United States Government Accountability Office

GAO

Testimony

Before the Committee on Energy and Natural Resources, U.S. Senate

For Release on Delivery
Expected at 2:15 p.m. EDT
Wednesday, March 12, 2008

HARDROCK MINING

Information on Abandoned Mines and Value and Coverage of Financial Assurances on BLM Land

Statement of Robin M. Nazzaro, Director
Natural Resources and Environment

March 12, 2008

HARDROCK MINING

Information on Abandoned Mines and Value and Coverage of Financial Assurances on BLM Land

GAO Accountability · Integrity · Reliability

Highlights

Highlights of GAO-08-574T, testimony before the Committee on Energy and Natural Resources, U.S. Senate

Why GAO Did This Study

The Mining Act of 1872 helped foster the development of the West by giving individuals exclusive rights to mine gold, silver, copper, and other hardrock minerals on federal lands. However, miners often abandoned mines, leaving behind structures, safety hazards, and contaminated land and water. Four federal agencies—the Department of the Interior's Bureau of Land Management (BLM) and Office of Surface Mining Reclamation and Enforcement (OSM), the Forest Service, and the Environmental Protection Agency (EPA)—fund the cleanup of some of these sites.

To curb further growth in the number of abandoned hardrock mines on federal lands, in 1981 BLM began requiring mining operators to reclaim lands when their operations ceased. In 2001, BLM began requiring all operators to provide financial assurances to guarantee funding for reclamation costs if the operator did not complete the task as required.

This testimony provides information on the (1) federal funds spent to clean up abandoned hardrock mine sites since 1998, (2) number of abandoned hardrock mine sites and hazards, and (3) value and coverage of financial assurances operators use to guarantee reclamation costs on BLM land. To address these issues, GAO, among other steps, asked 12 western states and Alaska to provide information on the number of abandoned mine sites and associated features in their states using a consistent definition.

To view the full product, including the scope and methodology, click on GAO-08-574T. For more information, contact Robin M. Nazzaro at (202) 512-3841 or nazzaror@gao.gov.

What GAO Found

Between fiscal years 1998 and 2007, BLM, the Forest Service, EPA, and OSM spent at least $2.6 billion (in 2008 constant dollars) to reclaim abandoned hardrock mines. BLM and the Forest Service have reclaimed abandoned hardrock mine sites on the lands they manage; EPA funds the cleanup of these sites, primarily on nonfederal lands through its Superfund program; and OSM provides some grants to states and Indian tribes to clean up these sites on their lands. Of the four agencies, EPA has spent the most—about $2.2 billion (in 2008 constant dollars) for mine cleanups. BLM and the Forest Service spent about $259 million (in 2008 constant dollars), and OSM awarded grants totaling about $198 million (in 2008 constant dollars) to support the cleanup of abandoned hardrock mines.

Over the last 10 years, estimates of the number of abandoned hardrock mining sites in the 12 western states and Alaska have varied widely, in part because there is no generally accepted definition for a hardrock mine site. Using a consistent definition that GAO provided, 12 western states and Alaska provided estimates of abandoned hardrock mine sites. On the basis of these data, GAO estimated a total of at least 161,000 such sites in these states with at least 332,000 features that may pose physical safety hazards and at least 33,000 sites that have degraded the environment.

According to BLM's information on financial assurances as reported in its November 2007 Bond Review Report, mine operators had provided financial assurances valued at approximately $982 million to guarantee reclamation costs for 1,463 hardrock operations on BLM land. The report also estimates that 52 mining operations have financial assurances that amount to about $28 million less than needed to fully cover estimated reclamation costs. However, GAO found that the financial assurances for these 52 operations are in fact about $61 million less than needed to fully cover estimated reclamation costs. The $33 million difference between GAO's estimated shortfall and BLM's occurs because BLM calculated its shortfall by comparing the total value of financial assurances in place with the total estimated reclamation costs. This calculation approach has the effect of offsetting the shortfalls in some operations with the financial assurances of other operations. However, financial assurances that are greater than the amount required for an operation cannot be transferred to another operation that has inadequate financial assurances. BLM officials agreed that it would be valuable for the Bond Review Report to report the dollar value of the difference between financial assurances in place and required for those operations where financial assurances are inadequate, and BLM has taken steps to correct this.

GAO discussed the information in this testimony with officials from the four federal agencies, and they provided GAO with technical comments, which were incorporated as appropriate.

Mr. Chairman and Members of the Committee:

I am pleased to be here today to discuss several aspects of hardrock mining, including abandoned hardrock mining sites and financial assurances. We developed this information during the course of our ongoing review, which is being conducted at the request of this Committee, Senator Reid, and the Chairman of the House Committee on Natural Resources.

As you know, the General Mining Act of 1872 encouraged the development of the West by allowing individuals to stake claims and obtain exclusive rights to the gold, silver, copper, and other valuable hardrock mineral deposits on land belonging to the United States. Since then, thousands of operators have extracted billions of dollars worth of hardrock minerals from land managed by the Department of the Interior's Bureau of Land Management (BLM) and the U.S. Department of Agriculture's Forest Service—the two principal agencies responsible for federal lands open for hardrock mining. However, some operators did not reclaim thousands of acres of federal land disturbed for exploration, mining, and mineral processing when their operations ceased. Some of these disturbed lands pose serious environmental and physical safety hazards. These hazards include environmental hazards such as toxic or acidic water that contaminates soil and groundwater or physical safety hazards such as open or concealed shafts, unstable or decayed mine structures, or explosives. Cleanup costs for these abandoned mines vary by type and size of the operation.[1] For example, the cost of plugging holes is usually minimal, but reclamation costs for large mining operations can be in the tens of millions of dollars.

Four federal agencies—BLM, the Forest Service, the Environmental Protection Agency (EPA), and the Department of the Interior's Office of Surface Mining Reclamation and Enforcement (OSM)—fund the cleanup and reclamation of some of these abandoned hardrock mine sites. BLM's and the Forest Service's Abandoned Mine Lands programs focus on the safety of their land by addressing physical and environmental hazards. EPA's funding of abandoned hardrock mine sites, under its Superfund Program, focuses on the cleanup and long-term health effects of air,

[1]For purposes of this testimony, cleanup refers to the mitigation of environmental impacts at mine sites, such as contaminated water, and the reclamation of land disturbed by hardrock operations.

ground, or water pollution by abandoned hardrock mine sites, and is generally for mines on nonfederal lands. Finally, OSM, under amendments to the Surface Mining Control and Reclamation Act (SMCRA) of 1977,[2] can provide grants to fund the cleanup and reclamation of certain hardrock mining sites after a state certifies that it has cleaned up its abandoned coal mine sites and the Secretary of the Interior approves the certification or at the request of a state or an Indian tribe.

Federal agencies, states, mining, and environmental organizations, and others have attempted to determine the total number of abandoned hardrock mines and the safety and environment hazards these mines pose. These estimates vary widely, and many of these abandoned hardrock mines present safety, health, and environmental hazards.

To curb further growth in the number of abandoned hardrock mines, BLM issued regulations, effective in 1981, that required all mining operators to reclaim BLM land disturbed by hardrock mining.[3] In 2001, BLM regulations began requiring all mining operators to provide financial assurances before beginning exploration or mining operations on BLM land.[4] These financial assurances must cover all of the estimated reclamation costs for a given hardrock operation.[5] Having adequate financial assurances to pay reclamation costs for BLM land disturbed by hardrock operations is critical to ensuring that the land is reclaimed if the mining operators fail to do so. In June 2005, we reported that some current hardrock operations on BLM land do not have financial assurances, and some have no or outdated reclamation plans and/or cost estimates on which the financial assurances should be based.[6] In that report we

- concluded that BLM did not have an effective process and critical management information needed for ensuring that adequate financial

[2]Pub. L. No. 95-87, as amended by Pub L. No. 101-5-8, Title VI, § 6010(2), Nov. 5, 1990.

[3]An operator is a person who conducts operations in connection with exploration, mining, and processing hardrock minerals on federal lands.

[4]43 C.F.R. §3809.

[5]BLM manages about 258 million acres, most of which are located in 12 western states, and Alaska. For simplicity in this testimony, we refer to BLM-managed land as BLM land.

[6]GAO, *Hardrock Mining: BLM Needs to Better Manage Financial Assurances to Guarantee Coverage of Reclamation Costs*, GAO-05-377 (Washington, D.C.: June 20, 2005).

assurances are actually in place, as required by federal regulations and BLM guidance; and

- made recommendations to strengthen BLM's management of financial assurances for hardrock operations on its lands.

In response to those recommendations, BLM modified its computer system—LR2000—to generate the Bond Review Fiscal Report (the Bond Review Report). BLM uses this report to determine if adequate financial assurances are in place for mining operations on its lands. BLM also requires its state directors to annually review the Bond Review Report to determine if all reclamation cost estimates are adequate, take action to address inadequacies, and certify that the financial assurances are adequate.

In contrast to BLM, the Forest Service—the other federal agency principally responsible for hardrock mining operations on federal land—does not have readily available information on the financial assurances in place for hardrock operations on its lands. Although the Forest Service's regulations do not require financial assurances for all operations, the Forest Service's policy is to require them.

In this context, my testimony today, as requested, discusses the (1) federal funds spent to clean up abandoned hardrock mine sites since 1998, (2) number of abandoned hardrock mine sites and the number of associated hazards, and (3) value and coverage of the financial assurances operators use to guarantee reclamation costs on BLM land.

To address these objectives, we interviewed staff at BLM, the Forest Service, EPA, and OSM; examined agency documents and data; and reviewed relevant legislation and regulations. In addition, for the first objective, we obtained federal expenditure data from these four agencies for cleaning up and reclaiming abandoned hardrock mine sites from fiscal years 1998 through 2007. We adjusted the expenditure data to 2008 constant dollars. For the second objective, we asked 12 western states and Alaska—which have significant numbers of abandoned hardrock mining operations—to determine the number of these mine sites in their states.[7] We asked the states to use a consistent definition, which we provided, in

[7]These states were Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, South Dakota, Utah, Washington, and Wyoming.

estimating the number of abandoned mine sites and associated features that pose a significant hazard to public health and safety and the number of sites that cause environmental degradation. We defined an abandoned hardrock mine site as all associated facilities, structures, improvements, and disturbances at a distinct location associated with activities to support a past operation of minerals locatable under the general mining laws. We specified that states should only include hardrock (also known as locatable), non-coal sites in this estimate. From these data, we estimated the number of abandoned hardrock mine sites, the number of features that pose physical safety hazards, and the number of sites with environmental hazards in the 12 western states and Alaska. We also summarized selected prior survey efforts by federal agencies and organizations to document differences in estimates, definitions, and methodologies. For the third objective, we reviewed BLM's Bond Review Report to determine the value and coverage of financial assurances in place to guarantee coverage of reclamation costs. This report provides information on financial assurances for 11 western states.[8] This Bond Review Report is generated from BLM's automated information system—LR 2000. Although the LR2000 data are of undetermined reliability, our limited assessment of these data indicates that they are appropriate as used and presented in this testimony, and we do not base any conclusions or recommendations on them.

We conducted this performance audit from November 2007 through March 2008, in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives. See appendix I for more detailed information on our scope and methodology.

In summary:

- The four federal agencies we examined—BLM, the Forest Service, EPA, and OSM—spent at least $2.6 billion (in 2008 constant dollars) between fiscal years 1998 and 2007 to clean up abandoned hardrock mines. BLM and the Forest Service spent a total of about $259 million (in 2008 constant

[8]These states were Arizona, California, Colorado, Idaho, Montana, New Mexico, Nevada, Oregon, Utah, Washington, and Wyoming.

dollars) to fund the cleanup of abandoned sites on the lands they manage. EPA spent the most of the four agencies—about $2.2 billion (in 2008 constant dollars) to fund the cleanup of abandoned mine sites, primarily on nonfederal land through its Superfund program, and OSM provided grants to states and Indian tribes totaling about $198 million (in 2008 constant dollars) to support cleanups of abandoned hardrock mines.

- According to several studies we reviewed that were conducted over the last 10 years, estimates of the number of abandoned hardrock mine sites in the 12 western states and Alaska vary widely, in part because there is no generally accepted definition for a hardrock mine site and the studies rely on the different definitions the states used. Furthermore, BLM's and the Forest Service's estimate of 100,000 abandoned hardrock mines on their lands is problematic because they included non-hardrock mines and mines that may not be on their lands. Using a consistent definition that we provided, the 12 western states and Alaska estimated the number of hardrock mine sites in their states and from this information we estimated a total of at least 161,000 abandoned hardrock mine sites in these states on state, private, or federal lands. These sites have at least 332,000 features that may pose physical safety hazards, such as open shafts or unstable or decayed mine structures. The states also estimated that at least 33,000 sites have degraded the environment by, for example, contaminating surface water and groundwater.

- As of November 2007, mine operators had provided financial assurances valued at approximately $982 million to guarantee reclamation costs for 1,463 hardrock operations on BLM land in 11 western states, according to BLM's Bond Review Report. The report also estimates that 52 mining operations have inadequate financial assurances amounting to about $28 million less than needed to fully cover estimated reclamation costs. However, we determined that the financial assurances for the 52 operations are actually about $61 million less than needed to fully cover estimated reclamation costs. The $33 million difference between our estimated shortfall and BLM's occurs because BLM calculated its shortfall by comparing the total value of financial assurances in place with the total estimated reclamation costs. This calculation approach has the effect of offsetting the shortfalls in some operations with the financial assurances of other operations. However, financial assurances that are greater than the amount required for an operation cannot be transferred to another operation that has inadequate financial assurances. BLM officials agreed that it would be valuable for the Bond Review Report to report the dollar value of the difference between financial assurances in place and required for those operations where financial assurances are inadequate, and BLM has taken steps to modify LR2000.

We discussed the information in this testimony with officials from the four federal agencies, and they provided us with technical comments, which we incorporated as appropriate.

Background

Historically, the mining of hardrock minerals, such as gold, lead, copper, silver, and uranium, was an economic incentive for exploring and settling the American West. However, when the ore was depleted, miners often left behind a legacy of abandoned mines, structures, safety hazards, and contaminated land and water. Even in more recent times, after cleanup became mandatory, many parties responsible for hardrock mining sites have been liquidated through bankruptcy or otherwise dissolved.[9] Under these circumstances, some hardrock mining companies have left it to the taxpayer to clean up the mining site. BLM, the Forest Service, EPA, and OSM play a role in cleaning up these abandoned mining sites and ensuring that currently operating sites are reclaimed after operations have ceased.

BLM and the Forest Service are responsible for managing more than 450 million acres of public lands in their care, including land disturbed and abandoned by past hardrock mining activities. BLM manages about 258 million acres in 12 western states, including Alaska. The Forest Service manages about 193 million acres across the nation. In 1997, BLM and the Forest Service each launched a national Abandoned Mine Lands Program to remedy the physical and environmental hazards at thousands of abandoned hardrock mines on the federal lands they manage. According to a September 2007 report by these two agencies, they had inventoried thousands of abandoned sites and, at many of them, had taken actions to clean up hazardous substances and mitigate safety hazards.[10]

BLM and the Forest Service are also responsible for managing and overseeing current hardrock operations on their lands, including the mining operators' reclamation of the land disturbed by hardrock mining. Although reclamation can vary by location, it generally involves such activities as regrading and reshaping the disturbed land to conform with adjacent land forms and to minimize erosion; removing or stabilizing buildings and other structures to reduce safety risks; removing mining

[9]GAO, *Environmental Liabilities: Hardrock Mining Cleanup Obligations*, GAO-06-884T (Washington, D.C.: June 14, 2006); GAO-05-377.

[10]BLM and Forest Service, *Abandoned Mine Lands: A Decade of Progress Reclaiming Hardrock Mines* (September 2007).

roads to prevent damage from future traffic; and establishing self-sustaining vegetation. One of the agencies' key responsibilities is to ensure that adequate financial assurances, based on sound reclamation plans and cost estimates, are in place to guarantee reclamation costs.[11] If a mining operator fails to complete required reclamation, BLM or the Forest Service can take steps to obtain funds from the financial assurance provider to complete the reclamation.

BLM requires financial assurances for both notice-level hardrock mining operations—those disturbing 5 acres of land or less—and plan-level hardrock mining operations—those disturbing over 5 acres of land and those in certain designated areas, such as the national wild and scenic rivers system. For hardrock operations on Forest Service lands, agency regulations require reclamation of sites after operations cease, but do not require financial assurances for the reclamation. However, according to a Forest Service official, if the proposed hardrock operation is likely to cause a significant disturbance, the Forest Service requires financial assurances.

Both agencies allow several types of financial assurances to guarantee estimated reclamation costs for hardrock operations on their lands. According to regulations and agency officials, BLM and the Forest Service allow cash, letters of credit, certificates of deposit or savings accounts, and negotiable U.S. securities and bonds in a trust account. BLM also allows surety bonds, state bond pools, trust funds, and property.

Neither agency centrally tracks all the types of financial assurances in place for hardrock operations on its lands. BLM's LR2000 tracks most of the types, and BLM is updating the database to include more types of financial assurances, but data are incomplete for the types of assurances currently in the system. The Forest Service does not have readily available information on the types of financial assurances in use, but it is developing a database to collect this and other information on hardrock operations by late summer 2008, according to Forest Service officials.

EPA administers the Superfund program, which was established under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 to address the threats that contaminated waste sites, including

[11]43 C.F.R. 3809 and 36 C.F.R. §228, Subpart A.

those on nonfederal lands, pose to human health and the environment.[12] The act also requires that the parties statutorily responsible for pollution bear the cost of cleaning up contaminated sites, including abandoned hardrock mining operations. Some contaminated hardrock mine sites have been listed on Superfund's National Priorities List—a list of seriously contaminated sites. Typically, these sites are expensive to clean up and the cleanup can take many years. According to EPA's Office of Inspector General in 2004, 63 hardrock mining sites were on the National Priorities List and another 93 sites had the potential to be added to the list.[13] Regarding financial assurances, EPA has statutory authority under the Superfund program to require businesses handling hazardous substances on nonfederal lands to provide financial assurances,[14] and according to agency officials, is currently exploring options for implementing this authority.

OSM's Abandoned Mine Land Program primarily focuses on cleaning up abandoned coal mine sites. However, OSM, under amendments to the Surface Mining Control and Reclamation Act (SMCRA) of 1977, can provide grants to fund the cleanup and reclamation of certain hardrock mining sites either (1) after a state certifies that it has cleaned up its abandoned coal mine sites and the Secretary of the Interior approves the certification, or (2) at the request of a state or Indian tribe to address problems that could endanger life and property, constitute a hazard to the public and safety, or degrade the environment, and the Secretary of the Interior grants the request. OSM has provided more than $3 billion to clean up dangerous abandoned mine sites. Its Abandoned Mine Land Program has eliminated safety and environmental hazards on 314,108 acres since 1977, including all high-priority coal problems and non-coal problems in 27 states and on the lands of three Indian tribes.[15]

[12]42 USC §§ 9601-9675.

[13]EPA, Office of Inspector General, *Nationwide Identification of Hardrock Mining Sites*, 2004-P-00005 (Washington, D.C: Mar. 31, 2004).

[14]GAO-06-884T.

[15]U.S. Department of the Interior, Office of Surface Mining Reclamation and Enforcement, *2006 Report to the President and Congress* (Washington, D.C.: Oct. 1, 2006).

Federal Agencies Have Spent At Least $2.6 Billion to Clean Up Abandoned Hardrock Mine Sites Since 1998

Between fiscal years 1998 and 2007, the four federal agencies we examined—BLM, the Forest Service, EPA, and OSM—spent at least $2.6 billion to reclaim abandoned hardrock mines on federal, state, private, and Indian lands. EPA has spent the most—$2.2 billion.[16] Although the amount each agency spent annually varied considerably, the median amount spent for the public lands by BLM and the Forest Service was about $5 million and about $21 million, respectively. EPA spent substantially more—a median of about $221 million annually—to clean up mines that are generally on nonfederal lands. Finally, OSM provided grants with an annual median value of about $18 million to states and Indian tribes through its SMCRA program for hardrock mine cleanups. Table 1 summarizes information on expenditures and hardrock mine cleanup activities at BLM, the Forest Service, EPA, and OSM. See appendix II for more detailed information on agency expenditures by fiscal year.

Table 1: Summary of Expenditures for Cleaning Up Abandoned Hardrock Mines at BLM, the Forest Service, EPA, and OSM, Fiscal Years 1998 through 2007

Dollars in thousands (2008 constant dollars)				
	BLM[a]	**Forest Service**	**EPA[b]**	***OSM***
Total expenditures between fiscal years 1998 and 2007	**$50,462**	**$208,709**	**$2,155,916**	**$198,099**
Median expenditures, fiscal years 1998 through 2007	$5,141	$21,476	$221,029	$17,626
Percent of total	1.9	7.8	82.6	7.6

Source: GAO analysis of BLM, Forest Service, EPA, and OSM data.

[a]These data include funding for large cleanup projects from the Soil Water and Air and the Hazard Management and Resource Restoration subactivities from BLM appropriations. These data do not include funding for smaller projects under those two subactivities, funding from Central Hazardous Materials Fund or the Natural Resource Damage Assessment and Restoration subactivities from the Department of the Interior's appropriations, or funding under the Southern Nevada Public Land Management Act.

[b]According to EPA officials, about 90 percent of these expenditures are EPA's; the other 10 percent are funds from responsible parties and states.

According to available data, as of September 30, 2007, BLM had spent the largest share of its funds in Montana—about $18 million; EPA had spent the largest share of its funds in Idaho—about $352 million; and Wyoming was the largest recipient of OSM grants for cleaning up hardrock mine

[16]Unless otherwise stated all dollars in this section are in 2008 constant dollars.

sites—receiving about $99 million. Wyoming was eligible for OSM grants after OSM's acceptance of the state's certification that it had completed its cleanup of coal mine sites. The Forest Service was unable to provide this information by state. See appendix II for BLM, EPA, and OSM total funding by state.

Prior State Estimates of the Number of Abandoned Hardrock Mine Sites Vary Widely, but Our Data Show at Least 161,000 Sites, with Many Posing Hazards

Previous state estimates of the number of abandoned hardrock mine sites vary widely in the six studies that we reviewed because, in part, there is no generally accepted definition for a hardrock mine site and the studies rely on the states' different definitions of hardrock mine sites. In addition, we found problems with BLM's and the Forest Service's estimate of 100,000 abandoned hardrock mines on their lands because the agencies included non-hardrock mines and mines that may not be on their lands. Using our consistent definition, 12 western states and Alaska estimated a total of at least 161,000 abandoned hardrock mine sites in their states on state, private, or federal lands.

Six Studies Identified a Range of Estimated Abandoned Hardrock Mining Sites

We identified six studies conducted in the past 10 years that estimated the number of abandoned hardrock mine sites in the 12 western states and Alaska.[17] The estimates in each of these studies were developed by asking states to provide data on the number of abandoned hardrock mine sites in their states, generally without regard to whether the mine was on federal, state, Indian, or private lands. The estimates for a particular state do, in some cases, vary widely from study to study. For example, for Nevada, the Western Governors' Association/National Mining Association estimated that the state had 50,000 abandoned hardrock mine sites in 1998, while in 2004 EPA estimated that the state had between 200,000 to 500,000 abandoned sites. The estimates also reflect the different definitions that states used for abandoned hardrock mining sites for a given study. For example, we found that, within the same study, some states define an

[17]The six studies are (1) Western Governors' Association and National Mining Association, *Cleaning up Abandoned Mines: A Western Partnership*, 1998; (2) Interstate Mining Compact Commission, *State NonCoal AML Inventory*, 2001; (3) Interstate Mining Compact Commission; *NonCoal Minerals Survey and Report* (expected issuance Spring 2008); (4) Mineral Policy Center, *Cleaning Up Western Watersheds*, 2003; (5) Earthworks fact sheets on hardrock mining from Earthworks Web site last visited on March 4, 2008 (www.earthworksaction.org/resources.cfm.); and (6) EPA, *Reference Notebook*, September 2004.

abandoned mine site as a mine opening or feature, while others define a site as all associated mine openings, features, or structures at a distinct location. As a result, an abandoned hardrock operation with two mine openings, a pit, and a tailings pile could be listed as one site or four sites, depending on the definitions and methodologies used. See appendix III for more information on estimates from these studies.

In addition, some regional or state estimates included coal and other non-hardrock mineral sites because it was (1) not important to distinguish between the type of minerals mined or (2) difficult to determine what mineral had been mined. In 2004, EPA commented on this problem, noting, "it is important to keep in mind that a universally applied definition of an [abandoned mine land] does not exist at present…therefore, the various agencies and state-developed…inventories presented may possess inconsistencies and are not intended for exact quantitative comparisons."

BLM and Forest Service Estimates of Abandoned Hardrock Mines Include Non-Hardrock Mines and Mines That May Not Be on Their Lands.

BLM and the Forest Service have also had difficulty determining the number of abandoned hardrock mines on their lands and have no definitive estimates. In September 2007, the agencies reported that there were an estimated 100,000 abandoned hardrock mine sites,[18] but we found problems with this estimate. For example, the Forest Service had reported that it had approximately 39,000 abandoned hardrock mine sites on its lands. However, we found that this estimate includes a substantial number of non-hardrock mines, such as coal mines, and sites that are not on Forest Service land. At our request, in November 2007, the Forest Service provided a revised estimate of the number of abandoned hardrock mine sites on its lands, excluding coal or other non-hardrock sites. According to this estimate, the Forest Service may have about 29,000 abandoned hardrock mine sites on its lands. That said, we still have concerns about the accuracy of the Forest Service's recent estimate because it includes a large number of sites on lands with "undetermined" ownership, and therefore these sites may not all be on Forest Service lands.

BLM has also acknowledged that its estimate of abandoned hardrock mine sites on its lands may not be accurate because it includes sites on lands that are of unknown or mixed ownership (state, private, and federal) and a few coal sites. In addition, BLM officials said that the agency's field offices

[18]BLM and Forest Service, *Abandoned Mine Lands: A Decade of Progress Reclaiming Hardrock Mines* (September 2007).

used a variety of methods to identify sites in the early 1980s, and the extent and quality of these efforts varied greatly. For example, they estimated that only about 20 percent of BLM land has been surveyed in Arizona. Furthermore, BLM officials said that the agency focuses more on identifying sites closer to human habitation and recreational areas than on identifying more remote sites, such as in the desert. Table 2 shows the Forest Service's and BLM's most recent available estimates of abandoned mine sites on their lands.

Table 2: BLM's and the Forest Service's Most Currently Available Estimated Number of Abandoned Mines on Their Lands, by State

State	Estimated number of abandoned mine sites on BLM land[a]	Estimated number of abandoned mine sites on Forest Service land[b]	Total
Alaska	6,000	830	6,830
Arizona	22,000	2,183	24,183
California	11,500	6,248	17,748
Colorado	2,500	2,605	5,105
Idaho	400	4,635	5,035
Montana	1,016	3,899	4,915
Nevada	9,000	1,613	10,613
New Mexico	3,000	989	3,989
Oregon	3,400	2,427	5,827
South Dakota	Not reported	503	503
Utah	10,000	697	10,697
Washington	Not reported	1,956	1,956
Wyoming	2,000	336	2,336
Total	**70,816**	**28,921**	**99,737**

Source: GAO analysis of BLM and Forest Service data.

[a]These data are from BLM's report on Abandoned Mine Land Inventory and Remediation, BLM/NV/GI-97/004, November 1996.

[b]These data are from the U.S. Geological Survey's analysis of data in the Mineral Resources Data System (of which MAS/MILS is now a part).

Using a Consistent Definition, GAO Estimated at Least 161,000 Abandoned Sites

To estimate abandoned hardrock mining sites in the 12 western states and Alaska, we developed a standard definition for these mine sites. In developing this definition, we consulted with mining experts at the National Association of Abandoned Mine Land Programs; the Interstate Mining Compact Commission; and the Colorado Department of Natural

Resources, Division of Reclamation, Mining and Safety, Office of Active and Inactive Mines. We defined an abandoned hardrock mine site as a site that includes all associated facilities, structures, improvements, and disturbances at a distinct location associated with activities to support a past operation, including prospecting, exploration, uncovering, drilling, discovery, mine development, excavation, extraction, or processing of mineral deposits locatable under the general mining laws. We also asked the states to estimate the number of features at these sites that pose physical safety hazards and the number of sites with environmental degradation. See appendix I for the complete definition we used when asking states for their estimates.

Using this definition, states reported to us the number of abandoned sites in their states, and we estimated that there are at least 161,000 abandoned hardrock mine sites in their states. At these sites, on the basis of state data, we estimated that at least 332,000 features may pose physical safety hazards, such as open shafts or unstable or decayed mine structures; and at least 33,000 sites have degraded the environment, by, for example, contaminating surface water and groundwater or leaving arsenic-contaminated tailings piles. Table 3 shows our estimate of the number of abandoned hardrock mine sites in the 12 western states and Alaska, the number of features that pose significant public health and safety hazards, and the number of sites with environmental degradation.

Table 3: GAO's Estimate of the Number of Abandoned Hardrock Mine Sites, Features That Pose Significant Public and Safety Hazards, and Sites With Environmental Degradation, in 12 Western States and Alaska, as of October 1, 2007

State	Estimated number of abandoned hardrock (non-coal, locatable) mine sites	Estimated number of features that pose a significant hazard to public health and safety	Estimated number of sites with environmental degradation
Alaska	469	235	99
Arizona	50,000	59,400	9,900
California	47,084	164,795	5,200
Colorado	7,300	17,000	150
Idaho	7,100	Not reported	Not reported
Montana	6,000	6,000-22,000	331
Nevada	16,000	51,000	150
New Mexico	800	15,000	200–300
Oregon	3,823	Not reported	140
South Dakota	950	Not reported	Not reported
Utah	17,000	17,000	17,000
Washington	3,629	1,608	50

State	Estimated number of abandoned hardrock (non-coal, locatable) mine sites	Estimated number of features that pose a significant hazard to public health and safety	Estimated number of sites with environmental degradation
Wyoming	956	519	437
Total	**161,111**	**332,557–348,557**	**33,657–33,757**

Source: GAO analysis of state-reported data.

While states used our definition to provide data on the estimated number of mine sites and features, these data have two key limitations. First, the methods and sources used to identify and confirm abandoned sites and hazardous features vary substantially by state. For example, some states, such as Colorado and Wyoming, indicated they had done extensive and rigorous fieldwork to identify sites and were reasonably confident that their estimates were accurate. Other states, however, relied less on rigorous fieldwork, and more on unverified, readily available records or data sources, such as published or unpublished geological reports, mining claim maps, and the Mineral Availability System/Mineral Industry Locator System (MAS/MILS),[19] which states indicated were typically incomplete. Several of those states that relied primarily on literature used the literature only as a starting point, and then estimated the number of features on the basis of experience. For example, while one state estimated that there were about three times the number of public safety hazards as identified by the literature, another state estimated that there were four times as many, and a third state estimated that there were up to six times as many.

Second, because states have markedly different data systems and requirements for recording data on abandoned mines, some states were less readily able to provide the data directly from their systems without manipulation or estimation. For example, New Mexico estimated the number of abandoned mine sites from the data it maintains on hazardous features, and Nevada estimated the number of abandoned hardrock mine sites from the data it maintains on the number of mining districts in the state.

[19]The MAS/MILS database was established to provide comprehensive information for known mining operations, mineral deposits/occurrences, and processing plants. The original data were collected on a state-by-state basis from the mid-1970s to 1982. The nonconfidential portions of the MAS/MILS database were compiled by the U.S. Department of the Interior, Bureau of Mines, but the accuracy of the database varies by location and mineral.

BLM Estimates That Operators Have Provided About $982 Million in Financial Assurances—About $61 Million Less Than Needed to Cover Estimated Reclamation Costs

As of November 2007, hardrock mining operators had provided financial assurances valued at approximately $982 million to guarantee the reclamation costs for 1,463 hardrock mining operations on BLM lands in 11 western states, according to BLM's Bond Review Report. The report also indicates that 52 of the 1,463 hardrock mining operations had inadequate financial assurances—about $28 million less than needed to fully cover estimated reclamation costs. We determined, however, that the financial assurances for these 52 operations should be more accurately reported as about $61 million less than needed to fully cover estimated reclamation costs. Table 4 shows total hardrock mining operations by state, the number of operations with inadequate financial assurances, the financial assurances required, BLM's calculation of the shortfall in assurances, and our estimate of the shortfall, as of November 2007.

Table 4: Total Hardrock Mining Operations, Operations with Inadequate Financial Assurances, Financial Assurances Required, and Difference Between Requirements and Actual Value, by State, as of November 2007

State	Total operations	Operations with inadequate financial assurances	Financial assurances required	BLM's difference between current and required value of financial assurances	GAO's difference between current and required value of financial assurances
Arizona	107	2	$7,689,394	($49,583)	($101,870)
California	95	4	24,530,439	1,593,013	(439,669)
Colorado	250	4	1,605,574	(170,291)	(167,730)
Idaho	46	1	1,556,705	(13,000)	(13,000)
Montana	41	0	67,478,064	1,200	0
New Mexico	28	0	1,066,735	0	0
Nevada	579	28	844,953,161	(33,667,684)	(47,739,814)
Oregon	60	4	366,773	47,327	(1,227)
Utah	150	5	12,247,645	(2,682,539)	(2,769, 802)
Washington	4	0	49,975	0	0
Wyoming	103	4	47,934,110	7,103,396	(9,518,877)
Total	**1,463**	**52**	**$1,009,478,575**	**($27,838,161)**	**($60,751,989)**

Source: GAO analysis of BLM's Bond Review Report.

Note: Data for Alaska are not maintained in LR2000 and not reported in the Bond Review Report.

The $33 million difference between our estimated shortfall of nearly $61 million and BLM's estimated shortfall of nearly $28 million occurs because BLM calculated its shortfall by comparing the total value of financial assurances in place with the total estimated reclamation costs. This calculation approach has the effect of offsetting the shortfalls in some operations with the financial assurances of other operations. However, the

financial assurances that are greater than the amount required for an operation cannot be transferred to an operation with inadequate financial assurances. In contrast, we totaled the difference between the financial assurance in place for an operation and the financial assurances needed for that operation to determine the actual shortfall for each of the 52 operations for which BLM had determined that financial assurances were inadequate.

BLM's approach to determining the adequacy of financial assurances is not useful because it does not clearly lay out the extent to which financial assurances are inadequate. For example, in California, BLM reports that, statewide, the financial assurances in place are $1.5 million greater than required, suggesting reclamation costs are being more than fully covered. However, according to our analysis of only those California operations with inadequate financial assurances, the financial assurances in place are nearly $440,000 less than needed to fully cover reclamations costs. BLM officials agreed that it would be valuable for the Bond Review Report to report the dollar value of the difference between financial assurances in place and required for those operations where financial assurances are inadequate and have taken steps to modify LR2000.

BLM officials said that financial assurances may appear inadequate in the Bond Review Report when

- expansions or other changes in the operation have occurred, thus requiring an increase in the amount of the financial assurance;
- BLM's estimate of reclamation costs has increased and there is a delay between when BLM enters the new estimate into LR2000 and when the operator provides the additional bond amount; and
- BLM has delayed updating its case records in LR2000.

Conversely, hardrock mining operators may have financial assurances greater than required for a number of reasons; for example, they may increase their financial assurances because they anticipate expanding their hardrock operations.

In addition, according to the Bond Review Report, there are about 2.4 times as many notice-level operations—operations that cause surface disturbance on 5 acres or less—as there are plan-level operations on BLM land—operations that disturb more than 5 acres (1,033 notice-level operations and 430 plan-level operations). However, about 99 percent of the value of financial assurances is for plan-level operations, while 1 percent of the value is for notice-level operations. While financial

assurances were inadequate for both notice- and plan-level operations, a greater percentage of plan-level operations had inadequate financial assurances than did notice-level operations—6.7 percent and 2.2 percent, respectively. Finally, over one-third of the number of all hardrock operations and about 84 percent of the value of all financial assurances are for hardrock mining operations located in Nevada. See appendix IV for further details on the number of plan- and notice-level operations in each state.

Mr. Chairman, this concludes my prepared statement. I would be happy to respond to any questions that you or Members of the Committee may have.

Contact and Staff Acknowledgments

Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this testimony. For further information about this testimony, please contact Robin M. Nazzaro, Director, Natural Resources and Environment (202) 512-3841 or nazzaror@gao.gov. Key contributors to this testimony were Andrea Wamstad Brown (Assistant Director); Casey L. Brown; Kristen Sullivan Massey; Rebecca Shea; and Carol Herrnstadt Shulman.

Appendix I: Objectives, Scope, and Methodology

To determine the (1) federal funds spent to clean up abandoned hardrock mine sites since 1998, (2) number of abandoned hardrock mine sites and the number of associated hazards, and (3) value and coverage of the financial assurances operators use to guarantee reclamation costs on the Department of the Interior's Bureau of Land Management (BLM) land, we interviewed officials at the BLM, the U.S. Department of Agriculture's Forest Service, the Environmental Protection Agency (EPA), and the Department of the Interior's Office of Surface Mining Reclamation and Enforcement (OSM); examined agency documents and data; and reviewed relevant legislation and regulations.

Specifically, to answer our first objective, we interviewed officials involved with the abandoned mine cleanup programs at BLM, the Forest Service, EPA, and OSM to request expenditure data, to understand how they tracked and monitored expenditures to clean up abandoned hardrock mines, and to request and ensure that we would receive the data we needed. We reviewed agency documents, budget justification reports and reports detailing agencies' cleanup efforts and programs. We obtained data on total expenditures for cleaning up and reclaiming abandoned hardrock mine sites that were compiled from BLM's Financial Accounting and Reporting System, EPA's Superfund eFacts Database, OSM's Abandoned Mine Land Inventory System, and Forest Service officials. BLM officials told us that in addition to the expenditure data they provided, the agency receives funding allocations from other sources, such as the Department of the Interior's Central Hazardous Materials fund. Since BLM does not track the expenditures from these other sources, we were unable to provide this information.

Because the four agencies' abandoned hardrock mine programs started in different years, start years for expenditure data vary. Specifically, BLM's data were for fiscal years 1997 through 2007; Forest Service's data, for fiscal years 1996 through 2007; EPA's data, for fiscal years 1988 through 2007; and OSM's data, for fiscal years 1993 to 2007. We performed a limited reliability assessment of the expenditure data and determined that we would limit our year-by-year presentation of expenditure data to the past 10 years (1998 through 2007) because of (1) variability in the program start year across the agencies, (2) inconsistencies across the agencies in their methods for tracking and reporting the data, and (3) some data recording errors in early years at some agencies. We presented these data in 2008 constant dollars.

Because of limited time in preparing this testimony, we were unable to fully assess the reliability of the agencies' expenditure data and the data

are therefore of undetermined reliability. However, we concluded that the data are appropriate as used and presented to meet our objectives because we (1) attribute the data to what agencies report as their expenditures, (2) present rounded data to minimize the perception of precision, and (3) do not base any conclusions or recommendations on the data.

To answer our second objective, we summarized selected prior survey efforts by federal agencies and organizations to document differences in estimates, definitions, and methodologies.[1] We also consulted experts in mining and abandoned mine land programs at the National Association of Abandoned Mine Land Programs; the Interstate Mining Compact Commission; and the Colorado State Department of Natural Resources, Division of Reclamation, Mining and Safety, Office of Active and Inactive Mines to develop a standard definition for estimating the number of abandoned hardrock mine sites, features, and sites with environmental degradation. Other efforts to assess the magnitude of the abandoned mine situation have acknowledged limitations in their efforts to develop a nationwide estimate because of inconsistencies in states' definitions and methods for estimating abandoned sites. Consequently, through iterative consultation with state and other mining experts, the definition we ultimately chose was clear and incorporated enough flexibility for all major hardrock mining states—the 12 western states and Alaska—to reasonably comply with our request, despite differences in how the states might define and maintain abandoned mine data.[2] We then provided states with an edit-controlled data collection instrument that requested data specifically tailored to our definitions and methods. Our definition of abandoned hardrock mine sites

- includes all associated facilities, structures, improvements, and disturbances at a distinct location associated with activities to support a past operation, including prospecting, exploration, uncovering, drilling,

[1]These studies were: (1) Western Governors' Association and National Mining Association, *Cleaning up Abandoned Mines: A Western Partnership*, 1998; (2) Interstate Mining Compact Commission, *State NonCoal AML Inventory*, 2001; (3) Interstate Mining Compact Commission; *Noncoal Minerals Survey and Report*, 2007; (4) Mineral Policy Center, *Cleaning Up Western Watersheds*, 2003; (5) Earthworks fact sheets on hardrock mining from Earthworks Web site last visited on March 4, 2008 (www.earthworksaction.org/resources.cfm.); and (6) EPA, *Reference Notebook*, September 2004.

[2]These states were Alaska, Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, South Dakota, Utah, Washington, and Wyoming.

discovery, mine development, excavation, extraction, or processing of mineral deposits locatable under the general mining laws;
- can range from an isolated prospect shaft and its associated waste rock pile and adjacent prospect pits, to a complex site with multiple entries, shafts, open pits, mill buildings, waste rock piles, a tailings pond, and associated environmental problems; and
- includes only hardrock (also known as locatable), non-coal sites.

Features that pose a significant hazard to public health and safety include

- features, such as mine openings, structures, and highwalls; and
- impoundments that pose a threat to public health and safety and require actions to secure, remedy or reclaim.

Sites with environmental degradation include features that lead to environmental degradation, and, consequently, require remediation of air, water, or ground pollution.

Rather than reporting, as requested, the number of features leading to environmental degradation, most states reported only the number of sites with environmental degradation, if they reported data for this request at all. Because most states do not maintain environmental degradation data by feature, states could only speculate about this figure, or compute it by estimating an average number of features per site and multiplying that by the overall number of sites with environmental degradation. Because of these limitations with feature-level data, we report only the number of sites with data on environmental degradation in order to ensure more reliable and consistent reporting across the states.

As a secondary confirmation that states provided data consistent with the definition, our data collection instrument included a section for states to provide a brief description of how the various data points were calculated, and whether the data provided were actual or estimated values. Based on comments in these fields, and basic logic checks on the data, we followed up as needed through telephone interviews to clarify and confirm problematic responses. Our definitional and editing processes provided us with reasonable assurance that the data were as clean and consistent as possible, and using these final edited data, we calculated the estimated number of abandoned mine sites, the number of features that pose physical safety and environmental hazards, and the number of abandoned mine sites with environmental degradation in the 12 western states and Alaska.

To answer our third objective—to determine the value and coverage of financial assurances in place to guarantee coverage of reclamation costs—we requested the BLM Bond Review Report from BLM's Legacy Rehost System 2000 (LR2000) database. Because we had previously reported reliability problems with data on financial assurances in LR2000,[3] we conducted a limited reliability assessment of the bond report data. This limited assessment included (1) basic logic checks on the data we received, (2) interviews with BLM minerals management officials knowledgeable of the changes made to LR2000 to address GAO's 2005 recommendations, and (3) a review of BLM's June 14, 2006, Instruction Memorandum 2006-172 for processing and entering Bond Review Report data in LR2000. Although the data are of undetermined reliability, our limited assessment indicates that management controls were improved for the generation of bond review reports from LR2000. We concluded that the data are appropriate as used and presented, and we did not base any conclusions or recommendations on these data.

[3]GAO-05-377.

Appendix II: Information on Federal Agency Expenditures to Clean Up Abandoned Hardrock Mines

This appendix provides information on federal expenditures used to clean up abandoned hardrock mines by fiscal year (table 5) and by state (table 6).

Table 5: BLM, Forest Service, EPA, and OSM Federal Expenditures to Clean Up Abandoned Hardrock Mine Sites, Fiscal Years 1998 to 2007

Dollars in thousands (2008 constant dollars)					
Fiscal year	**BLM[a]**	**Forest Service**	**EPA[b]**	**OSM**	**Total**
1998	$1,263	$16,623	$176,620	$1,634	$194,175
1999	5,210	22,003	225,941	9,795	257,570
2000	5,071	23,150	228,460	30,492	286,026
2001	5,916	22,617	245,662	43,130	317,858
2002	5,600	22,192	191,903	18,620	238,740
2003	4,957	21,752	209,753	24,502	261,405
2004	8,696	21,200	225,680	16,631	272,760
2005	6,350	20,542	222,508	11,236	261,294
2006	4,587	19,779	219,549	15,450	260,128
2007	2,811	18,852	209,839	26,608	259,037
Total	**$50,462**	**$208,709**	**$2,155,916**	**$198,099**	**$2,613,186**
Percent of total	2 percent	8 percent	83 percent	8 percent	
Median	$5,141	$21,476	$221,029	$17,626	$260,711

Sources: BLM, the Forest Service, EPA, OSM.

Notes: Program inception totals are $50,462 since 1998 for BLM; $231,538 since fiscal year 1996 for Forest Service; $3,261,197 since 1988 for EPA; and $406,236 since 1977 for OSM.

[a]These data include funding for large cleanup projects from the Soil Water and Air and the Hazard Management and Resource Restoration subactivities from BLM appropriations. These data do not include funding for smaller projects under those two subactivities, funding from Central Hazardous Materials Fund or the Natural Resource Damage Assessment and Restoration subactivities from the Department of the Interior's appropriations, or funding under the Southern Nevada Public Land Management Act.

[b]According to EPA officials, about 90 percent of these expenditures are EPA's; the other 10 percent are funds from responsible parties and states.

Table 6: BLM, EPA, and OSM Expenditures to Cleanup Abandoned Hardrock Mines, by State, Fiscal Years 1988 to 2007

Dollars in thousands (2008 constant dollars)						
State	**BLM**[a]	**EPA**[b]	**OSM**	**Total**	**Rank**	**Percent of total**
Montana	$18,158	$325,693	$27,499	**$371,350**	1	15.44
Idaho	6,310	351,848		**$358,158**	2	14.90
Colorado	6,762	277,622	19,362	**$303,746**	3	12.63
New Jersey		271,473		**$271,473**	4	11.29
Utah	4,970	132,135	5,029	**$142,133**	5	5.91
California	3,748	126,384		**$130,131**	6	5.41
Oklahoma		119,017		**$119,017**	7	4.95
Missouri		101,648	489	**$102,138**	8	4.25
Wyoming	1,054		99,893	**$100,947**	9	4.20
Nebraska		74,331		**$74,331**	10	3.09
South Dakota		64,246		**$64,246**	11	2.67
New York		52,567		**$52,567**	12	2.19
Texas		30,518	18,342	**$48,860**	13	2.03
Pennsylvania		41,079		**$41,079**	14	1.71
Washington		32,223		**$32,223**	15	1.34
Vermont		27,473		**$27,473**	16	1.14
South Carolina		22,913		**$22,913**	17	0.95
Indian Tribes			22,226	**$22,226**	18	0.92
Kansas		19,704	536	**$20,240**	19	0.84
New Mexico		15,845	3,349	**$19,194**	20	0.80
Nevada	2,289	13,229		**$15,517**	21	0.65
Tennessee		15,493		**$15,493**	22	0.64
Michigan		14,995		**$14,995**	23	0.62
Minnesota		8,804		**$8,804**	24	0.37
Illinois		7,201	724	**$7,925**	25	0.33
Oregon	4,205	2,611		**$6,816**	26	0.28
Alaska	2,786		602	**$3,388**	27	0.14
Maine		1,761		**$1,761**	28	0.07
Florida		1,611		**$1,611**	29	0.07
North Carolina		1,523		**$1,523**	30	0.06
Arizona	180	748		**$927**	31	0.04
Kentucky		452		**$452**	32	0.02
Ohio		248	49	**$297**	33	0.01
Indiana		230		**$230**	34	0.01

Dollars in thousands (2008 constant dollars)						
State	**BLM[a]**	**EPA[b]**	**OSM**	**Total**	**Rank**	**Percent of total**
Virginia		154		**$154**	35	0.01
West Virginia		139		**$139**	36	0.01
Total	**$50,462**	**$2,155,916**	**$198,099**	**$2,404,477**		100.00

Sources: BLM, EPA, OSM.

Note: The Forest Service was unable to provide this information by state.

[a]These data include funding for large cleanup projects from the Soil Water and Air and the Hazard Management and Resource Restoration subactivities from BLM appropriations. These data do not include funding for smaller projects under those two subactivities, funding from Central Hazardous Materials Fund or the Natural Resource Damage Assessment and Restoration subactivities from the Department of the Interior's appropriations, or funding under the Southern Nevada Public Land Management Act.

[b]According to EPA officials, about 90 percent of these expenditures are EPA's; the other 10 percent are funds from responsible parties and states.

Appendix III: Estimated Number of Abandoned Mine Sites, According to Selected Studies, 1998 to 2007

State	Western Governors' Association/National Mining Association (1998)[a]	Interstate Mining Compact Commission (2001)[b]	Interstate Mining Compact Commission (2007)[c]	Mineral Policy Center (2003)[d]	Earthworks (formerly Mineral Policy Center) (2007)[e]	EPA (2004)[f]	Range of estimated abandoned mines previously reported
Alaska	432	No data provided	350	432	No data provided	432	350–432
Arizona	100,000	100,000	80,000	100,000 "openings"	100,000	8,000–10,000	8,000–100,000
California	20,000	15,000	47,000	39,000	39,000	40,000–47,000	15,000–47,000
Colorado	22,000	18,000 mine openings	No data provided	23,000 including coal	23,000 including coal	8,000–23,000	8,000–23,000
Idaho	9,000	No data provided	No data provided	8,000-9,000	8,000–9,000	8,000–16,000	8,000–16,000
Montana	6,000	No data provided	2,740	6,000	6,000	6,000–19,000	2,740–19,000
Nevada	50,000	50,000 could pose a physical threat to people	100 mine sites, 200,000mine openings	200,000–500,000 mine features	No data provided	200,000–500,000	100–500,000
New Mexico	20,000	25,000 mine openings	No data provided	10,000–20,000	10,000–20,000	10,000–20,000	10,000–25,000
Oregon	No data provided	No data provided	No data provided	126 plus ongoing inventory in specific watersheds	126 on the ground inventory	94–120	94–126
South Dakota	900 in Black Hills	No data provided	900 in Black Hills	900 in Black Hills area	900	900	900
Utah	20,000	No data provided	17,000–20,000	20,000 mine openings, including coal	20,000	20,000 mine openings	17,000–20,000
Washington	No data provided	800 mine sites that that produced minerals worth more than $2,000	3,800	3,800	3,800	3,800	800–3,800
Wyoming	2,649	No data provided	1,696	640	No data provided	3,371	640–3,371

Source: GAO's analysis of nationwide estimates.

Note: Although studies asked for the number of sites, states did not always report the number of hardrock mine sites; instead some states reported other data, such as the number of mine openings, number of sites including coal, and number of mine features.

[a]Western Governors' Association and National Mining Association, *Cleaning Up Abandoned Mines: A Western Partnership,* 1998.

[b]Interstate Mining Compact Commission, *State NonCoal AML Inventory*, 2001.

[c]Preliminary data were collected in 2007, and will be presented in Interstate Mining Compact Commission, *NonCoal Minerals Survey and Report* (expected issuance Spring 2008).

[d]Mineral Policy Center, *Cleaning Up Western Watersheds*, 2003.

[e]Earthworks fact sheets on hardrock mining from Earthworks Web site last visited on March 4, 2008 (www.earthworksaction.org/resources.cfm.).

[f]EPA, *Reference Notebook,* September 2004. EPA has been working to update this information and expects to issue a new report in Summer 2008.

Appendix IV: Information on BLM Financial Assurances and Their Adequacy to Cover Estimated Reclamation Costs

This appendix provides information from BLM's November 2007 Bond Review Report, which includes information on the number of financial assurances in place for hardrock operations on BLM lands in 11 western states (table 7); the value of these financial assurances by state (table 8); the number of inadequate financial assurances for notice- and plan-level operations, by state (table 9); and BLM's and our analyses of the differences between financial assurance requirements and actual value of financial assurances in place for notice- and plan-level operations by state (table 10).

Table 7: Number of Financial Assurances in Place for Hardrock Operations on BLM Land in 11 Western States

State	Total number of notices	Total number of plans of operation	Total number of notices and plans of operation
Arizona	72	35	107
California	46	49	95
Colorado	228	22	250
Idaho	19	27	46
Montana	27	14	41
New Mexico	20	8	28
Nevada	409	170	579
Oregon	57	3	60
Utah	103	47	150
Washington	3	1	4
Wyoming	49	54	103
Total	**1,033**	**430**	**1,463**

Source: BLM's Bond Review Report, November 2007.

Note: Data for Alaska are not maintained in LR2000 and are not reported in BLM's Bond Review Report.

Table 8: Value of Financial Assurances Guaranteeing Reclamation of Hardrock Operations on BLM Land, by State

State	Value of assurances required for notices	Value of assurances in place for notices	Value of assurances required for plans of operation	Value of assurances in place for plans of operation
Arizona	$538,847.00	$554,578.20	$7,150,547.46	$7,085,233.46
California	177,749.00	212,849.00	24,352,689.65	25,910,602.86
Colorado	235,859.39	225,673.39	1,369,715.00	1,209,610.00
Idaho	44,871.00	44,871.00	1,511,834.19	1,498,834.19
Montana	966,268.96	966,268.96	66,511,795.32	66,512,995.32
New Mexico	87,940.54	87,940.54	978,794.00	978,794.00
Nevada	4,764,983.00	4,779,329.00	840,188,178.00	806,506,148.00
Oregon	168,777.00	166,104.00	197,995.85	247,995.85
Utah	1,411,244.00	1,497,253.00	10,836,401.00	8,067,853.00
Washington	750.00	750.00	49,224.85	49,224.85
Wyoming	935,922.00	957,122.00	46,998,188.00	54,080,384.00
Total	**$9,333,211.89**	**$9,492,739.09**	**$1,000,145,363.32**	**$972,147,675.53**

Source: BLM's Bond Review Report, November 2007.

Note: Data for Alaska are not maintained in LR2000 and are not reported in BLM's Bond Review Report.

Table 9: Number of BLM's Notice- and Plan-Level Operations with Inadequate Financial Assurances on BLM Land, by State

State	Number of notices with inadequate financial assurances	Number of plans with inadequate financial assurances	Total number of notices and plans with inadequate financial assurances
Arizona	1	1	2
California	1	3	4
Colorado	2	2	4
Idaho	0	1	1
Montana	0	0	0
New Mexico	0	0	0
Nevada	14	14	28
Oregon	4	0	4
Utah	1	4	5
Washington	0	0	0
Wyoming	0	4	4
Total	**23**	**29**	**52**

Source: BLM's Bond Review Report, November 2007.

Note: Data for Alaska are not maintained in LR2000 and is not reported in BLM's Bond Review Report.

Table 10: BLM and GAO Difference Between Financial Assurance Requirements and Actual Value in Place for Notice and Plan Operations, by State, as of November 2007

State	BLM's difference for notice operations	GAO analysis of difference for notice operations	BLM's difference for plan operations	GAO analysis of difference for plan operations
Arizona	$15,731.20	($1,629.80)	($65,314.00)	($100,240.00)
California	35,100.00	(200.00)	1,557,913.21	(439,468.88)
Colorado	(10,186.00)	(7,518.00)	(160,105.00)	(160,212.00)
Idaho	0.00	0.00	(13,000.00)	(13,000.00)
Montana	0.00	0.00	$1,200.00	0.00
New Mexico	0.00	0.00	0.00	0.00
Nevada	14,346.00	(109,092.00)	(33,682,030.00)	(47,630,722.00)
Oregon	(2,673.00)	(1,227.00)	50,000.00	0.00
Utah	86,009.00	(1,254.00)	(2,768,548.00)	(2,768,548.00)
Washington	0.00	0.00	0.00	0.00
Wyoming	21,200.00	0.00	$7,082,196.00	(9,518,877.00)
Total	**$159,527.20**	**($120,920.80)**	**($27,997,687.79)**	**($60,631,067.88)**

Source: BLM's Bond Review Report, November 2007.

Note: Data for Alaska are not maintained in LR2000 and is not reported in BLM's Bond Review Report.

GAO's Mission

The Government Accountability Office, the audit, evaluation, and investigative arm of Congress, exists to support Congress in meeting its constitutional responsibilities and to help improve the performance and accountability of the federal government for the American people. GAO examines the use of public funds; evaluates federal programs and policies; and provides analyses, recommendations, and other assistance to help Congress make informed oversight, policy, and funding decisions. GAO's commitment to good government is reflected in its core values of accountability, integrity, and reliability.

Obtaining Copies of GAO Reports and Testimony

The fastest and easiest way to obtain copies of GAO documents at no cost is through GAO's Web site (www.gao.gov). Each weekday, GAO posts newly released reports, testimony, and correspondence on its Web site. To have GAO e-mail you a list of newly posted products every afternoon, go to www.gao.gov and select "E-mail Updates."

Order by Mail or Phone

The first copy of each printed report is free. Additional copies are $2 each. A check or money order should be made out to the Superintendent of Documents. GAO also accepts VISA and Mastercard. Orders for 100 or more copies mailed to a single address are discounted 25 percent. Orders should be sent to:

U.S. Government Accountability Office
441 G Street NW, Room LM
Washington, DC 20548

To order by Phone: Voice: (202) 512-6000
TDD: (202) 512-2537
Fax: (202) 512-6061

To Report Fraud, Waste, and Abuse in Federal Programs

Contact:

Web site: www.gao.gov/fraudnet/fraudnet.htm
E-mail: fraudnet@gao.gov
Automated answering system: (800) 424-5454 or (202) 512-7470

Congressional Relations

Ralph Dawn, Managing Director, dawnr@gao.gov, (202) 512-4400
U.S. Government Accountability Office, 441 G Street NW, Room 7125
Washington, DC 20548

Public Affairs

Chuck Young, Managing Director, youngc1@gao.gov, (202) 512-4800
U.S. Government Accountability Office, 441 G Street NW, Room 7149
Washington, DC 20548