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Report to the Chairman, Environment, Energy, and Natural Resources Subcommittee, Committee on Government Operations, House of Representatives

October 1987

FEDERAL LAND MANAGEMENT

Limited Action Taken to Reclaim Hardrock Mine Sites

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October 21, 1987

The Honorable Mike Synar
Chairman, Environment, Energy
and Natural Resources Subcommittee
Committee on Government Operations
House of Representatives

Dear Mr. Chairman:

This report responds to your February 10, 1987, request that we follow up on actions taken by the Department of the Interior's Bureau of Land Management (BLM) in response to our report entitled Public Lands: Interior Should Ensure Against Abuses From Hardrock Mining (GAO/RCED-86-48, March 27, 1986). That report identified problems concerning the manner in which BLM was carrying out its responsibilities under the Federal Land Policy and Management Act of 1976 (FLPMA). The report noted that despite legislative requirements for reclamation, some BLM lands that had been mined were not being reclaimed. The report identified 30 mine sites (24 in Nevada and 6 in Colorado) which BLM officials believed had been abandoned without the required reclamation having been done. To help assure that federal lands damaged by mining operations are reclaimed, we recommended that the Secretary of the Interior (1) base his decision on whether to require a reclamation bond on the significance of land disturbance likely to result from the mining operation and (2) require mine operators to post a bond in an amount large enough to cover the estimated costs of reclamation if their operations could cause significant surface disturbance. We also recommended that the Secretary amend the surface management regulations to require operators to furnish the anticipated completion dates of their mining operations.

As you requested, we revisited the 30 unreclaimed mine sites discussed in our previous report to determine (1) if the mine sites had been reclaimed, (2) what actions BLM has taken since our previous report to ensure that the sites were reclaimed, (3) BLM's explanations about sites that remain unreclaimed, and (4) the specific steps BLM intends to take to assure these sites' eventual reclamation.

In brief, we found that 6 of the 30 mine sites have been completely reclaimed, 4 have been partially reclaimed, and 20 remain unreclaimed. Exploration or mining activity has resumed on two of the partially reclaimed sites and on three of the unreclaimed sites; thus reclamation

of these five sites will not be required until operations cease. Reclamation of one of the six reclaimed sites, located in a BLM wilderness study area, was completed by BLM at an estimated cost to the federal government of about $4,000. The other five sites were reclaimed by the operators or claim holders at their own expense. The cost to fully reclaim the 19 remaining inactive mine sites is estimated at $87,400 by BLM geologists and reclamation specialists.

In general, BLM has taken limited action since our previous review to assure that operators reclaim the mine sites. BLM officials in Nevada and Colorado explained that, given their limited staff resources, they considered other land management activities to be higher priorities and they had no plans for reclaiming these sites. For the most part, BLM officials have not contacted the mine operators to urge reclamation of the mine sites. In three cases where BLM officials, on their own initiative, had contacted the mine operators or claim holders to urge reclamation of the sites, the sites were reclaimed.

BLM has issued a task force report which recommended changes to its bonding policy but which did not advocate implementing our 1986 recommendations. BLM officials discovered during our review that two of the operators had posted financial guarantees with the state of Colorado.[1] According to Colorado BLM officials, financial guarantees required by the state (which BLM accepts in lieu of federal guarantees) should help to assure the eventual reclamation of most sites in the state.

Background

FLPMA requires mine operators to reclaim, as soon as feasible, all areas disturbed by their operations.[2] BLM's reclamation requirements apply only to mining disturbances created in 1981 or later; operators are not required to reclaim earlier disturbances. Whether operating under a notice of intent (for mining activities that cause a cumulative surface disturbance of 5 acres or less per year) or a plan of operations (for mining activities that could disturb more than 5 acres per year), operators must reclaim the disturbed areas to BLM's regulatory standards. These standards require saving topsoil, reshaping the areas disturbed, applying the reserved topsoil, revegetating the areas, removing toxic materials, and controlling erosion and water runoff.

[1]Colorado, Idaho, Montana, Oregon, Utah, and Wyoming have authority to require a financial guarantee on mining operations, but the extent to which this authority is exercised varies.

[2]In some cases the mine operator leases the site from the claim holder (the individual or company holding a legal claim to the site); in other cases, the operator is the claim holder.

BLM's regulations authorize officials to require a financial guarantee or bond from mine operators to ensure reclamation of mining operations involving more than 5 acres, unless the operation would cause only minimal disturbance to the land. However, if an operator has already posted a financial guarantee with a state agency, evidence of this will be accepted in lieu of a federal guarantee.

According to BLM's policy, financial guarantees are required only when an operator has an established record of regulatory noncompliance. If BLM finds that an operator is not complying with its regulations or has not carried out the required reclamation work, it may issue a noncompliance notice. If the operator then fails to take the actions required by the notice, BLM can require the operator to furnish a financial guarantee. BLM can also seek a court order enjoining the operator from further mining and ordering the operator to reimburse BLM for the cost of reclamation.

BLM's authority to require financial guarantees for operations conducted under notices of intent is limited, even though they may cause damage as severe, if not as extensive, as that conducted under plans of operations. Under current regulations, BLM can require a guarantee from operators working under notices of intent only if BLM issues a notice of noncompliance and then requires the mine operator to submit a plan of operations. BLM cannot require a financial guarantee until the operator fails to comply with the actions required by the noncompliance order and is requested to file a plan of operations.

BLM's Bonding Task Force Report

In October 1986, BLM established a Mining Claim Bonding Task Force to review its bonding policy. In April 1987, BLM issued its bonding task force report, which recommended certain changes to BLM's surface management program, including revising BLM's bonding policy to provide flexibility in the bonding of plans of operations and notices of intent. It fell short, however, of advocating implementation of our 1986 recommendations. The task force concluded that, based on its data, the incidence of unreclaimed acreage is relatively low, therefore there is no need to bond all mining operations.

Status of the 30 Mine Sites and BLM Actions to Ensure Reclamation

Of the 30 mine sites identified in our 1986 report as abandoned and unreclaimed, 4 have been partially reclaimed and 6 have been totally reclaimed. BLM reclaimed one mine site in a BLM wilderness study area at an estimated cost to the federal government of about $4,000. Regarding this site, an Interior solicitor advised the BLM district manager that,

because the operator had filed for bankruptcy, it would be virtually impossible to recover BLM's reclamation costs. He noted, however, that had BLM required a bond, such costs to the government would have been avoided. Three other mine sites were reclaimed by the operators or claim holders as a result of recent BLM contacts with them to encourage reclamation. Two sites were reclaimed by the operators on their own. Mining activity was reactivated on 5 sites since our prior report, leaving 19 sites still requiring reclamation, at an estimated cost of $87,400. (See table 1.)

Table 1: Summary of the 30 Mine Sites' Status

Mine site status	State		Estimated reclamation cost[a]
	Colorado	Nevada	
Unreclaimed	3	17	$78,900
Partially reclaimed	2	2	8,500
Reclaimed	1	5	•
Total	**6**	**24**	**87,400**

[a]Reclamation costs for the five reactivated sites are not included because the extent of disturbance, which determines the reclamation cost, will not be known until operations cease.

The extent of disturbance and the estimated cost of reclamation work needed on the unreclaimed and partially reclaimed sites vary considerably. Site damage ranged from drill holes to bulldozer cuts, pits, and abandoned equipment left at the mine site. Estimated reclamation costs for individual sites ranged from less than $100 to almost $30,000.

Actions Taken by BLM to Reclaim the 30 Mine Sites

Since mid-1985, BLM had taken no action on 15 of the 19 sites that remained unreclaimed or partially unreclaimed in 1987. In general, BLM officials explained that other land management duties were more important than pursuing the reclamation of these mine sites. For the same reason, BLM officials had no plans to assure the eventual reclamation of these mine sites. In the remaining four cases, BLM had taken actions ranging from contacting operators about needed reclamation to threatening legal recourse against operators who abandoned mine sites without reclamation.

Conclusions

BLM has made limited progress in reclaiming the mine sites identified in our March 1986 report. Only six sites were completely reclaimed. As we concluded in our earlier report, requiring financial guarantees could be an effective enforcement tool to ensure reclamation, but BLM has limited

its use. As an Interior solicitor noted, about $4,000 in federal reclamation costs for one site we reviewed would have been avoided had BLM required that operators post bonds. In fact, BLM had not obtained financial guarantees for any of the operations we reviewed. However, BLM officials discovered during our review that two of the reactivated mine sites are covered under Colorado statewide bonds; BLM officials believe these bonds will ensure the two sites' eventual reclamation.

In our March 1986 report, we concluded that the cost of posting a financial guarantee should be considered part of the cost of a mining operation, and is justified by the need to assure that mined lands are reclaimed by the operator, and not at public expense. We recommended that the Secretary require mine operators to post a bond or financial guarantee to insure reclamation if the operations could cause significant land disturbance. On the basis of the results of this review, we believe that these conclusions and recommendations are still valid; we urge their implementation.

While we acknowledge BLM officials citing higher priority land management activities and lack of staff as reasons for not contacting operators and/or claim holders to urge reclamation of the mine sites, we note that in three cases where BLM did contact the individuals, the operators reclaimed the sites at their own expense. We believe that such contacts can be instrumental in urging reclamation of the sites we identified, as well as other unreclaimed sites that BLM officials are aware of.

Recommendation

We recommend that the Director, BLM direct BLM state officials to contact operators or claim holders of known unreclaimed mine sites as soon as feasible to urge their reclamation. Priority should be given to those mine sites that are not covered by financial guarantees.

To determine if the 30 mine sites had been reclaimed, we made on-site inspections accompanied by BLM officials and interviewed BLM officials with jurisdiction over the sites in five district offices—Battle Mountain, Winnemucca, Carson City and Elko, Nevada; and Montrose, Colorado. In the district offices, we reviewed the case files related to each mine site.

We discussed our summary information with officials at BLM's district and state offices and incorporated their comments in our report where appropriate. However, as your office requested, we did not obtain official agency comments on a draft of this report. We conducted our review

between March and July 1987 in accordance with generally accepted government auditing standards.

As agreed with your office, we plan no further distribution of this report until 30 days from the date of this letter. At that time, we will send copies to the Secretary of the Interior, the Senate Committee on Energy and Natural Resources, the House Committee on Interior and Insular Affairs, and other interested parties and will make copies available to others on request.

Appendix I contains 1) discussions of our observations of each of the 30 mine sites, including descriptions and photographs of some mining disturbances we observed; 2) the extent and estimated costs of reclamation needed at each site; and 3) BLM's actions taken to assure reclamation since the issuance of our March 1986 report.

This review was performed under the direction of James Duffus III, Associate Director. Major contributors are listed in Appendix II.

Sincerely yours,

J. Dexter Peach

J. Dexter Peach
Assistant Comptroller General

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Abbreviations

BLM	Bureau of Land Management
FLPMA	Federal Land Policy and Management Act of 1976
GAO	General Accounting Office
RCED	Resources, Community, and Economic Development Division

Status of the 30 Mine Sites Reviewed by GAO

This appendix provides, for each of the 30 mine sites in our review, a discussion of the site's reclamation status during our 1985 and 1987 inspections, our observations and selected photographs of mining disturbances, and BLM's comments on its actions to encourage reclamation. Twenty-four of the 30 mine sites were located in four Nevada BLM districts (Battle Mountain, Winnemucca, Carson City, and Elko), and 6 were located in Colorado's BLM Montrose district.

BLM's Battle Mountain District, Nevada

BLM's Battle Mountain District contained 8 of the 30 mine sites that we reported on in March 1986. As of our 1987 inspection, all 8 of the sites required reclamation, at a total estimated cost of about $18,300.

Site No. 1

The 1981 notice of intent for this site proposed an exploration project that would involve drilling an unspecified number of holes for potential mineral development. The same operator subsequently filed another notice that proposed drilling six holes and constructing short stretches of new roads, with an expected disturbance of less than half an acre. Both notices stated that all disturbed areas would be reclaimed in accordance with BLM standards. Our 1985 on-site inspection found the area inactive and unreclaimed. During our 1987 inspection, we observed an unreclaimed drill road, three unplugged drill holes, and no indication of recent mining activity. According to a BLM geologist accompanying us, it would cost about $800 to reclaim this site.

The case file showed that the operator had notified BLM in 1981 that he had completed the project, with an estimated disturbance of less than half an acre, and was awaiting guidance on final reclamation measures. No BLM response was documented in the case file. Because of staff turnover since 1981, the area geologist could not explain why BLM had not responded. The BLM resource area manager told us that BLM has no immediate plans to follow up on this site's reclamation, but will try to do so as work load and staffing levels allow.

Site No. 2

The 1982 notice of intent for this site proposed sampling for gold and other minerals by digging backhoe pits to depths ranging from 8 to 20 feet in an area of less than 5 acres. Proposed reclamation consisted of leveling the excavated material and redistributing any available topsoil.

Our 1985 inspection found the area to be unreclaimed and inactive. During our 1987 inspection, we observed five unreclaimed backhoe pits and

no indication of recent mining activity. According to the BLM geologist who accompanied us, it would cost about $1,000 to reclaim these pits. Figure I.1 shows one of the unreclaimed pits.

Our review of the case file showed that the operator had notified BLM in 1982 that he had completed mining and planned no further activity because mineral recovery would not be economically feasible, given the declining metal prices. The operator also noted, however, that he was leaving the test pits unreclaimed, at the claim holder's request, so that the claim holder could later sample exposed bedrock for ore deposits. No BLM response was documented in the file. The BLM resource area manager said that she has no immediate plans to follow up on this site's reclamation, but will try to pursue reclamation with the claim holder when work load and staffing levels allow.

Site No. 3

The 1981 notice of intent for this site proposed an exploration project that would involve drilling 30 holes and digging 15 trenches, with a disturbance of about 1,350 square feet. The notice did not contain the required reclamation statement.

Our 1985 inspection found the site unreclaimed and no indication of any recent exploration or mining activity. During our 1987 inspection, we observed numerous large unplugged drill holes in the middle of roads, posing safety hazards. Because this site was located in a heavily mined area, a BLM geologist could not positively determine how much of the existing disturbance—drill holes and trenches—was caused by this operator and how much had been caused before 1981 (and was thus not subject to BLM reclamation requirements). According to the geologist accompanying us, reclamation of the site could cost up to $2,000.

The case file on this notice contained only a copy of the notice and BLM's acknowledgment that the notice was in order and complete. BLM had taken no action on this site since our 1985 review due to other work priorities and staffing constraints according to the area manager. The resource area manager said that she has no immediate plans to follow up on this site's reclamation, but will try to do so as work load and staffing levels allow.

Site No. 4

The 1981 notice of intent for this site proposed the construction of roads and drilling about eight exploratory holes, with a disturbance of less

Figure I.1: Unreclaimed Backhoe Pit Poses Safety Hazard in BLM's Battle Mountain District, Nevada

than 5 acres. The notice stated that all disturbed areas would be reclaimed to BLM standards.

Our 1985 inspection found the site unreclaimed and no indication of any recent exploration or mining activity. Our 1987 inspection found roads and holes unreclaimed. The area geologist accompanying us estimated the cost of reclamation at $2,000.

BLM had taken no action on this site since our 1985 site inspection due to other work priorities and staffing constraints, according to the area manager. The resource area manager said that she has no immediate plans to follow up on this site's reclamation, but will try to do so as work load and staffing levels allow.

Site No. 5

The 1981 notice of intent for this site proposed an exploration project that would involve constructing roads, drilling holes, and digging shallow trenches, with a cumulative surface disturbance of less than 5 acres. The notice proposed reclaiming all disturbed areas to BLM standards.

Our 1985 inspection found the site unreclaimed with no indications of recent exploration or mining activity. During our 1987 inspection, we observed that the operator had reclaimed part of an extensive road network but had not completed all the reclamation required by the reclamation plan that he had agreed on with BLM. The operator had not recontoured one of the roads as required by the reclamation plan and had not built erosion-control devices on another road. According to the geologist accompanying us, the reclamation should also have included further recontouring and reseeding of roads. The geologist estimated the cost of needed reclamation at $3,500.

The case file showed that BLM had written a specific reclamation plan for this site in 1984, and that a BLM geologist had inspected the site in mid-1985 and had noted his concern about the extent of reclamation needed. According to the Deputy State Director for Mineral Resources, BLM staff will contact the operator about further reclamation as soon as work load and staffing levels permit.

Site No. 6

The 1982 notice of intent for this site proposed an exploration project that involved creating 2 drill roads on a steep hillside adjacent to about 12 existing drill roads. The notice stated that all disturbed areas would be reclaimed to BLM standards.

Our 1985 inspection found the area unreclaimed and no indication of any recent exploration or mining activity. During our 1987 inspection,

we observed many unreclaimed drill roads and no indication of recent mining activity. According to two BLM geologists accompanying us, some of the roads were created before 1981, but others were made more recently. One of the geologists estimated the reclamation cost for this site to be $5,000.

The case file showed that, upon a 1986 site inspection, a BLM geologist believed that most of the roads had been created before 1981 and recommended closing the case file. BLM staff, however, had not contacted the operator to determine whether he had constructed any roads under his 1982 notice and, if so, whether he planned to reclaim them. The BLM resource area manager said that she has no immediate plans to follow up on this site's reclamation, but will try to do so as work load and staffing levels allow.

Site No. 7

The 1981 notice of intent for this site proposed drilling an unspecified number of exploratory holes. The notice stated that all disturbed areas would be reclaimed to BLM standards. Our 1985 inspection found the site unreclaimed and no indication of any recent exploration or mining activity. During our 1987 inspection, we observed several unplugged drill holes and no indication of recent mining activity on the site. According to the BLM geologist accompanying us, it would cost from a few dollars to a few hundred dollars to plug the drill holes, depending on the method used (e.g., placing rocks over the holes vs. fitting the holes with cement plugs).

The case file showed that the operator notified BLM in 1981 that he had completed his exploratory drilling and planned no further operations on this site. Because of staff turnover since 1981, the current BLM geologists were unable to explain why BLM had not responded to the operator's notification. The resource area manager said that she had no immediate plans to follow up on this site's reclamation, but will try to do so as work load and staffing levels allow.

Site No. 8

The 1981 notice of intent for this site (followed by 1982 and 1983 notices by the same operator) proposed a cyanide leaching operation (a method used to extract gold from ore) that involved digging an ore pit, creating a leach pad area of 40,000 square feet, and digging two chemical leach ponds. The surface disturbance proposed was 2 to 3 acres. Each of the notices stated that all disturbed areas would be reclaimed to BLM standards.

Our 1985 inspection found the operation inactive and unreclaimed. During our 1987 inspection, we observed that some recontouring had been done outside the leach pad area, but that the leach pad, two chemical ponds, and an ore pit were still unreclaimed. We noted no indication of recent mining activity, and an accompanying BLM geologist determined that the pad liner was no longer usable, as it had deteriorated too much to prevent seepage of leaching chemicals. This geologist estimated the site's reclamation cost to be $4,000. Figure I.2 shows one of the unreclaimed chemical leaching ponds.

Figure I.2: Cyanide Leaching Pond Left Unreclaimed Since 1985 in BLM's Battle Mountain District, Nevada

The case file showed that BLM, subsequent to our 1985 inspection, contacted the operator and requested that he reclaim the leaching operation. Because the original operator was no longer affiliated with the leaching operation, the current operator responded that he was attempting to lease the site to someone else or might continue the operations himself. Therefore, the current operator requested an extension of the reclamation requirements. BLM granted an extension, but requested that in the meantime the current operator recontour around the leach pad area to redirect water drainage and reseed the area. This reclamation

work was completed and BLM agreed to defer other reclamation requirements until the current operator either finished or leased the leaching operation.

The BLM resource area manager said that because the leach pad liner has deteriorated and no mining activity has resumed on the site, BLM staff would notify the current operator to complete reclamation of the site.

BLM's Winnemucca District, Nevada

BLM's Winnemucca District contained 7 of the 30 mine sites included in our review. As of our 1987 inspection, all seven of the sites required reclamation, at a total cost of at least $53,000.

Site No. 9

The 1982 notice of intent for this site proposed an open-pit mining operation for precious metals. The operation was to involve digging a mine pit and bringing in related processing equipment and structures, with a proposed disturbance of less than 5 acres. In 1985 the operator filed a similar notice. Both notices stated that all disturbed areas would be reclaimed to BLM standards.

Our 1985 inspection found the mining operation unreclaimed and inactive. During our 1987 inspection, we observed mining equipment on the site; however, it did not appear to have been recently operated. Among the equipment on the site were a bulldozer, a backhoe, a mobile water tank, and portions of two highway tractor-trailers. The BLM geologist who accompanied us believed that the operator had abandoned the site because the operator did not do any work in 1986 and told the geologist that he planned to begin a new mining operation at another location. The geologist estimated that reclaiming the site could cost as much as $30,000, including the costs required to remove all the heavy equipment and various structures.

Because the mining operation has been inactive for over a year, according to the area geologist, BLM staff plan to contact the claim holder and the operator (as time and work load permit) to determine the status of the operation and to discuss the site's eventual reclamation.

Site No. 10

The 1981 plan of operations for this site proposed an open-pit barite mining operation that involved constructing roads and digging a 100-foot-deep mine that would be capable of producing 50,000 tons of barite per year. The mine was expected to cover 42 acres. The plan proposed

that all mined areas, spoil dumps, ore stockpiles, and roads would be reclaimed and seeded.

Our 1985 inspection found the large pit, extensive waste dumps, and access roads unreclaimed and the site inactive. During our 1987 inspection, we observed no change. A BLM geologist estimated the site's reclamation cost at $15,000. Figure I.3 shows part of the unreclaimed mining area.

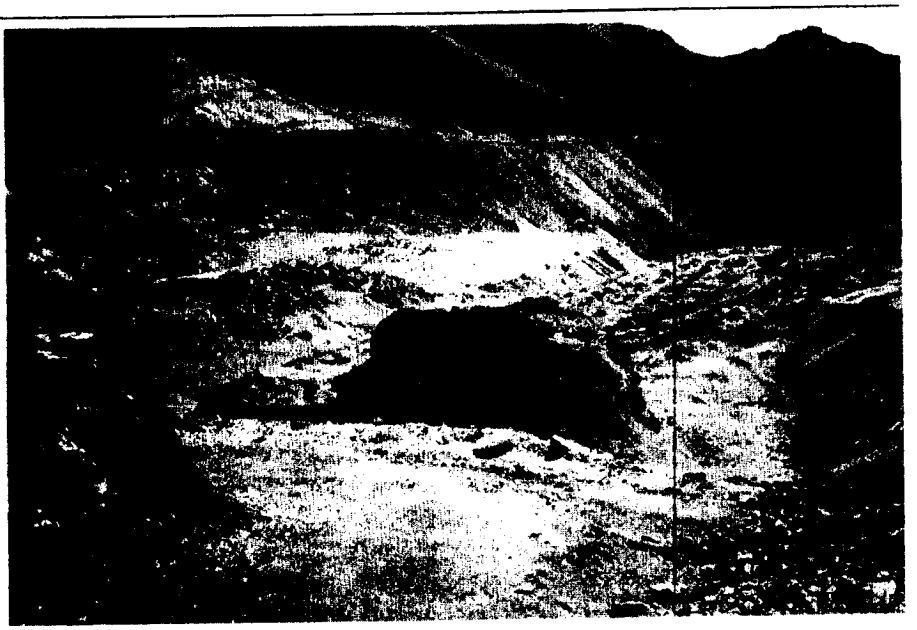


Figure I.3: Unreclaimed Barite Mining Area in BLM's Winnemucca District, Nevada, Is What Remains of Failed Mining Operation

The case file showed that in 1983 BLM found that the operator had gone out of business, had no assets, and had abandoned the mine without performing any reclamation. In 1984, an Interior solicitor concluded that BLM had no chance of recovering any reclamation costs because the operator no longer had any assets. BLM staff have no specific plans to assure this site's reclamation because they believe they have already exhausted all possibilities. However, the barite deposit was not mined, so BLM staff hope that when barite prices go up, another operator will mine the deposit and then reclaim the site.

Site No. 11

The 1982 plan of operations for this site proposed a precious metals exploration project that involved building roads, boring drill holes, and digging four trenches, each 12 feet by 100 feet. The plan stated that all roads, trenches, and drilling areas would be recontoured and that all areas would be reclaimed.

Our 1985 inspection found unreclaimed drilling areas and drill holes and an extensive unreclaimed road system that was unsightly and visible from a nearby interstate highway. According to the BLM geologist accompanying us, BLM had not required the operator to reclaim the drilling areas, holes, or roads because operators on nearby sites might want to use them for their mining operations. The geologist stated, however, that the trenches had been reclaimed. During our 1987 inspection, we observed that the drilling areas, holes, and roads were still unreclaimed, and that erosion was occurring on some roads. According to a BLM geologist, an operator with sites nearby had recently used some of the roads but was not expected to continue using the roads or to reclaim the area. The geologist estimated this site's reclamation cost at $5,000.

The case file showed that the operator had originally filed a notice of intent on this site, but that 3 months later, upon finding that the operation had exceeded the 5-acre limit, BLM required the operator to file a plan of operations. The exploration project eventually grew to cover about 15 acres. No BLM action since mid-1985 was documented in the file. According to the BLM district geologist, BLM staff have no specific plans to assure the site's reclamation because they believe the operator is no longer in business. The best hope for reclamation, said the geologist, is that a new operator will explore in the area and reclaim it.

Site No. 12

The 1983 notice of intent for this site proposed an exploratory gold sampling and testing operation that involved digging 30 steep-sided pits of depths up to 30 feet, with a total disturbance of about 3 acres. The notice stated that all disturbed areas would be reclaimed to BLM standards.

Our 1985 inspection found numerous steep-sided unreclaimed pits and no indication of recent exploration or mining activity. During our 1987 inspection, we observed some of the same pits; however, a new operator was exploring on the site and his earth-moving activities had obliterated some of the pits dug by the previous operator. A BLM geologist accompanying us estimated that it would cost $600 to reclaim the remaining pits.

The case file showed that BLM made numerous attempts in 1984 and 1985 to contact the operator and the claim holder to require that the pits be reclaimed. BLM also sent the operator a notice of noncompliance with reclamation requirements and notified the operator and the claim holder that some of the pits posed significant hazards to the public and wildlife. In April 1985 the operators promised to reclaim the pits, but did not do so. No further BLM action was documented in the file.

According to the area geologist, the operator probably will not reclaim the pits, but the current or future operators may fill and level them to facilitate their own exploration activities. According to the Deputy State Director for Mineral Resources, BLM staff have no specific plans to assure this site's reclamation, due to their current work load and staffing levels.

Site No. 13

The 1983 plan of operations for this site proposed a leaching operation (through which gold or other precious metals are extracted from ore) that involved building roads and trenches. The initial operation was to leach about 40,000 tons of ore; if the results were good, additional tonnage would be mined and processed. The plan stated that the surface soil would be saved and used to reclaim the mine area, but that the leach piles and roads would be left in place for future use.

Our 1985 inspection found the mine area unreclaimed and inactive. During our 1987 inspection, we observed that the mining operation had resumed. The operator said he expected to finish mining in 1987. Because the extent of disturbance will not be known until operations cease, we obtained no reclamation cost estimate for this site. BLM staff had no specific plans to assure the site's eventual reclamation.

Site No. 14

The 1983 notice of intent for this site proposed a mining operation to extract minerals from old mill tailings (previously processed ore). The operation involved digging four large trenches (11 feet by 195 feet), with a total disturbance of less than 1 acre. The operator's proposed reclamation was to fill in the trenches.

Our 1985 inspection found the trenches unreclaimed and no indication of recent mining activity. During our 1987 inspection, we observed no change. According to the BLM geologist who accompanied us, it would cost about $2,000 to reclaim the trenches. Figure I.4 shows one of the unreclaimed trenches.

Figure I.4: One of Four Unreclaimed Trenches Scarring Federal Land at Mine Site in BLM's Winnemucca District, Nevada

The case file showed that BLM sent the operator a notice of noncompliance in December 1985, noting that the operation appeared to have been abandoned without reclamation. The notice stated that the required reclamation included filling in existing trenches, recontouring, and cleaning up debris. No response from the operator was documented in the file. In 1986, the claim holder refused to lease this site to the original operator. According to the BLM Deputy State Director for Mineral Resources, BLM staff will contact the claim holder, when work load and staffing allow, and will request that he either arrange for the previous operator to reclaim the area or reclaim it himself.

Site No. 15

The 1981 notice of intent for this site proposed a gold mining operation that involved digging trenches with a total disturbance of less than 4 acres. The notice stated that all disturbed areas would be reclaimed to BLM standards.

Our 1985 inspection found the trenches unreclaimed and no indication of recent mining activity. During our 1987 inspection, we observed no change. The BLM geologist accompanying us estimated the reclamation cost at $1,000.

The case file showed that this site received considerable attention in 1985 and 1986 due to possible mercury contamination of a well and pond on the site. In informal hearings, the Nevada State Department of Environmental Protection contended that the use of mercury as an ore processing agent in the mine area had introduced mercury into the well and the pond. The current operator's mining operation had elevated the mercury levels in the area. Because contamination was at issue, BLM (as the landowner) was deemed liable for determining the extent of contamination and for formulating corrective measures, if necessary.

In response, BLM contracted with an environmental/engineering firm with hazardous waste and material experience to investigate the potential mercury contamination of the area. As of July 1987, BLM was analyzing the firm's preliminary report and was anticipating a need to close down the well and dismantle its windmill to prevent their further use (as such use could elevate the mercury levels). Excluding the cost of the investigation contract, BLM has already spent about $1,700 in staff and travel costs associated with the contamination issue, and estimates further expenditures of about $1,200 to dismantle the windmill. According to the BLM Deputy State Director for Mineral Resources, BLM staff will follow up with the operator, once the investigative report is made final, to assure that he reclaims the area.

BLM's Carson City District, Nevada

BLM's Carson City District contained 6 of the 30 mine sites included in our review. As of our 1987 inspection, two of the six sites required reclamation. The estimated cost of reclaiming one of the sites was about $10,000. The remaining site will be reclaimed after operations cease.

Site No. 16

The 1981 plan of operations for this site proposed continuing a 20-acre copper, silver, and gold mining operation that was already operating when the reclamation requirements took effect. (This plan was never approved by BLM staff because they did not receive the additional information they had requested from the operator.) The mining operation involved four large leaching vats and other ore processing equipment, a railroad tank car, a mobile home trailer, and roads. A bulldozer was to be used to dig ore for processing. The plan stated that the land's reclamation would be a "model example," and it included extensive plans for reseeding and revegetating the area.

We did not visit this site in 1985, but BLM's area office provided us with photographs and file data on its status. These documents showed that

about 10 acres were littered with mining equipment and a destroyed mobile home. Pieces of the mobile home were scattered throughout the area. Two 50-gallon barrels of sulfuric acid and several sacks of caustic chemicals were left behind and had been vandalized; acid from a barrel riddled with bullet holes had drained into the ground. During our 1987 on-site inspection, we observed large pieces of equipment from the vat leaching operation, a heavily eroded road, several bulldozer cuts, and no indication of recent mining activity. However, the sulfuric acid, chemicals, and mobile home pieces had been removed. According to the BLM geologist who accompanied us, the cost to reclaim this site would be about $10,000. Figure I.5 shows equipment left on the site.

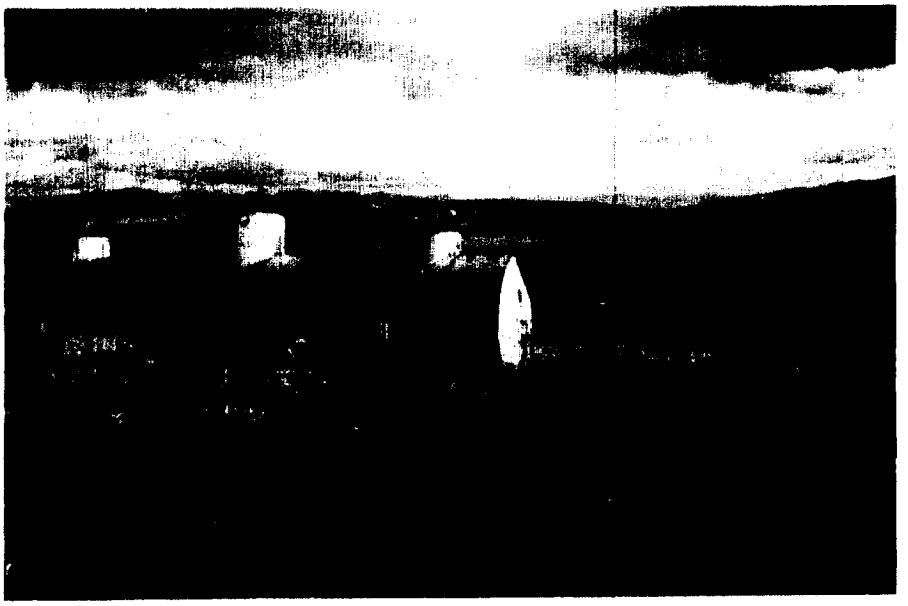


Figure I.5: Abandoned Mining Equipment Litters Federal Land in BLM's Carson City District, Nevada

The case file showed no BLM action since our 1986 report, but documented a series of actions in 1983 that resulted in the operator removing the chemicals from the site. The mobile home pieces, on the other hand, were removed by the county sanitation department, partly to prevent the public perception that the site was a land dump. The BLM geologist could not explain why BLM staff have not contacted the operator and required him to reclaim the vat leaching site. The resource area geologist plans to do so, however.

Site No. 17

The 1983 notice of intent for this site proposed an exploration project that involved digging a 300-foot trench with a bulldozer and boring up to 15 drill holes. The notice stated that all disturbed areas would be reclaimed to BLM standards.

Our initial inspection found an unreclaimed trench and no indication of recent mining activity. During our 1987 inspection, we observed that the trench was still unreclaimed, but was being used for access to an active exploration project on an adjacent site. According to the BLM geologist with us, the cost of reclaiming the trench would be about $2,000.

The case file showed that BLM sent the operator a notice of noncompliance in 1987 for failure to reclaim the trench. When the operator did not respond, BLM contacted the claim holder, who said he would reclaim the trench as soon as he no longer needs it for access to an adjacent site on which he is exploring. According to the area geologist, BLM staff plan to monitor the exploration project on the adjacent site to assure that the claim holder, upon project completion, reclaims the trench.

Site No. 18

The 1981 notice of intent for this site proposed mining about 5,000 tons of gold and silver ore and processing it with a heap leach operation. The mining area was to cover less than 5 acres. The notice did not contain the required reclamation statement.

Our initial inspection found an unreclaimed leach pile about 5 feet high and no indication of recent mining activity. During our 1987 inspection, we observed that the leach pile had been reclaimed. The case file showed that BLM contacted the operator in 1985, and the operator subsequently reclaimed the leach pile.

Site No. 19

The 1981 notice of intent for this site proposed an exploration project that involved digging four bulldozer cuts, each about 10 feet by 20 feet. The notice did not contain the required reclamation statement. Our initial inspection found unreclaimed roads and drilling areas on the site, and no indication of recent activity. During our 1987 inspection, we observed the same unreclaimed roads and drilling areas. We did not observe any bulldozer cuts during either inspection.

The case file showed that BLM contacted the operator in 1985, and the operator said he had backfilled the bulldozer cuts immediately after he

finished his project. According to a BLM geologist, the other site disturbances (roads and drilling areas) were probably caused before BLM's reclamation requirements took effect (in 1981). As a result, BLM staff considered the site reclaimed and closed the case file.

Site No. 20

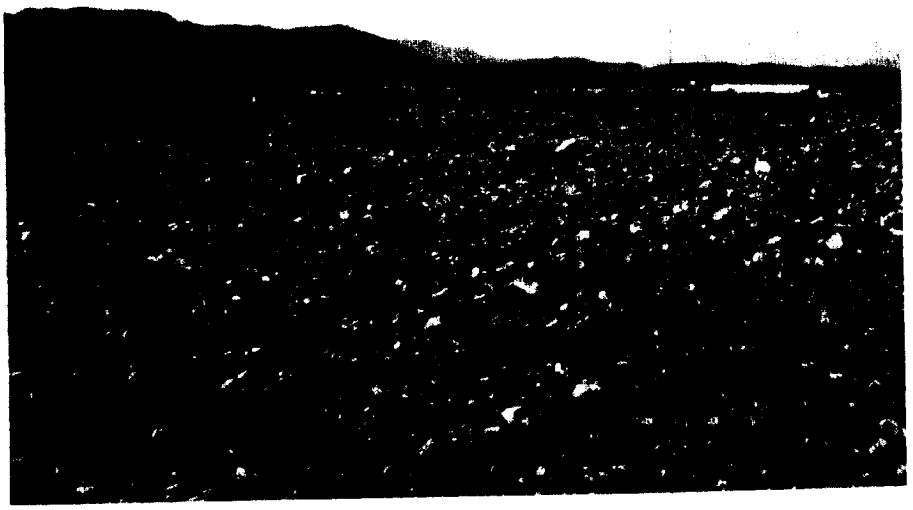
The 1983 notice of intent for this site proposed an exploration project that included digging a long trench (20 feet by 200 feet) and boring several drill holes. The notice did not contain the required reclamation statement.

Our initial inspection found the unreclaimed trench, alongside a state road, and no indication of recent exploration or mining activity. This 20-by-200-foot trench was about 5 feet deep and posed a safety hazard to the public and wildlife. During our 1987 inspection, we observed that the trench had been reclaimed. Figures I.6 and I.7 show the trench before and after its reclamation.

Figure I.6: Unreclaimed Trench in BLM's Carson City District, Nevada, as It Appeared in GAO's 1986 Report

The case file showed that in 1984, BLM sent two notices of noncompliance to the operator for failing to reclaim the trench. In response, the operator promised to fully reclaim the trench after completing his 1985

Figure I.7: GAO's 1987 Visit Found Trench in BLM's Carson City District, Nevada, Reclaimed



drilling. In November 1985, BLM sent the operator a letter requesting that he reclaim the trench. When the operator did not respond, BLM contacted the claim holder, who subsequently reclaimed the trench.

Site No. 21

The 1982 plan of operations for this site proposed an ore processing operation covering about 1.3 acres. The operation involved bringing in processing equipment (using existing roads) and creating several waste collection ponds and ore processing areas. For proposed reclamation, the plan stated that some of the tailings (ore separation residues) would be spread over the road to control dust, and the remainder would be spread over the ground.

We did not inspect this site in 1985, but BLM provided us with photographs and case file data. These documents showed that the processing operation, which had expanded from the proposed 1.3 acres to at least 2.5 acres, was unreclaimed and inactive. The waste collection ponds had dried up but had not been filled in and reclaimed; a garbage dump existed alongside a creek on the site; and several pieces of machinery littered the site, including three small bulldozers, a 2-1/2 ton tanker truck with parts missing, a broken-down and stripped station wagon, and miscellaneous pieces of mining equipment (all of which had parts

missing). During our 1987 inspection, we observed that the site had been reclaimed.

The case file showed that this site was located in a BLM wilderness study area. Consequently, BLM had stipulated, in approving the 1982 plan, that reclamation be completed so that any ore processing effects would be substantially unnoticeable by July 1986, when the site was to be considered for wilderness designation. According to a BLM area geologist, however, BLM believed that in order to meet its stipulations, the operators would need to finish the reclamation work by June 1985, so that revegetation could mature by the July 1986 wilderness consideration date. The case file showed that BLM made repeated attempts (including sending a notice of noncompliance) to persuade the operators (who were also the claim holders) to reclaim the site by June 1985. The operators removed their equipment from the site and did some recontouring, but refused to finish the reclamation work that was still needed. As a result, in January 1986, with the wilderness consideration deadline approaching, BLM used its own staff and equipment to finish the reclamation work, at a cost of nearly $4,000.

The BLM district manager then billed the operators to recoup BLM's reclamation costs, but with no success. The operators had filed for bankruptcy and had no remaining assets. Accordingly, an Interior Department solicitor advised the district manager that the bill was virtually uncollectible. The solicitor noted, however, that requiring bonds from operators would avoid government reclamation costs in such cases.

BLM's Elko District, Nevada

BLM's Elko District contained 3 of the 30 mine sites included in our review. As of our 1987 inspection, two of the three sites required reclamation, at a total cost of about $5,000.

Site No. 22

The 1981 notice of intent for this site proposed a mining operation that involved constructing a road along a hillside to an existing mine. The road, 12 feet wide and 3/4-mile long, would be used to haul ore from the mine. The notice stated that all disturbed areas would be reclaimed to BLM standards.

Our 1985 inspection found that the haul road had been built not along a hillside, as proposed, but up a stream drainage area; the road crossed the stream 12 times. According to the BLM district manager, the road construction had caused major damage to the stream drainage and

streamside vegetation. During our 1987 inspection, we observed erosion gullies caused by the road and vegetation growing on parts of the road. According to the BLM geologist accompanying us, nature can best reclaim the disturbance over time, and to bring in mechanized equipment would hinder the natural reclamation process and cause further damage. As a result, he provided no reclamation cost estimate.

The case file showed that BLM, upon discovering in 1981 that the operator had built the road through the stream drainage, notified the operator to cease all work under this notice and to discuss reclamation requirements with BLM. The operator responded that he would discuss the matter with BLM and would comply with the reclamation requirements. By 1984, because the operator had not made any further use of the road, BLM decided that the best course of action would be to allow natural revegetation and streamflow to reclaim the road.

Site No. 23

The 1983 plan of operations for this site proposed a cyanide leaching operation to process gold and silver ore, with an initial total surface disturbance of about 5 acres. Using existing roads, the operation was to involve constructing a leach pad area and two chemical leaching ponds. For proposed reclamation, the plan stated that the leaching ponds would be filled in and seeded.

Our 1985 inspection found no indication of recent mining activity and an unreclaimed, 15-acre leaching operation. In addition, an unstable dam had been left unreclaimed, as had several deep trenches and a road that had been widened from 28 to 92 feet. During our 1987 inspection, we observed no change. According to the BLM geologist accompanying us, the site's reclamation would cost about $5,000. Needed reclamation included removing processing equipment and facilities, removing the deteriorated leach pad liner, filling and seeding the leaching ponds, recontouring the leaching area, reapplying topsoil, seeding the area, controlling drainage on roads, recontouring and seeding roadsides, and reinforcing the reservoir dam. (See fig. I.8.)

The case file showed that BLM, in approving the plan of operations, specified detailed reclamation requirements and required that reclamation be completed by the fall of the year following the operation's cessation. BLM also requested a $5,000 reclamation bond but did not receive one before the operator went bankrupt (without having done any reclamation work). BLM inspected the site numerous times, both before and since our 1985 review, and found that new operators had been working on the

Figure I.8: Unreclaimed Leaching Operation Left by Bankrupt Operator in BLM's Elko District, Nevada

site, but they had not done any reclamation either. In 1986, BLM notified the claim holder that he was responsible for reclaiming the leaching operation because he was involved in joint ventures on the site. The claim holder responded that he was planning to do more work in the area and wanted to defer reclamation until he had finished. BLM agreed, on the condition that he post a $5,000 reclamation bond before continuing with any operations. The claim holder said he would provide the bond, but had not done so as of April 1987. If the claim holder does not reclaim the site in 1987, the BLM resource area manager told us that he plans to contact Interior's solicitor to seek legal action against the claim holder.

Site No. 24

The 1981 plan of operations for this site proposed a barite mining operation that involved building a lengthy road for hauling the ore. The total disturbance was expected to be about 23 acres, part of which was private land. The plan stated that reclamation would include recontouring and reseeding the pit walls, waste dumps, and roads.

Our 1985 inspection found the open-pit barite mine unreclaimed and no indication of any recent mining activity. During our 1987 inspection, we observed that the portion of the mine that was located on BLM land had

been reclaimed. The case file showed that BLM had contacted the operator in 1984 about reclaiming the site, and the operator said he had sold the operation and considered the buyer to be responsible for its reclamation. BLM responded that the original operator was still responsible for reclamation. In October 1985 the original operator reclaimed the public land portion of the mine and built erosion control devices on the haul road to facilitate drainage. BLM staff did not require any other reclamation of the haul road because they wanted it available for ongoing exploration in the area.

BLM's Montrose District, Colorado

BLM's Montrose District contained 6 of the 30 mine sites included in our review. As of our 1987 inspection, five of the sites required reclamation, at a total cost of about $1,100.

Site No. 25

The 1981 notice of intent for this site proposed sampling for precious metals by digging several shallow pits with a backhoe and creating a short road, with a total disturbance of less than an acre. The notice stated that the sampling pits would be filled.

Our 1985 inspection found several unreclaimed sampling pits and assorted mining equipment, including a large storage trailer. We noted no indications of recent mining activity. During our 1987 inspection, we observed that some pits had been reclaimed but that two had not. Mining equipment was still on the site, but we noted no indications of recent mining activity. Because BLM considers this site to be active, the extent of disturbance and the corresponding cost of reclamation is not yet known.

The case file showed that BLM had inspected the site six times and, in 1985, notified the claim holder that he should reclaim the site and remove the equipment, as he had done no work since 1982. The claim holder responded that he planned to work the site, and he filed another notice. Consequently, BLM considers the site to be active. According to a BLM reclamation specialist, the claim holder has reclaimed several of the older sampling pits. After operations cease, the BLM resource area manager expects that this site will be reclaimed, either by the claim holder or through use of the $5,000 financial guarantee that the state required on this project.

Site No. 26

The 1981 notice of intent for this site proposed an exploratory drilling project that involved boring about 50 drill holes and constructing some roads. The notice stated that all disturbed areas would be reclaimed to BLM standards.

Our 1985 inspection found some unreclaimed drill holes and roads, with no indication of recent mining activity. During our 1987 inspection, we observed that drill holes had been reclaimed, but that the roads had not. Because BLM considers this site to be active, the extent of disturbance and the corresponding cost of reclamation is not yet known.

The case file showed that in 1986, BLM's resource area geologist had closed the case file without having inspected the site. Shortly before our 1987 inspection, however, a resource area reclamation specialist inspected the site and noted that the drill holes had been reclaimed. The operator then advised BLM that he plans to do more drilling in 1988, so BLM considers the site to be active. After operations cease, the BLM resource area manager expects that the operator will reclaim the site.

Site No. 27

The 1981 notice of intent for this site proposed a uranium mining operation that involved expanding a dumping area for non-ore wastes and enlarging a turnaround area for vehicles. At an estimated disturbance of less than an acre, the operation would use existing roads and an existing but nonoperating underground mine. The notice did not propose specific reclamation measures, but did state that reclamation assurances were covered by a state-required financial guarantee.

Our 1985 inspection found the dumping and turnaround areas unreclaimed and no indication of recent activities. During our 1987 inspection, we observed no change. The BLM reclamation specialist accompanying us estimated that it would cost $300 to reclaim the dumping and turnaround areas. The case file showed no BLM contacts with the operator, but a BLM reclamation specialist said he had inspected the site. According to the resource area manager, the site's reclamation will be assured by a state required $25,000 financial guarantee. The guarantee is presently in a 5-year cessation status; that is, the operator has 5 years to either resume mining operations and extend the guarantee or to reclaim the disturbance and have the guarantee released.

BLM plans to periodically check the status of operations on this site. If the operator decides to permanently close the mine, BLM will require reclamation to be completed at that time.

Site No. 28

The 1981 notice of intent for this site proposed sampling for gold by digging five shallow pits, each 16 feet by 24 feet, on the banks of Colorado's San Miguel River, with a total disturbance of less than one acre. The notice did not contain the required reclamation statement.

Our 1985 inspection found the area unreclaimed and inactive. During our 1987 inspection, we observed that floodwaters from the San Miguel River had washed out the disturbance, making the site indistinguishable from other streamside areas. The case file showed that BLM notified the operator in 1983 to reclaim several pits and remove associated equipment. In 1986 the area geologist closed the case file without any documentation of a site inspection. She explained that she did not believe the operator could be located, but the case file showed no attempt to contact the operator at that time. Because floodwaters inundated the site, BLM planned no further action on this notice at the time of our visit.

Site No. 29

The 1982 notice of intent for this site proposed sampling for precious metals by digging several sampling pits with a small backhoe, with a total disturbance of less than 5 acres. The notice stated that all disturbed areas would be reclaimed to BLM standards.

Our 1985 inspection found the site unreclaimed and inactive. During our 1987 inspection, we observed no change. According to the BLM reclamation specialist with us, the cost of reclaiming the site would be about $800. Figure I.9 shows an unreclaimed pile of gravel taken from a sampling pit on the site.

The case file showed that a BLM reclamation specialist met with the operator in 1982 and discussed reclamation. Because the operator had cleared a wooded area for his sampling operation, the reclamation specialist told him that reclamation should include planting new trees and shrubs in addition to seeding the area with grass. Following a 1983 site inspection, BLM notified the operator that the abandoned operation must be reclaimed. The operator did not respond. According to the BLM area geologist, she closed the case file in 1986 because she was uncertain how much of the site's disturbance was caused by the operator and how much might have been caused by other area operations. Following our 1987 inspection, BLM again contacted the operator, who denied responsibility for the disturbances. The operator said that the claim holder had leased the site to another operator. In June 1987, BLM was attempting to contact the claim holder to request that he reclaim the site.

Figure I.9: Unreclaimed Gravel Pile Scars Federal Land in BLM's Montrose District, Colorado

Site No. 30

The 1981 notice of intent for this site proposed an exploration drilling project that involved creating access roads and boring 50 drill holes, with a total disturbance of less than 5 acres. The notice stated that reclamation would include reserving and redistributing topsoil and seeding the area.

Our 1985 inspection found the site unreclaimed and inactive. During our 1987 inspection, we observed numerous reclaimed and unreclaimed drill holes. Because the site was located in a heavily explored area, however, the BLM reclamation specialist accompanying us could not differentiate which drill holes had been bored under this notice. The case file showed that BLM had inspected the site in 1982, along with seven other adjacent sites covered by separate notices filed by the same operator. After our 1987 inspection, BLM again inspected the area, accompanied by a representative of the operator, and determined that the holes bored in 1981 had been reclaimed.

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