensure that priority three through six work had been performed.\textsuperscript{160} Western states, industry, and environmentalists, however, have pressed the OSM to be even less strict in following the

\textsuperscript{156} "[S]tates have some discretion in determining which projects to fund. . . . [S]tates and the OSMRE have ample authority to fund lower-priority projects along with higher-priority projects as long as the total program shows that high-priority projects are being addressed." \textit{See id. supra note 70, at 6 n.2.}

\textsuperscript{157} Collins, supra note 70, at 89-90; see 1996 Appropriations, supra note 153, at 541 (testimony of Gregory Conrad, Interstate Mining Compact Comm'n) (suggesting that states should have more flexibility to set local priorities).

\textsuperscript{158} \textit{See} Collins, supra note 70, at 90.

\textsuperscript{159} The OSM's AML regulations lend some support to this proposition. The regulations, found in 30 C.F.R. §§ 870-875, do not define "public health" "safety" or "general welfare." 30 C.F.R. § 870.5. But "extreme danger," a term used in priority one, is defined as "a condition that could reasonably be expected to cause substantial physical harm to persons, property, or the environment and to which persons or improvements on real property are currently exposed." \textit{Id.} (emphasis added). This language could support a decision to address problems of environmental contamination under priority one rather than under priority three. The priority three language of "environmental restoration" could then be taken to refer to less pressing work such as remediation of landscape disturbances or restoration of fish and wildlife resources.

\textsuperscript{160} \textit{See} Premature Approval, supra note 73, at 1-3. The report noted that although that flexibility was not consistent with SMCRA, it did make sense if the noncoal problems were more severe than the lower priority coal projects that remained. \textit{See id.} at 3-4.
“coal before noncoal” priority structure. Western states undoubtedly favor funneling more SMCRA money into noncoal reclamation because they have more noncoal sites than coal sites; eastern states have the opposite interest. Environmentalists probably favor the looser interpretation because from the national perspective of getting the maximum benefit from each cleanup dollar, it makes more sense to remediate serious noncoal sites before addressing relatively benign coal sites. From an equity standpoint, however, spending a great deal of SMCRA money on noncoal sites would be unfair to coal producers, who pay the taxes that fund SMCRA’s AML program, given that noncoal producers currently pay nothing. Given these conflicting policy and equity arguments, the OSM’s approach has been reasonable.

There have been no suggestions that state management of AML funds has been incompetent or unduly influenced by local politics. The GAO reported that “States’ management of AML reclamation projects is generally adequate” and that states “[h]ave, for the most part, implemented financial control procedures and practices to ensure that the expenditures of reclamation funds are proper.” State programs also appear to be reasonably efficient. Wyoming, for example, has spent eighty percent of its total funds on mine reclamation, with administrative costs accounting for only 2.2% of total expenditures. By contrast, at the federal level, about twenty-eight percent of AML funds expended between 1985-1990 were spent on administrative activities.

III
RECENT EFFORTS TO ADDRESS THE ABANDONED NONCOAL MINE PROBLEM
A. Reform Background

The problem of abandoned noncoal mines is a recent addition to the debate about mining law reform. For the 1872 Mining Act’s first
century, reformers ignored the environmental problems caused by mining and focused on the failure of the Mining Act to meet the mining industry's needs, in terms of ensuring that land was available for exploration, providing reliable land tenure, and reducing litigation over claims. It was not until the mid-1960s that a commission first proposed giving the government the authority to impose environmental regulations on mining. Until only a few years ago, this attention to environmental problems remained entirely forward rather than backward looking—that is, aimed at preventing future environmental damage rather than at cleaning up problems that already existed. John Leshy's otherwise exhaustive 1987 book on mining law and mining law reform, for example, does not mention abandoned mines at all. As recently as 1991, Congressional hearings on reform of the Mining Act contained almost no debate about abandoned mine reclamation. To the extent there was discussion at all, it was about the basic issue of whether such a reclamation program should even exist, not about the more detailed question of how such a program should be structured.

Over the past few years, however, the public and Congress have become increasingly aware of the problem of abandoned mines. Articles about abandoned mines have appeared in newspapers and mainstream environmental magazines. The Western Governor's Association released a major study in 1991; the MPC released one in 1993. Federal agencies began in earnest the work of inventorying the

166. See John D. Leshy, The Mining Law: A Study in Perpetual Motion 290 (1987) [hereinafter Perpetual Motion]. As late as 1952, "environmental regulation was not specifically addressed" in a Presidential policy commission report. Id. at 300-01.

167. See id. at 302. That commission's report was also the first time that anyone had recommended that a royalty be imposed on hardrock minerals extracted from public lands. See id. at 303. There had been earlier proposals, however, to change the mining law to a permit or leasing system, which, like royalties, could have been used to impose significant charges on the industry. See id.

168. Leshy describes the environmentalist position as a demand that "the external environmental costs of mining be internalized." Id. at 311.

169. Neither does Professor Leshy's 1988 article on reform of the mining law mention the need to clean up abandoned mines as one of the eight major reasons for revived interest in reform of the Mining Law. See John D. Leshy, Reforming the Mining Law: Problems and Prospects, 9 PUB. LAND L. REV. 1, 5-10 (1988).


171. See Status Report, supra note 3, at 29.

172. See, e.g., Wilkinson, supra note 20, at 26-31; Glen Martin, Abandoned Mines Pollute the River, SAN FRANCISCO CHRON., June 17, 1992 (describing impacts of Copper Mountain and Iron Mountain mines); Dan Baum & Margaret Knox, We Want People Who Have a Problem With Mine Wastes to Think of Butte, SMITHSONIAN, Sept.-Oct. 1992 (describing employment benefits of abandoned mine reclamation).
mines on their land. And in August of 1993, the House Natural Resources Committee held hearings devoted entirely to the problem of abandoned noncoal mines.\(^\text{173}\) The need to address the problem of abandoned mines has become an area of consensus,\(^\text{174}\) as is the proposition that such a program should be funded by any money raised by a royalty imposed on hardrock mining.\(^\text{175}\)

Indeed, over the past five years, Congress has considered about ten bills\(^\text{176}\) with provisions that would have created a federal program, modeled on SMCRA’s AML program, to pay for the cleanup of abandoned noncoal mines. None of these bills passed, although some came very close. In considering why the bills failed, and whether similar proposals will be put forward in the foreseeable future, it is necessary to understand that the move to create a federal abandoned noncoal mine reclamation program is only part of the larger effort to reform the 1872 Mining Act.

While pressure has existed to reform the Mining Act since its passage in 1872,\(^\text{177}\) that pressure has increased during the 1990s. Spurred by some highly visible cases in which mining companies patented extremely valuable claims for only a few dollars, and perhaps by some notorious mining-related environmental catastrophes as well, Congress has begun to consider mining reform in earnest.

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174. See id. at 98 (statement of Graham Clark, Newmont Mining Corp.); Mineral Exploration and Development Act of 1991: Hearing on H.R. 918 Before the Subcomm. on Mining and Natural Resources of the Comm. on Interior and Insular Affairs, Part I, 102d Cong. 176 (1991) [hereinafter Mineral Exploration, Part I] (written testimony of Gordon Carlson, Park County Mining Association) (“I don’t believe that anyone in the industry is against some form of fund dedicated to the reclamation of past damages from mining.”); Issue in Brief: Mining Law Reform Fact Sheet (National Mining Association, Washington, D.C.) (“The mining industry supports provisions ... that would direct one-half of all royalties paid by mining companies on public lands to address abandoned mine lands on public or patented lands.”).

175. See Erika Hobbs, On Shaky Ground: U.S. Mining Reform, ENG. AND MIN. J., Sept. 1996, at 39. This is not to say that the issue of whether there should be such a royalty at all is settled, although in 1993 the industry largely conceded that issue. See id. There is certainly still no consensus on what the level of that royalty should be. Compare H.R. 1580, 104th Cong. § 401 (1995) (imposing a three percent royalty on mining profits) with H.R. 357, 104th Cong. § 306(a) (1995) (imposing an eight percent royalty on net smelter return). But there is agreement that if such a royalty is imposed, some portion of that money should be earmarked for an abandoned mine cleanup program.


177. See PERPETUAL MOTION, supra note 166, at 287-88. For an exhaustive discussion of the reform efforts up to 1987, see generally id. For a brief description of subsequent events up to 1988, see John D. Leshy, Reforming the Mining Law: Problems and Prospects, 9 PUB. LAND L. REV. 1 (1988).
Most recent bills have had three main elements. First, they would have created a regulatory program, modeled after SMCRA, that would have standardized regulatory and bonding requirements. Second, they would have levied a royalty on mining on federal lands. And third, they would have created an abandoned noncoal mine reclamation program. These reforms were nearly enacted in 1993 when both the House and the Senate passed bills that eventually died in conference in the final hours of the Congress. The bills were reintroduced in the 104th Congress, but made no headway. During that session, Republican legislators also introduced bills that the environmental community decried as "sham reform." These bills would have created weak regulatory requirements and levied insignificant royalties; they passed both houses as part of the FY 1996 Omnibus Budget Reconciliation Bill, which was vetoed by President Clinton.

Given the current political situation, Congress will likely only create a noncoal reclamation program as part of a larger package of mining law reform. Even though the problem of abandoned mines has become increasingly visible, the effort to create a reclamation program does not appear to have enough political momentum to pass unless combined with patent and royalty reform and stricter environ-

178. The imposition of royalties on minerals extracted from public lands is a complex and controversial issue. Three main studies over the past five years have examined how much money a royalty on hardrock mining could raise. See Stephen D. Alfers & Richard P. Graff, Economic Impact of Mining Law Reform, (Davis, Graham & Stubbs and Coopers & Lybrand) Jan. 1992; Economic Implications of a Royalty System for Hardrock Minerals, U.S. Dept. of the Interior (1993) [hereinafter Economic Implications]; CBO Testimony: Statement of Jan Paul Acton, Assistant Director, Natural Resources and Commerce Division, Cong. Budget Office, Before the Senate Subcomm. on Mineral Resources, Development and Production of the Comm. on Energy and Natural Resources, 103d Cong. (1993). The DOI study, the most detailed and carefully reasoned of the three, estimated that a 5% royalty on gross value of production would raise $31-84 million, an 8% gross royalty $48-133 million, and a 12% gross royalty $71-195 million per year. See Economic Implications, supra, at 55. Most of the Democrat-sponsored bills of the past five years have contained royalties in that 5-12% gross range. Those three studies also considered the economic impact royalties would have on the mining industry, as did two others. See John L. Dobra & Paul R. Thomas, The U.S. Gold Industry (1992); Thomas M. Power, Not All That Glitters: An Evaluation of the Impact of Reform of the 1872 Mining Law on the Economy of the American West, (Mineral Policy Center, Washington D.C.) 1993. The studies agreed that a mid-range gross royalty would have a minimal immediate impact on the mining industry. The studies, however, contained quite different estimates of the impact after a decade of royalties. At one extreme, the MPC study estimated a 3% decline in total mineral production; at the other end, the Dobra & Thomas study estimated a 60% decline. See Power, supra, at 3; Dobra & Thomas, supra, at 29. These long-range estimates are unreliable, however, because mineral prices, which are unpredictable, have a greater effect on long-term production than would a royalty.


181. See Hobbs, supra note 175, at 39.
mental controls for ongoing mining. Moreover, with its current emphasis on deficit reduction, Congress would be loathe to create a new multi-billion dollar program without having a source of funding already in hand; a royalty on mining on federal lands is the only likely source. Although this paper considers the abandoned mine issue largely independently of the larger mining reform effort, it is important to keep that context in mind, since it will determine such crucial issues as the level and duration of funding for any abandoned noncoal mine program.

B. Differences Among Recent Bills and Reform Proposals

All the major mining reform bills of the past five years would have created an abandoned noncoal mine reclamation program. Despite the agreement that such a program should exist, there was no consensus on the exact form it should take. The proposals differed in several important respects: the roles played by the federal and state governments, the priorities for the cleanup, the geographic scope of the program, the method for allocating cleanup funds among states, the creation of inventories, and the approach to remining.¹⁸²

1. Federalism

The most significant difference among the various proposals was the degree of authority delegated to the states. Some Republican sponsored bills would have granted states almost total autonomy.¹⁸³ Under this "state run" approach, states would be given money with essentially no federal oversight. Although they would be required to spend the money according to federally established priorities and conditions (for example, that the money could not be spent on a listed Superfund site), the state reclamation programs would not require federal approval. Moreover, since the money would be transferred directly into state-managed funds, the federal authorities would have no fiscal control over state actions.

The most common framework proposed in the bills represents the middle ground on the federalism spectrum:¹⁸⁴ a "cooperative fed-

¹⁸². There were also important differences in the bills that are beyond the scope of this paper. By far the most important difference was how much money the various bills would have raised to pay for the cleanup. See supra note 174 and sources cited therein. A related issue was whether the interest that accrues on unspent portions of the abandoned mine fund would be added to the fund, or given to the treasury. SMCRA has been criticized for taking the latter approach. See McElfish & Beier, supra note 114. Perhaps as a result, most of the bills would have reinvested the interest from the noncoal reclamation fund in the fund itself. See, e.g., S. 257, 103d Cong., 1st Sess. § 301(a)(2) (1993).


¹⁸⁴. Most of the recent bills took this approach. See H.R. 918, 102d Cong. (1992); S. 257, 103d Cong. (1993); H.R. 1708, 103d Cong. (1993); S. 775, 103d Cong. (1993). So did
eralism" approach modeled after SMCRA. Under this approach, the Federal Government would grant money from a federal fund to states that meet basic criteria, typically that the state had a federally approved reclamation program and that the state had created an inventory of abandoned mines. Then the state would be allowed to spend the money on projects that reflected priorities and conditions spelled out in the law.

The other extreme is the "federally run" approach. Under this alternative, instead of distributing the money to the states, the Federal Government itself would manage the reclamation. Again, the Federal Government would have to follow the priorities established by statute. The most strict variant of this position is the imposition of uniform federal cleanup standards. This idea, proposed by the MPC, has not made it into any bills.

2. Priorities

Essentially all of the proposals contained similar priority structures, which were modeled after SMCRA. The first three priorities were generally the same: 1) protection of human health and welfare from mine emergencies; 2) protection of human health and welfare from non-emergency hazards; and 3) environmental restoration.

the MPC reform proposal presented in the Burden of Gilt report. See Lyon et al., supra note 6, at 61.

185. The criteria for approving the reclamation programs were typically vague. See, e.g., S. 257, 103d Cong. § 305(c)(1) (1993) ("The Secretary shall approve any State abandoned mine reclamation program . . . if . . . the State has the ability and necessary State legislation to implement such program and . . . the program complies with the provisions of this title and the regulations of the Secretary under this title.").

186. This framework was used in H.R. 322, 103d Cong. (1993). Congressional Quarterly described that overall bill as an "environmental wish list." Cong. Q. Wkly. Rep., 3169, Vol. 52, No. 43 (Nov. 5, 1994).

187. See Lyon et al., supra note 6, at 61.

188. See, e.g., S. 257, 103d Cong. § 302(b) (1993). There were a few variations on this general scheme. H.R. 1580, 104th Cong. (1995) and S. 506, 104th Cong. (1995), for example, required that states spend money in accordance with priorities, but only included the first two common priorities, omitting the third one about environmental restoration. See H.R. 1580, 104th Cong. § 504(b) (1995); S. 506, 104th Cong. (1995). It is not clear whether that would mean that states would not be allowed to spend money on such projects, but the bills probably would not be so interpreted or enforced by the Federal Government, since they were based on the idea of giving states broad latitude on how to spend the money. Another variation was found in H.R. 322, 103d Cong. (1993), in which the third priority included restoration of fish and wildlife resources. See id. at § 302(b)(3). A third variation was found in H.R. 1708, 103d Cong. (1993), which did not separate emergency protection of health and welfare from other protection of health and welfare. See id. at § 12(b)(2). Its companion bill, S. 775, 103d Cong. (1993), contained a similar provision.

Of course, environmental hazards can sometimes threaten human health and welfare. Under SMCRA's similar language, environmental restoration potentially could be, but generally has not been, performed under the language of the first two priorities. See supra notes 120-123, 155 and accompanying text.
The lower level priorities that exist in SMCRA, such as spending money on public buildings damaged by coal mining, were not found in any of the noncoal reclamation bills.

3. *Program Scope*

All of the proposals agreed on several points. First, no reclamation money could be spent on a mine for which a private party had continuing cleanup responsibility under state or federal law. This would prevent an abandoned mine program from becoming a windfall for liable parties. Moreover, all proposals agreed that the abandoned mine fund could not be used to reclaim lands that were abandoned after the passage of the bills. Finally, all of the proposals contained broad language that would govern what kinds of reclamation work could be performed. The bills were divided, however, on whether abandoned mine cleanup money could be spent on any qualified mine regardless of location, or whether cleanup money could only be spent on mines on federal lands. Most of the bills from the 102d and 103d Congresses took the former position; the two bills from the 104th Congress limited spending to federal lands. An intermediate position was that money could be spent on mines on federal lands, or on mines that directly affected federal lands.

189. See, e.g., S. 257, 103d Cong. § 303(a)(2) (1993). To reinforce this requirement, all the bills specified that the abandoned mine fund could not be used to reclaim lands that were abandoned after the passage of the bills, which would establish reclamation requirements for private parties. See H.R. 322, 103d Cong. § 303(a) (1993); H.R. 1580, 104th Cong. § 503(a) (1995); H.R. 1708, 103d Cong. § 12(c)(1)(a) (1993). Two bills further specified that on federal land, no money could be spent on mines abandoned after 1974 on Forest Service land, and after 1980 on BLM lands, dates that reflect when reclamation requirements were adopted by those agencies. See H.R. 918, 102d Cong. § 423(a) (1992); S. 257, 103d Cong. § 303(a) (1993).

190. See H.R. 322, 103d Cong. § 303(a) (1993); H.R. 1580, 104th Cong. § 503(a) (1995); H.R. 1708, 103d Cong. § 12(c)(1)(a). Two bills contained earlier abandonment dates for federal land. Under those proposals, money could only be spent on mines on Forest Service land abandoned before 1974, and for mines on BLM lands that were abandoned before 1980. See H.R. 918, 102d Cong. § 423(a) (1992); S. 257, 103d Cong. § 303(a) (1993). SMCRA regulations interpret similar statutory language to allow AML funds to be spent on a site where the responsible party has gone bankrupt, and the funds available under bankruptcy proceedings or financial guarantees are inadequate to reclaim the site fully. See 30 C.F.R. § 874.12(d)(2)(ii) (1997).

191. Typical language was “reclamation and restoration of land and water resources adversely affected” by past mining. S. 257, 103d Cong. § 302(a) (1993). The bill then provided a non-exclusive list of seven allowable types of expenditures. See id.

192. The bills that allowed spending on all lands were: H.R. 918, 102d Cong. (1992); S. 257, 103d Cong. (1993); H.R. 1708, 103d Cong. (1993); and S. 775, 103d Cong. (1993). Interestingly, the Western Governors’ Association, a state group, favored focusing the cleanup on federal lands sites, but with some flexibility to address sites not on federal lands. See Public Land Hearings, supra note 23, at 44 (statement of Michael Leavitt, Governor, State of Utah).

193. See H.R. 322, 103d Cong. §§ 302(a), (d) (1993).
RECLAMATION OF NONCOAL MINES

4. Fund Allocation

The bills that allocated money to the states proposed different methods for how the money should be distributed. Under a SMCRA model, half of the money would be returned to the state where it was raised, and the other half distributed by the OSM. One set of bills proposed expanding the "state share," returning all of the money to the state where it was raised.\textsuperscript{194} However, since Nevada presently produces most of the revenue from hardrock mining on federal land,\textsuperscript{195} but does not have the largest abandoned mine problem,\textsuperscript{196} this allocation scheme would not channel money to where it is needed most.

Two other proposals took the opposite approach, expanding federal discretion by permitting the federal agency to distribute the fund money to whichever states had the "greatest need,"\textsuperscript{197} determined according to the priorities established in the bills.\textsuperscript{198} An intermediate approach would require that the money be distributed "equitably" among the various states, although "due consideration" would have to be given to the priorities.\textsuperscript{199}

5. Inventories

Another split in the bills concerned whether an inventory would be required. Only one proposal (the one that would have federally run cleanup) would have required the creation of a standardized federal inventory of abandoned noncoal mines, as is required by SMCRA for abandoned coal mines.\textsuperscript{200} Most of the other proposals would have required state-by-state inventories. Under these proposals funds would go only to states that had developed an inventory.\textsuperscript{201} Finally, the "state-run" proposal would not have required any new inventory at all.\textsuperscript{202}

\textsuperscript{195} See \textit{Economic Implications}, supra note 178, at 33 (stating that 83% of revenue from federal lands was located in Nevada). Although not all mining occurs on federal lands, the Federal Government, of course, could only impose a royalty on mining on land that it owned.
\textsuperscript{196} See \textit{WGA Report}, supra note 1, at 13-15 (comparing estimated reclamation costs for various states).
\textsuperscript{197} S. 257, 103d Cong. § 304 (1993).
\textsuperscript{198} See \textit{id.}; H.R. 918, 102d Cong. § 424(a)(2) (1992) (distributing money to states with the "greatest need," but giving priority to states that are not already receiving SMCRA money).
\textsuperscript{199} H.R. 1708, 103rd Cong. § 12(d)(1)(b) (1993); S. 775, 104th Cong. (1995).
\textsuperscript{200} See H.R. 322, 103d Cong. § 303(c) (1993).
\textsuperscript{201} See H.R. 918, 102d Cong. § 425(a)(2) (1992); S. 257, 103d Cong. § 305(a)(2) (1993); H.R. 1708, 103d Cong. § 12(e)(1)(b) (1993); S. 775, 104th Cong. (1995).
6. Remining

In a departure from the SMCRA model, all the recent bills, except one, contained provisions intended to encourage remining.203 Most of these bills would not have allowed any money to be spent on a site unless it were shown that the area could not be economically remined, unless so delaying reclamation would threaten public health or safety.204 Such provisions would presumptively favor remining, since it could be very difficult to prove that remining was not economically feasible. An even stricter remining provision was incorporated in the Republican bills introduced in the 104th Congress. This would have barred reclamation on any land for which a remining plan had been submitted and contained no exception for protecting public health and welfare.205

This catalogue of differences should make it clear that despite recent consensus that an abandoned noncoal mine reclamation program is needed, much negotiation about the details of such a program remains to be done. Surprisingly, the debate over abandoned mine reclamation has not been marked by the polarity between environmental groups and industry groups, and between the states and the Federal Government, that has plagued environmental decisionmaking generally, and the other aspects of mining reform in particular. This suggests that there is a good chance that politically viable solutions exist to the differences described in this section. And even though mining law reform generally has stalled over the past three years, the forces that have been driving the reform effort have not gone away, making it inevitable that Congress will eventually revisit the issue.

IV STRUCTURING AN ABANDONED NONCOAL MINE CLEANUP PROGRAM

A. Goals

Decisions about how to structure an abandoned noncoal mine program should be based on how well such a program can accomplish several restoration goals. First, an abandoned mine program should be environmentally effective, a term that encompasses two goals in tension with each other: remediying the greatest number of environmental and safety hazards possible, and addressing the most serious

203. See H.R. 918, 102d Cong. (1992). The proposal presented in Burden of Gilt also does not recommend that the law contain a provision on remining. See Lyon et al., supra note 6.

204. See S. 257, 103d Cong. § 303(a)(3) (1993); H.R. 322, 103d Cong. § 303(a)(3); H.R. 1708, 103d Cong. § 12(c)(1)(c) (1993); and S. 775, 103d Cong. (1993).

problems first. Second, and closely related, a program should be \textit{cost effective}, not only in the short term, but in the long term as well. Third, it should be \textit{equitable}, both in terms of how the benefits of the program are distributed among states, and in terms of which regions and which private parties will pay for the program. Finally, a program should be \textit{politically robust}: it must be structured in such a way that it has a chance of passage and of long-term viability.

\textbf{B. Federalism}

The first important decision necessary to structuring an abandoned noncoal mine cleanup program is how to allocate responsibility for the program between the Federal Government and the states. As seen in the previous discussion of recent mining reform bills, the choice spans the spectrum from complete state autonomy to total federal control.

There are several reasons why it might be beneficial to have an active state role in an abandoned mine cleanup program. First, many states have already gained expertise in cleaning up abandoned noncoal mines through carrying out both SMCRA-funded and state-funded cleanups. In those states, programs already exist that are staffed by personnel familiar with the engineering and administrative challenges cleanups pose. In states that have so far only cleaned up coal mines, existing expertise would be somewhat less applicable to noncoal mine cleanup, but would still be helpful because some problems, such as acid mine drainage, are common to both kinds of abandoned mines. It would be efficient, therefore, for a national cleanup program to take advantage of existing state administrative structure and expertise.

Second, these state agencies are familiar with local conditions. Given the vast variation in mines and the problems they cause, this local knowledge is crucial to tailoring efficient, site-specific responses to abandoned mines. Allowing many states to experiment with different cleanup techniques is also likely to advance the science of mine reclamation more rapidly than if a single federal agency applied a one-size-fits-all solution to abandoned mine problems.

Understanding local conditions also may help states determine which abandoned mine sites pose the greatest risk. Moreover, states are certainly better positioned than the Federal Government to

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\item[206.] See Hardrock Mine Hearings, supra note 13, at 41 (statement of Dianne Nielson, Executive Director, Utah Dept. of Envtl. Quality).
\item[207.] See Hardrock Mine Hearings, supra note 13, at 33 (statement of Gregory Conrad, Interstate Mining Compact Comm'n) ("states are closer to the problems and can make a better determination than the federal government about priorities and actual remediation work."). Conversely, the complexity of determining risk might mean that a federal agency
\end{itemize}
\end{footnotesize}
translate those evaluations into appropriate decisions about which mines should be cleaned up first. Scholarly literature on risk assessment has emphasized that public weighing of risks such as safety and environmental hazards is quite properly influenced by non-scientific, non-quantitative factors such as degree of aversion to risk, fear of catastrophic outcomes, and concern about equitable distribution of risks.\textsuperscript{208} These preferences about risk-taking are likely to vary locally: some communities may be more concerned about people falling into pits, while others may be more worried about drinking-water contamination. States, which are more responsive to these local preferences than the Federal Government, are therefore the appropriate political unit to be making decisions about cleanup priorities.

Finally, granting greater local control and giving local preferences more weight in cleanup decisions will encourage greater local political support for the cleanup effort. Enlisting local support is important given that many abandoned mines are located in mining districts where there is also ongoing mining. Communities benefiting from the program (through environmental cleanup and reclamation employment) are in many cases also likely to feel its costs (decreased mining employment because of imposition of royalties). Moreover, mining communities traditionally place a high value on independence,\textsuperscript{209} and may resent excessive outside control. There are thus several solid justifications for a large state role in administering an abandoned mine cleanup program.

By contrast, most of the common arguments for a dominant federal role in environmental regulatory programs\textsuperscript{210} do not make sense when applied to an abandoned mine cleanup program. There is, for example, no risk of a “race to the bottom”: states, given a certain amount of cleanup money to spend, will have no incentive to perform poor cleanups. Nor is there likely to be a substantial problem with interstate effects. While it is true that a state might not have an incentive to clean up a mine with environmental effects that are felt entirely

\footnotesize{with experience in the process, such as the Environmental Protection Agency, would be able to make more accurate determinations.}

\textsuperscript{208} See, e.g., Donald T. Hornstein, \textit{Reclaiming Environmental Law: A Normative Critique of Comparative Risk Analysis}, 92 COLUM. L. REV. 562, 614-15 (1992) (“[P]ublic intuitions about risk can often be unpacked to reveal concern about a whole set of values that rational people may legitimately consider. . .”).


\textsuperscript{210} See John P. Dwyer, \textit{The Practice of Federalism Under the Clean Air Act}, 54 MD. L. REV. 1183, 1219 (1995) (“The usual justifications for a dominant federal role in environmental regulation are to take advantage of economies of scale with regard to research and data collection, to regulate interstate pollution, and to replace unduly weak state regulation”).
in another state, such situations will probably be rare, since mine impacts are generally felt locally.\textsuperscript{211}

A stronger argument for federal control is that if states are given too much freedom to spend reclamation money, they might succumb to pressure from local special interests to spend it on what would otherwise be low-priority cleanups. Because there is no indication that money has been misspent in the state implementation of SMCRA,\textsuperscript{212} this argument does not provide a convincing rationale for a fully federally controlled program.

The Federal Government, however, does have an interest in making sure that its money is spent efficiently by requiring that the worst abandoned mine sites are addressed first, even if that means that reclamation does not proceed at the same pace in all states. This suggests that the Federal Government should have some say in the nationwide prioritization of projects. The appropriate model, therefore, seems to be the SMCRA-style system of federal grants to state reclamation programs.

Assuming that a reclamation program were to adopt this cooperative federalism approach, the question remains as to what degree of federal oversight is necessary.\textsuperscript{213} Detailed, uniform national cleanup standards, whether technology-based or health-based, are inappropriate. Abandoned noncoal mines differ greatly, in terms of remoteness, the types of minerals present, geological settings,\textsuperscript{214} and extent of contamination. All of these factors affect both what kinds of reclamation techniques are appropriate and how thoroughly it makes sense to remediate a particular site. The decision about whether to backfill or to cover an open shaft depends, for example, on the stability of the terrain; the method chosen will affect the ease of later remining the shaft. Requiring the use of one technique in all circumstances would not be sensible. Given the reality of inadequate funding, it would also be foolish to insist on the same level of cleanup at a mine with waste

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\item \textsuperscript{211} Physical safety hazards, of course, stay put. While surface water contamination can spread, the worst effects are usually fairly close to the mine. See supra note 37 and accompanying text.
\item \textsuperscript{212} See supra notes 162-163 and accompanying text.
\item \textsuperscript{213} There has also been debate over which federal agency is best qualified to manage the fund. The common nominees are the OSM, which has the most experience managing an abandoned mine reclamation program, and the BLM, which has the most experience regulating hardrock mining. The Bush administration came up with a third choice: that each affected agency manage the money. See Mineral Exploration, Part V, supra note 170, at 72. This Comment will not attempt to resolve that debate. One issue that should be considered, however, is how likely an agency would be to disapprove a state reclamation program if the agency has little experience in doing reclamation itself.
\item \textsuperscript{214} A recent USGS report noted that the geological setting of an abandoned mine could impact the effectiveness of various cleanup techniques. See Abandoned Mine Cleanup Linked to Local Geology, ENG'G AND MIN. J., Aug. 1995, at NA-16C.
\end{itemize}
flowing into a river upstream from a city and at a mine in the remote desert. These factors suggest that there is no easy way to set uniform nationwide cleanup standards.

C. Priorities

It is imperative that the cleanup of abandoned mines be sensibly prioritized, since any abandoned noncoal mine program is likely to be seriously underfunded. There probably will never be enough money to clean up all of the sites, and even if there were, many of the sites would not be cleaned up for many years. Thus the choice of whether or not to adopt the SMCRA “health and safety before environment” priority model, will affect not only which sites will be cleaned up first, but ultimately which will be cleaned up at all.

The priority structures of SMCRA and all the recent reform bills all reflect a belief that the main goal of remediating abandoned mines should be the prevention of harm to humans. This anthropocentric premise is sensible. It does not, however, lead automatically to the conclusion that physical safety hazards (such as open pits and shafts) should be addressed before environmental hazards (such as acid mine drainage). After all, a single contaminated drinking water supply could pose a much larger overall risk to human welfare than a great number of unmarked mine openings.

There is no obvious way to resolve the issue of which mines should be cleaned up first. Some generalizations about the problem cut in opposite ways. On the one hand, the total cost of remediating the safety hazards will probably be far lower than the cost of remediating the environmental hazards, suggesting that safety problems should be tackled first. On the other hand, environmental problems such as groundwater contamination are likely to worsen the longer they are left alone; this is especially true of acid mine drainage, because increased acidity speeds the rate of further acidification. This suggests giving environmental hazards higher priority. None of this analysis, it should be cautioned, is much more than speculation, because so little is known about the true level of risk posed by environmental and safety hazards at abandoned mines.

Even a detailed study of the risks of various mining hazards, however, would be unlikely to reveal an optimal solution. The technique of comparative risk assessment has come under attack in recent years for several reasons. Critics claim that it is “a backdoor effort to pro-


216. Although this premise is, of course, subject to debate, this Comment will take it as an assumption. If one were to value harm to animals and ecosystems more highly, that would suggest dealing with the environmental problems first.
mote deregulation,” that it overlooks issues of equity, that it is subject to excessive influence by special interest groups, that it ignores public preferences, and that it tends to ignore values “that cannot readily be monetized.”217 All of these criticisms are primarily aimed at the use of comparative risk assessment to shape regulatory programs, and several of them do not apply well to the abandoned mine cleanup context. An assessment of which mines should be cleaned up first is not likely to be used to try to prevent cleanup altogether, since states have an incentive to see that cleanup money is spent in their states. There has not been any suggestion in the debate over abandoned mines that their risks are distributed inequitably, so the decision about which mines to clean up first does not implicate equity concerns. Moreover, there is no reason to think that supporters of remediating particular hazards will be better able to afford hiring experts to sway the process.218

Despite this reasoning, some of the criticisms of formal risk assessment do suggest that requiring such an assessment would be unwise in the abandoned mine context. Most importantly, as noted above, priorities based on a national risk assessment would be insensitive to local preferences about risk-bearing. Risk assessment would also tend to ignore values such as aesthetics and wildlife preservation that could not be easily added to the calculus of harm, although leaving them out might be appropriate if the focus of the program is prevention of harm to humans.

This debate suggests two conclusions. First, the recent reform bills have been correct not to require that priorities be based on any kind of national evaluation of risks.219 Second, states ought to be allowed to address the overall goal of the program—to clean up the mines that pose the greatest risk first, regardless of whether or not those problems are termed “environmental”—on a case by case basis. Since there appears to be no practical way to set national priorities

219. Of course, a risk assessment could be performed simply to inform the judgment of the states, without obligating them to first address the risks assessed as most serious. A thorough risk assessment, however, would require a huge amount of detailed information. See Hornstein, supra note 208, at 573 (describing risk assessment’s “enormous need for information”). Given the difficulty of comparing physical safety and environmental hazards, the information would probably not be worth the cost, and certainly would not be worth the delay.
that will lead to an optimally efficient cleanup, states should be given flexibility in making the prioritizing decisions.\textsuperscript{220}

Most of the other issues discussed in this section can also be understood as issues of priority. The decision about what types of mines to include in the program is partly a question of which mines deserve national attention first, and of whether the cleanup should proceed only on federal land. Likewise, the decision about whether money should go back to the states where it is collected or to the states where it is most needed can be seen as a choice about whether the most serious problems should be addressed first.

\textbf{D. Program Scope}

The problem of program scope contains two separate issues.\textsuperscript{221} The first is what kind of mines—gold mines, phosphate mines, gravel mines—should be included in the program. One set of recent bills proposed spending money only on mines of "locatable" or "hardrock" minerals, meaning those that may be patented under the 1872 Mining Act.\textsuperscript{222} The other bills would have spent money on all noncoal minerals, which would include, for example, the phosphate mines of Florida. There has been very little discussion about which approach is preferable.

Equity only marginally favors limiting the scope to hardrock mines. On the one hand, given that all the recent bills would have funded a cleanup program solely from royalties on the hardrock mining industry, it would be unfair to hold that segment of the mining industry responsible for cleaning up hazards that were caused by a different segment of the industry. On the other hand, all proposals would require the hardrock mining industry to pay for problems that

\textsuperscript{220} This does not mean that an abandoned mine reclamation statute should contain no standards. Rather, like SMCRA, it should limit the kind of work on which reclamation money can be spent on physical hazard remediation and environmental cleanup. The exclusion of SMCRA priorities four through six is entirely appropriate, since those provisions, even though rarely used, reek of pork. See 30 U.S.C. § 1233(a)(4)-(6).

\textsuperscript{221} A third issue might have to do with whether to allow cleanup at mines already covered by existing reclamation programs, particularly CERCLA and UMTRCA. This has not been an area of dispute, however; all the recent reform proposals would have excluded mines that are on the NPL or the UMTRCA list. The exclusion is sensible. If abandoned mine reclamation money were to replace Superfund funding, those few sites would more than eat up the limited money that would be available under a noncoal reclamation program. While Superfund cleanups are notoriously slow, the chances are at least as good that those sites will eventually get remedied that way. Nor does it make sense to have joint Superfund/AML funding; such programs have not worked well in the coal context. See \textit{Hardrock Mine Hearings}, supra note 13, at 39 (Testimony of Dianne Nelson, on behalf of Western Governors' Association).

\textsuperscript{222} This was the position favored by the Bush administration. See \textit{Mineral Exploration, Part V}, supra note 4 for discussion of meaning of "hardrock."
were created by companies that in many cases ceased to exist decades or more ago. Given this basic and unavoidable unfairness, it does not seem much worse to ask the hardrock industry to pay for problems created by past offenders in a closely related segment of the industry.

Other considerations strongly call for a broader scope. From the standpoint of maximizing the safety and environmental benefits, it would make sense to address the most serious problems first, regardless of what kind of mineral was once mined at the site. Also, once a federal program is passed, any further solutions are going to have to be undertaken by the states, since the pressure for federal action will have subsided. Thus it would be sensible for a federal program to attack the largest possible piece of the problem. These advantages of a broad scope outweigh the mild unfairness that would result from having a cleanup program funded solely from royalties on the hardrock mining industry.

One piece of information that would help make an informed decision is how much the cost of an abandoned mine program would increase if it addressed all noncoal mineral mines rather than only mines with locatable minerals. But as previously noted, studies of the abandoned mine problem have tended to ignore this distinction. It would also be useful to know whether particular kinds of abandoned mines tend to cause different or more severe health or environmental problems, and whether the different kinds of mines tend to be located in different parts of the country.

The other issue of scope has been whether the program should address only mines that are located on (or affect) federal lands, or whether program funds should be applied to all mines, whether on federal, state, or private lands. This debate is a fairly easy one to resolve: there is no convincing rationale for limiting the funds to abandoned mines on federal lands. Since there is no indication that the problems are any more severe on federal lands, limiting the program in that way would mean that less severe problems on federal land would be addressed before more serious problems on state and private land. Currently, SMCRA AML money can be spent on any lands; there has been no criticism of that broad scope, and there is no reason to change this policy in a noncoal reclamation program.

223. Perhaps the cost would not increase drastically, since one study noted that the "vast majority" of abandoned mines in the West are from metal mining. See Status Report, supra note 3, at 7.

224. It might be argued that limiting cleanup to federal lands would reduce the risk that private landowners with existing cleanup responsibilities could evade liability. All of the bills, however, would have prohibited cleanup of mines for which private parties were liable. See note 189 and accompanying text.

225. The reason that some recent noncoal proposals would limit the program to federal lands may have to do with how the money is raised: whereas the SMCRA AML program is
If the program is limited to mines on federal lands, then it should at least have the flexibility to clean up mines located near federal lands with effects that cross onto federal property. Such a provision is essential to an effective cleanup, given that many abandoned mines are found in mining districts that are made up of a mixture of federal, private, and state lands.\footnote{226}

Limiting a program to federal lands would also change the federalism analysis presented above. While it would still likely be true that states would have more expertise in reclamation than the Federal Government, states might be less familiar with the local conditions than the federal land management agencies. Because the work would be limited to federal lands, the state sovereignty argument would have no force at all. Thus, if only mines on federal lands are cleaned up, it would make more sense for the program to be run the way inventories and reclamation are now being done informally by various federal agencies. Rather than having a program of grants, the Federal Government would retain control, but enter into cooperative programs with states. This approach would also facilitate coordinated cleanup of historic mining districts with mixed state and federal ownership.

\subsection*{E. Fund Allocation}

There are two ways to allocate funds for an abandoned noncoal mine cleanup program: (a) tie reclamation grants to the amounts collected in each state or ensure states a minimum share of reclamation grants, as SMCRA does, or (b) spend the money wherever it is needed the most. From a national policy standpoint, the latter choice is clearly preferable, as it would fix the most serious problems first.

One reason why a state-share allocation scheme would be inefficient is that at present under such a scheme, most of the royalties funded by a tax on all coal producers wherever their mines are located, the hardrock mining reform bills would have funded the reclamation program only by levies on mines on federal lands. The authors of the bills may have thought it unfair to require mining operations on federal land to pay for cleanup of hazards caused by mining operations on other lands. That fairness problem, however, is illusory. While the funds for the program would only be raised from mining companies that mine on federal lands, that would not unduly burden some mining firms at the expense of others, since the mining industry is dominated by large corporations that have mines on both federal and private lands, and because the limited life-span of mines means that the payment burden will be constantly moving around.

\footnote{226. See generally Mineral Exploration, Part I, supra note 174, at 415 (testimony of Luke Danielson, Colorado Mined Land Reclamation Board) (suggesting that cleanup should "address interrelated environmental problems in historic mining districts"). Not only is the Federal Government concerned about spillovers from state lands, states are concerned about spillovers from federal lands. See Hardrock Mine Hearings, supra note 13, at 67 (testimony of Dianne Nielson, Western Governors' Association) (states are interested in assuming responsibility for sites on federal land in part because of spillover concerns).}
would be collected in Nevada. While this is bound to change eventually (the present concentration of mining in Nevada is largely a product of the relatively high price of gold), it would not make sense to have most of the money going back to Nevada, where the sparse population makes the safety hazards less pressing, and the dry climate makes the environmental problems less severe.

In addition, SMCRA's state-share scheme was a political compromise (or, viewed more positively, an attempt at fairness) necessitated by the large-scale westward movement of the coal industry. This shift meant that there was more money raised in the West, but more need for reclamation in the East. There is no evidence that a noncoal reclamation program would suffer from a similar regional disparity—generally speaking, abandoned noncoal mines are a Western problem, and noncoal mining is primarily a Western activity. This suggests there is no need for a compromised allocation scheme modeled on SMCRA.

F. Inventories

An allocation scheme that funds reclamation where it is most necessary requires an inventory of abandoned mines that is accurate, consistent, and impartial. No such inventory exists.

There is no way for the Federal Government to make an intelligent comparison of risks when the different state studies have used different methodologies for collecting data and evaluating risks. As the Bureau of Mines and the Colorado Center for Environmental Management recently put it: "[A] more complete scoping—one based on rational, uniform criteria and methodologies—is essential, if we are to accurately assess the extent of the [abandoned mine] problem and plan to deal with it." Another risk of using existing state studies is that controversy may arise (as it did under SMCRA) over whether states have exaggerated the hazards at mines in order to have them cleaned up more quickly.

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228. See East's Coal Towns Wither in the Name of Cleaner Air, N.Y. Times, Feb. 19, 1996, at A1 (explaining that Clean Air Act provisions requiring reduction of sulfur dioxide emissions have resulted in closing of coal mines in eastern areas where coal is high in sulfur).

229. For a summary of the problems with existing state inventories, see supra notes 5-9 and accompanying text.

230. S. 257, 103d Cong. (1993) and H.R. 918, 102d Cong. (1992) should accordingly be criticized for having a "greatest need" allocation scheme without requiring the creation of a federal inventory.

A more workable solution for developing a consistent national inventory is to have states and federal agencies work together to develop the inventory. Developing a standardized national inventory should not be considered a waste of money. The quality of the decisions that are made about which sites are reclaimed cannot be any higher than the quality of the information upon which those decisions are made. Moreover, since field reconnaissance work and site assessments have not been done in most cases, there should not be much duplication of that work in creating an inventory.

It is important to recognize, however, that there are likely to be some real problems and costs associated with creating such an inventory. First, it will probably be fairly expensive. The SMCRA national inventory, for example, cost about $26 million. Wyoming has estimated that it cost the state about $3,300 to inventory each site. This amount is substantial when compared to the $2,000 to $20,000 that Wyoming spent, on average, remediating safety hazards (the most common type of work to be done). Wyoming’s inventory costs, however, declined to between $700 and $1000 per site as the state became more efficient at performing inventory work. Wyoming’s experience provides a good argument for having the inventory work done in conjunction with a federal agency, since there would be better transfer of expertise among states, potentially making all the work more efficient. An additional problem with doing a national inventory is that it will take at least several years. It took Wyoming, for instance, about four years to do a comprehensive inventory of its coal and non-coal sites.

Because of these costs, the decision about whether or not it makes sense to create a national inventory depends in large part on the level at which the program is funded. If only a few million dollars a year are available for reclamation, it would not make sense to spend most of that money on a new inventory. Given such low funding, the goals of the program would be better served by just making do with the existing state inventories. If there are a few hundred million dollars a year available, creating a national inventory would be a worthwhile investment.

232. State and federal cooperation is the emerging model in the various local inventories now being created. See id. at 4-5.
233. See id. at 3.
234. See Hardrock Mine Hearings, supra note 13, at 34 (statement of Gregory Conrad, Interstate Mining Compact Comm’n).
235. See DOLZANI ET AL., supra note 32, at 34. The MPC, however, has estimated the cost of remediating safety hazards at the average site to be $19,500. See Lyon et al., supra note 6, at 31.
236. See DOLZANI ET AL., supra note 32, at 2.
237. See id. at 38 (stating that it took from the early 1980s to 1984).
RECLAMATION OF NONCOAL MINES

G. Remining

Remining commonly involves reprocessing tailings or other waste rock.\textsuperscript{238} The potential advantage of remining is that the mining operation then assumes responsibility for cleaning up the site according to current reclamation standards. Supporters say that this can lead to industry reclamation that costs the government nothing.\textsuperscript{239} The debate over remining has several strands.\textsuperscript{240}

Part of the debate involves incentives for remining. The most common proposal is to protect re-miners from liability for past environmental contamination.\textsuperscript{241} CERCLA and analogous state laws currently act as a large disincentive to remining the worst sites, because companies are afraid that once they do any work at a site, they will potentially be held liable for any pre-existing contamination.\textsuperscript{242} Small companies sometimes perform remining despite this risk only because they have less resources to lose if they are held liable.\textsuperscript{243} Other proposed incentives for remining include reducing bonding requirements or offering bonding credits.\textsuperscript{244} Sometimes the proposed subsidies are even more direct, such as waivers of fees or taxes.\textsuperscript{245} Although all of these proposals clearly bear on abandoned mine reclamation, a detailed discussion of them would involve many other statutes and is thus beyond the scope of this Comment.

Another part of the debate addresses whether any money should be spent on abandoned mine reclamation in cases where there is a possibility that the site may eventually be remined. Reclaiming such a site may make it impossible, or at least much more difficult, to later

\begin{itemize}
\item \textsuperscript{238} See Hardrock Mine Hearings, supra note 13, at 131 (testimony of Graham Clark, on behalf of American Mining Congress).
\item \textsuperscript{239} See Hardrock Mine Hearings, supra note 13, at 41 (statement of Dianne Nelson, Western Governors' Association).
\item \textsuperscript{240} This issue is not one where policymakers can look to the past to see what works. Coal sites have rarely been remined because coal is found in a pure 'seam,' all of which is usually extracted when the site is originally mined. By contrast, metals are found in various concentrations in the ore; they are mined only down to the grade that is profitable at the time. Lower-grade rock, commonly left behind both in the ground and in the tailings, may become profitable to mine later if mineral prices increase. See, e.g., Dolzani et al., supra note 32, at 72.
\item \textsuperscript{241} See, e.g., Hardrock Mine Hearings, supra note 13, at 160 (statement of Debra Struhsacker, Consultant).
\item \textsuperscript{242} See Hardrock Mine Hearings, supra note 13, at 131-33 (testimony of Graham Clark, on behalf of American Mining Congress).
\item \textsuperscript{243} See id. at 132-33.
\item \textsuperscript{244} See WGA Report, supra note 1, at 96-97.
\item \textsuperscript{245} See Hardrock Mine Hearings, supra note 13, at 32-33 (statement of Gregory Conrad, Interstate Mining Compact Comm'n). With this latter group of incentives, remining does cost the government money. The MPC also argues that the use of reclamation funds to finance remining "invites misuse of incentives and political corruption." Lyon et al., supra note 6, at 49.
\end{itemize}
remine the site. In this vein, some of the recent bills have proposed that, absent an emergency, reclamation not be allowed at a site until it can be shown that the site cannot be economically remined. These provisions are a poor idea, for several reasons. First, the provisions are vague. The profitability of remining is a fuzzy standard. What if, for example, the site could be profitably remined by a large operation but not by a small operation? Or what if the site could not currently be profitably remined, but might be if the price of the mineral continued to rise? The second, and related, problem is that such a policy could lead to paralysis. The remining profitability determination would be a difficult one to make, and would add time and cost to the reclamation process.

Given these difficulties, and given that there appears to be a trade-off between permanent reclamation and protecting the possibility of remining, an abandoned noncoal mine reclamation statute should not contain any language mandating particular types of engineering solutions. Rather, states should be allowed to choose whether or not to use engineering solutions that facilitate later remining.

CONCLUSION

It is evident from the sheer number of abandoned noncoal mines and the variety of health, safety and environmental hazards they cause, that a reclamation program for these mines is needed. What form such a program should take, is an issue that deserves closer attention than it has so far received. Given the relative success of the SMCRA program in cleaning up abandoned coal mines, the recent proposals to create a noncoal reclamation program modeled after SMCRA are a sensible place to start. But any such program should allow states more latitude than they have under SMCRA in prioritizing safety hazards and environmental contamination. In addition, federal oversight should be limited to ensuring that whichever projects are undertaken are the ones most needed to protect human health. If a reclamation program is reasonably well funded, a consistent and

246. The choice of reclamation method may affect the ease of later remining. Backfilling shafts, for example, is a more permanent solution than simply covering the entrance, but it also makes remining more difficult. See Dolzman et al., supra note 32, at 71-72. This trade-off between permanence and ease of later remining can also be an issue with the treatment of waste-rock piles. See id. at 97.

247. An even more drastic proposal, not found in any of the bills, was presented at the 1993 hearings. An industry consultant suggested that remining proceed exclusively for about ten years, after which time the government could take a look at what reclamation still remained to be done. See Hardrock Mine Hearings, supra note 13, at 160.

248. See id. at 191 (critiquing remining provisions of S. 775 and S. 257 for vagueness).

249. Mineral prices, the main factor that determines whether remining is profitable, can be extremely volatile. Thus a site that was currently profitable might quickly become unprofitable if the mineral prices dropped.
standardized national inventory of abandoned mines would be an invaluable tool to accomplish that oversight task. The Federal Government should also be able to funnel money to states where it is most needed, without having to give any base amount to each state. States should not be required to make a showing that the sites they want to reclaim cannot be remined; rather the choice of reclamation or remining should be left to their discretion. Such a program would best be able to accomplish the goal of spending money wisely to make abandoned mining districts both cleaner and safer.