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MINING ACTIVITIES IN THE CUSTER AND GALLATIN
NATIONAL FORESTS IN MONTANA

GOVERNMENT

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HEARING

BEFORE THE

SUBCOMMITTEE ON
MINERALS, MATERIALS, AND FUELS

OF THE

COMMITTEE ON
INTERIOR AND INSULAR AFFAIRS

UNITED STATES SENATE

NINETY-SECOND CONGRESS

FIRST SESSION

ON

INFORMATIONAL HEARING ON ACCESS AND EXPLORATION
PROBLEMS OF MINERAL DEVELOPMENT WITHIN NATIONAL
FOREST AREAS

AUGUST 18, 1971

BILLINGS, MONT.



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Committee on Interior and Insular Affairs

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MINING ACTIVITIES IN THE CUSTER AND GALLATIN NATIONAL FORESTS IN MONTANA

WEDNESDAY, AUGUST 18, 1971

U.S. SENATE,
SUBCOMMITTEE ON MINERALS, MATERIALS, AND FUELS,
COMMITTEE ON INTERIOR AND INSULAR AFFAIRS,
Billings, Mont.

The committee met, pursuant to notice, at 9 a.m. in the library lecture hall of Eastern Montana College.

Senator Frank E. Moss presiding.

Present: Senators Moss and Metcalf.

Also present: Mary Jane Due, staff counsel; Suzanne Reed, staff assistant; and Thomas Nelson, assistant minority counsel.

Senator Moss. This hearing will come to order.

I am Senator Moss and sitting with me is Senator Lee Metcalf of Montana, and a member of the Senate Interior and Insular Affairs Committee and the Subcommittee on Minerals, Materials, and Fuels.

I have been in Montana for 3 days now and have had a marvelous time, particularly yesterday. We were privileged to take a flight by helicopter over the area that will be under discussion today. Needless to say, it was a spectacular and thrilling event. We are indebted to the Forest Service and the Army National Guard for hosting that flight and enabling members of the subcommittee, and many others, to see the things about which we will be talking today. It was a thrilling and enjoyable day, and I express my gratitude to the Governor of Montana who arranged, along with the Forest Service, for this flight for me and my colleague, Lee Metcalf.

Senator Metcalf and I have served for many years in the Senate, and I consider him one of the great Senators of the United States, as well as my very close, personal friend.

We are here this morning to make a record on a problem that is looming ever larger on the horizon in the West, particularly, but also in all sections and parts of the country. The purpose of this hearing stems from a great awakening we have had in the country on the problems of environment, of preserving our waters and our land and our air without degradation. At the same time, we must continue the development and utilization of our resources. This is a difficult problem, we know, in many, many respects as we become more urbanized and more industrialized and as our demand for energy and raw materials continues to mount. We are plagued on the other side by the problems of pollution and degradation and destruction of the area in which we live, and this problem comes to a head in the mining area that we are considering today. It is the same general problem we

have in building coal-fired electric generating plants, of controlling effluent wastes of factories in the streams, of littering our parks and our countryside by solid waste. All of these matters relate to the problem we have here today.

One of the great challenges to all of us in the 1970's is finding a way to meet the mineral needs of our country and, at the same time, providing adequate and responsive controls of practices which have despoiled portions of our beautiful country.

This is a public hearing conducted by the Minerals, Materials and Fuels Subcommittee of the Senate Interior and Insular Affairs Committee of the United States with regard to public lands. There are several bills dealing with strip mining and related activities presently pending before the committee. The hearings on these measures are scheduled for later this fall. For this reason, we do not wish to go into these matters at this hearing, as they will be subject to extended hearings elsewhere at a later date.

What we are talking about today is the impact which mineral exploration activities proposed mining operations, and the associated facilities, such as access roads will have on the areas known as the Stillwater Complex in the Custer and Gallatin National Forest in the State of Montana.

We are concerned here with a particular area and a particular situation. Under the present mining laws, which have been part of the laws of this country since 1866, mineral activity is permitted within the public domain administered by the Forest Service, as well as the BLM. The committee is aware of the public agitation as a result of minerals exploration and development activity in the Stillwater complex and of the efforts of the mining industry and the Forest Service personnel to reach an accommodation in the form of workable regulations. We are looking for information for our record which will benefit this committee in its deliberations to find workable solutions to difficult problems such as this one.

Now, I stress the fact that we are making a record, because only two of the members of the committee are sitting here, and they are Senator Metcalf and I. We not only feel the problem very pointedly, because it is in our area, but we have some background information on it that came from viewing the vicinity yesterday and our briefings that we have had. We want to have a record made so that our colleagues may study the record, as well as the staff people, and be able to have before us all the information we need when we begin our deliberations.

This is what we call an informational hearing, since testimony is not directed toward a specific bill. We are talking about a problem, how we can meet the problem and what ought to be done. Maybe, out of what this record shows, a bill might be drafted to effect, by law, some of the things that need to be done to eliminate this problem.

We have a long list of very distinguished witnesses, and we expect to receive a lot of valuable information. In order to be able to give everybody his opportunity to be heard, whatever you have submitted here, in writing, will be printed in full in the hearing record. Therefore, it will not be necessary for you to read everything that is in your written statement. In fact, it would be very helpful to the committee, and other witnesses, if you could summarize and highlight the things that you think are particularly important. In that way, we will be able to move

the hearing along in the limited time that we have and we will not deprive the record of any detail. We will be sure to give it as much detail as possible.

We are ready to begin and call our first witness, but I want my colleague, Senator Metcalf, to say anything he would like to say here in his home State before we begin these informational hearings.

Senator METCALF. Thank you, Senator Moss.

I want to reiterate that this is an informational hearing, a field hearing. Our purpose is to hear you; so, I am not going to make an extended statement. However, I would be remiss in my duties, and I would be derelict in my responsibility to my distinguished colleague if I didn't on your behalf, as Montanans, and my behalf, welcome Senator Moss to the "Big Sky Country." I want to express my appreciation to him for having taken time out from his summer recess to come here. He has taken several valuable days out of recess to come here and participate in this hearing.

This area that we looked over yesterday, and the one with which we are immediately concerned, has been of great interest to Senator Mansfield. Probably one of the reasons we are having this hearing is that the majority leader, better known as the majority whip, said to come up here and investigate this situation. I had hoped, and Senator Mansfield had hoped, that he would be here to be able to fly over the area and to participate in the discussions to get the information that we are going to obtain. Senator Mansfield ran into some other problems relating to his duties as regards his leadership and was unable to come, but he is concerned and interested in this hearing.

Again, I say, it is your hearing and we are looking forward to hearing your testimony. This is a vital and necessary matter, not only here in the Stillwater and Billings area, but nationally, as Senator Moss has said. Much of the information developed here will be a source of information for legislation in this Congress.

I welcome you all. Thank you very much.

Senator Moss. Thank you, Senator Metcalf.

Our first witness was to have been Gov. Forrest H. Anderson. The Governor was with us all day yesterday, but he had to return last night and will not be here, in person, this morning. Mr. Gary Wicks will appear, representing Governor Anderson, of the State of Montana and he will be our first witness. Our next witness was to have been the Honorable John Melcher, Congressman, Second District of Montana.

Oh, he is here now. He will be next, but we will hear first from Gary Wicks, representing Gov. Forrest H. Anderson. Mr. Wicks is administrative assistant to Governor Anderson.

STATEMENT OF HON. FORREST H. ANDERSON, GOVERNOR OF THE STATE OF MONTANA; AS PRESENTED BY GARY WICKS, ADMINISTRATIVE ASSISTANT

Mr. Chairman and members of the committee, the environmental movement is a popular revolution.

It is a new consciousness of the meaning of life in our society.

And it is perhaps the beginning of a new order of values in this country.

The environmental movement has achieved few tangible results.

Its victories are only temporary.

It has, however, publicized the danger of continuing 19th century resource exploitation.

And people, government and some corporations are beginning to realize that a laissez-faire resource policy cannot continue without destroying the natural quality of life and threatening the health of our citizens.

This is no longer the frontier.

It is not the West of 1872 when the Nation believed it had an inexhaustible supply and a limitless environment capable of absorbing all the abuses attendant to the extraction of these resources.

This is the new West.

Our people have seen the environmental destruction that has occurred in other areas of this country.

And we will not permit this plague to be visited upon our land.

The most obvious measure to protect the environmental quality of western lands would be to modify the mining law of 1872.

And this antiquated law should be updated with legislation that specifies three conditions.

1. Establishment of a value system in which the real and long-term costs of mineral development are considered in any decision to mine. Esthetic and natural values must be balanced against mineral and economic needs. This balance has not been struck in the past, possibly because it is far easier to set a value on a pound of metal than on the natural beauty of a wilderness. If this essential compromise cannot be achieved, there will be no way to prevent mining in areas where it should not occur.

2. The decisionmaking process must be modified. A single company or interest group should not have the exclusive power to determine whether a mine will be developed. Procedures must be established which promote consideration of the needs and values of the public—because we are administering public lands. And this fact is often ignored by mining companies, the agencies that manage the lands and Congress which controls these departments.

3. There must be adequate commitment of economic resources to assure that any mine law is effective. Too often in this country, good laws are reduced to nothing more than good intentions because they are not properly enforced.

I believe the mineral leasing system advocated by Senators Metcalf and Jackson is the beginning of a rational approach to better mine laws.

I am hopeful mineral leasing will be implemented in the near future.

And I fully support this concept.

The technology of mineral extraction is far superior to the technology of mineral land reclamation.

It will take time to achieve an adequate balance.

And during that time we must depend upon the laws and authority presently available to all levels of government to control development which will permanently damage the environment.

To this point, I am sorry to say, the agencies of the Federal Government have failed to use their authority to promote the best interest of Montana and the entire Nation.

Procrastination has been the order of the day—or more precisely—the order of the century.

This is particularly true in the Stillwater area.

It has taken from 1872 until the spring of this year, nearly 100 years, to develop meaningful mining regulations.

And there are still serious questions regarding the effectiveness of these regulations.

Regulation of the mining industry has been 100 years of conservation rhetoric, avoiding responsibility and environmental degradation.

This is an unfortunate history of failure.

And you saw the results yesterday when you flew over the Stillwater country.

Because of this failure, Montana has been forced into an unusual position in the Federal-State system—a position of leadership.

The 42d Montana Legislature enacted significant environmental legislation:

Senate bill 70, Surface Mined Land Reclamation Act.

House bill 66, the Montana Environmental Quality Act.

And most important of all for our purposes today, House bill 243 the Hard Rock Mining Reclamation Act.

The Hard Rock Act requires a permit to be issued before mineral exploration or development can occur on all lands—Federal, State, and private—in Montana.

Bonding is a requirement, not an option.

Small operators, however, are excepted.

Regulations providing for the administration of this act will be operable by September 15 of this year.

We also have strong air and water pollution control laws and an honest concern for wildlife and esthetic considerations which may not be specifically protected by law.

I assure you today that these laws and considerations, supported by the people of this State, will be used to protect Montana's environment.

And we will do it alone, if necessary.

There is no doubt, however, that we can do a better job if we are supported by the authority and resources of the Federal Government.

In this regard, I have five specific recommendations:

1. Federal agencies regulating public lands must acquire the resolve to administer lands on behalf of the people rather than special interest groups. And this resolve can only result from a clear expression of congressional intent.

2. The environmental rhetoric which has been emanating from Congress and the executive branch must be supported by something more substantial than press releases.

Federal environmental agencies need money.

They need money for research, enforcement, and administration of laws and to bring suits if required.

3. We must develop more stringent environmental protection laws. And these laws must apply to entire regions and not just single States.

The natural environment is not divided by unnatural political boundaries. The air follows the wind and the water follows the current, and pollution is transient.

If one State allows environmental destruction, adjacent States are vulnerable.

I suggest that regulations similar to those developed by Montana be adopted by Federal agencies on a regional basis.

This would also eliminate the possibility of one State compromising the environmental concern of its people to gain a competitive advantage in the quest for economic development.

4. We must honestly enforce all environmental laws.

For instance, we must determine the validity of mining claims established under the law of 1872. Many of these claims have taken land out of public use, where there is no justification. If adequate resources were applied to determine the validity of these claims, I am confident we could return much of this land to public use.

5. State governments do not have the resources to adequately protect the environment, particularly States such as Montana where so much of the land is owned and administered by the Federal Government.

We need, and I have repeatedly requested, financial assistance from the Federal Government to establish effective administrative agencies at the State level.

I believe these are reasonable recommendations designed to establish equilibrium between economic and environmental interests.

Something must be done.

And Congress and the President must commit Federal resources if we are to strike this essential balance.

I do not believe Montana should be a wilderness.

And the people of this State will not allow it to become a wasteland.

Senator Moss. Thank you very much for an excellent statement by the Governor. The summary of the problem was very comprehensive. His detailing of what steps are already being taken in Montana were very helpful indicating that this State is aware of the problem and is moving to meet it on a State level, even though the Governor points out that if it is to be done effectively, it really has to be nationwide. Otherwise we will have a disparity among States and some States would not measure up with others. It could become a hodgepodge, which would be harmful, it seems to me even from the economic standpoint to those engaged in the mining industry or other extractive industries. I am most appreciative of this, and I am aware of the Governor's feelings on this.

If you spend a day in the mountains with a man talking with him, you can get his great feeling of love for the beautiful mountain areas of this State. I am pleased to have his statement.

Senator Metcalf?

Senator METCALF. I just wanted to tell Mr. Wicks that he can tell the Governor that as far as this committee is concerned, the State of Montana will not have to go it alone. We will help you in every way we can to embark on this program.

Mr. WICKS. Thank you, Senator. I am sure the Governor will be pleased to hear that.

Senator Moss. Thank you very much.

Now we will hear the Honorable John Melcher, who is a Congressman for the Second District of Montana. This is the district in which he sits, and Montana is well served by John Melcher in the House of Representatives. We are glad to have you here, John.

STATEMENT OF HON. JOHN MELCHER, A U.S. REPRESENTATIVE
IN CONGRESS FROM THE STATE OF MONTANA

Congressman MELCHER, Senator Moss and Senator Metcalf, thank you. I came in this morning from my home town, Forsyth, a town a hundred miles down the Yellowstone Valley.

I want to particularly commend both of you Senators and your committee for giving the people here in Montana an opportunity to meet with you and to testify before you on what we consider one of the great, great problems facing Montana right now. Of course, it isn't unique to our area, but I think we have some unique areas we want to protect, and we want to tell you how important it is to us to protect these areas.

Last week I flew over the Stillwater area, the area ahead of the Stillwater drainage in the Custer and Gallatin Forest. I couldn't help but note the intensive desire of the Forest Service people to develop some protective regulations, which they now have had in the Federal Register and they are attempting to implement soon. They are well aware of the Alpine area up ahead of the Stillwater and the degradation that is being done to the land there, to the soil. The Alpine area has a habitat that may be very, very difficult to repair. It may be permanently damaged, or, at least damaged for a century or two if such exploration work continues in the same manner.

I think, perhaps, the rules that are being promulgated by the Forest Service are partly the result of the statements made by Senator Metcalf here in Billings over a year ago. He pointed out that the Forest Service and other Federal agencies are custodians of the Federal lands, and that they must do, by their own force and power, all that is necessary to make them good custodians of our public lands.

I compliment the Forest Service on their new regulations. I have reviewed them. I think they hit on some of the very vital points that must be recognized and must be implemented.

I note that they have a plan of operation for any mining interest that must be approved by the forest officer responsible before the operation can start. They are looking particularly at the air quality, water quality, solid waste, scenic values, streams and lakes and fishery habitats, and roads with mining claims, reclamation, rehabilitation, and restoration.

I think that whatever they need, by way of law, to back up these regulations, should be given to them by Congress and every other Federal agency that has jurisdiction over any of our Federal lands. The rules that are being promulgated here by the Forest Service look quite complete, to me, but perhaps as they go through the process of listening to the various interests they want to have their views known on the proposed rules, as they go through the process of trying to implement these new rules and regulations, they may be calling upon Congress for specific legislation to give them the power, to give them the authorization to put the full weight of the Congress and the people of the United States behind this policy.

I believe that we in Congress should give them that power by new legislation wherever they find it necessary. I say that not only for the Forest Service, but I say it for the Bureau of Land Management

and any other Federal agency that has jurisdiction over our public lands.

Now, next year, in 1972, we are going to have a 100-year-old celebration for Yellowstone National Park, the first national park in the world, and we will be celebrating next year Yellowstone's 100th birthday. Now, I think we should do everything we can to enhance that birthday party for Yellowstone, but it is also going to be the 100th year for something that isn't quite as attractive—or nowhere near as attractive—as Yellowstone, our national park. It is going to be the 100th year that the general mining laws of 1872 have been in existence. They are going to celebrate their centennial. I think we ought to make it a point to commemorate, in 1972, some strong revisions and partial repeal of those general mining laws of 1872. They have gone their limit. They have been with us too long, and we are seeing on the head of the Stillwater, in our own area, some of the results of the degradation—not just from mining. This is just exploration for mining. Some of this we have viewed. You have viewed it, just as I have, and some of this is the result of exploration for mining. That is what is causing the degradation now.

I am particularly pleased that Senator Metcalf has joined with Senator Jackson in introducing a bill on leasing, rather than what I consider to be the archaic practices of the patent and mining claims. I am also interested that in the House, Congressman Udall has introduced a similar leasing bill.

In viewing that, I think we should keep in mind that while the subsurface, the mineral, can be leased similar to the process used on oil leases, that the surface rights themselves, the land itself, should be retained by the Federal Government for future use after the mining is done. In any general leasing law for minerals, I would want to see the opportunity for small mining companies to have their opportunity to engage in the development of minerals and not, in any way, reserve it for the giant mining companies.

The third phase that I would like to mention briefly to you, Senator Moss and Senator Metcalf, is what we are doing with strip mining. With our huge coal deposits here in eastern Montana, we are constantly faced with how good a reclamation law Montana has and that after strip mining, the land is reclaimed. All the strip mining operations currently being pursued in eastern Montana has been range land. To a lot of people, they view the land as not having tremendous value per acre compared to richer lands, richer agricultural lands that grow more abundance; but, the land does have a tremendous value for all the people that utilize it in eastern Montana. They have utilized it for a century and hope to utilize it for many, many more centuries. The grazing land itself can be restored and must be restored to the capabilities it had prior to mining. It is the object of the recent legislative action in Helena to give Montana a strong reclamation law for strip mining. I think perhaps each Federal agency on Federal land in Montana would want to abide by Montana's reclamation law. The law is of course, too new to know just how effective and how efficient it will be for Montana. I think if the legislature has found any defects in the law or any weaknesses in the law, the next legislature convening in Helena would want to to strengthen it.

Perhaps I would find that each Federal agency that has jurisdiction over Federal lands might find themselves in Montana contesting, legally, on whether or not the Montana reclamation law on strip mining would govern on Federal lands. That being the case, I think it behooves Congress to act promptly with good, strong, effective, complete rehabilitation of all strip-mined lands on Federal lands—Montana or elsewhere—to put the land back into the same class, the same productive capabilities it had prior to any strip mining. In our case, it would be principally grazing land. There would conceivably be farmlands, but, in either case, that the reclamation required after strip mining, and prompt reclamation, be required to put the land back into the condition it was prior to the time it was mined.

I, again, commend your committee, Senator, for your very desirable and very needed hearings here in Billings. I want to state that at least one member—and I am sure I can speak for many more members—the majority of the members on our House Interior Committee are anxious to review your findings. We are anxious, also, to implement the needed legislation that should be and must be passed quickly on this very pressing and urgent subject. I can't stress the word "urgent" too much in regard to the need for stronger and more effective reclamation laws.

Thank you, gentlemen.

Senator Moss. Thank you very much, Congressman Melcher. That was an excellent statement and indicates that you have, indeed, been considering this matter; you are conscious of the problem that exists in your district and State, as well as countrywide, in the area of preserving our lands and keeping them beautiful and in their original condition as much as we can. I suppose as long as we have any mining exploration, there has to be some impact, but the objective—as I understand your statement—is that we keep that at an absolute minimum and to give powers or create powers, if we need to, to administering agencies to require that the lands be kept in as near their natural state as possible.

Your discussion on strip mining was very interesting. We do have several bills before us now—including one that I have offered—on strip mining. These bills vary to the point that some of them prohibit strip mining entirely and go right on down to the point where they require restoration.

I gathered from your discussion that you recognize that strip mining, economically, probably has to be had in order to utilize our resources. We have demands for energy. You, at the same time, think there ought to be strict requirements for restoration of the land after the mining of the coal, which is usually the subject of extensive strip mining. You feel there should be restoration of the surface so that it will be usable and beautiful and thereafter equal to what it was before. Is that basically what your view is?

Congressman MELCHER. That is correct, Senator. I recognize that we are going to have extraction of minerals along with strip mining for coal. In both fields, we are going to have need, and we must recognize these needs. We can't be blind to the fact that the country's needs must be met and we have to keep on living. Now, as far as strip mining for coal is concerned, our energy needs continue to grow so rapidly,

and we are finding that there is some very doubtful—very doubtful—results from atomic energy development for generating electricity. We are turning more and more to the coal that is available in Montana and other western States to meet the power needs of the future.

I am familiar with the proposals that would prohibit strip mining, period, in the United States. It is not practical. It doesn't state the fact that every 10 years the power needs of the country and the electrical needs of the country double; so, we are constantly in a position of needing to increase the source of fuel for electrical energy generation. My feeling on this particular subject—and I know that Senator Metcalf has long espoused the same technology—is that we have been negligent in not developing magnetohydrodynamics to assist the utilization of the fields in generating electricity. We can make some great strides with the development of "MHD," as it is known, and we will have greater efficiency from our fuels. We are constantly pressed with more fuel for the development of energy; so, it is our place in life, I think, to make the best of our needs and, at the same time, guard our land and our environment with sensible and practical and effective laws on reclamation. Sir, you are entirely right on your assessment of my views.

Senator Moss. Well, I am glad to have you make that clear in the record. Consequently, your view would be much the same on hard minerals, such as we are talking about in the Stillwater complex. We are not going to do away with mining. The thing is, that we have to find a way to restore and repair any damage done and to do the least amount of damage in the first place and still be consistent with the ways to discover and recover minerals that we need for our economy.

Congressman MELCHER. That is correct, sir.

Senator Moss. Thank you very much. Senator Metcalf?

Senator METCALF. Thank you, Mr. Chairman. Congressman Melcher, I know that we have worked together, along with Senator Mansfield, in developing many of these conservation policies. I was pleased that you mentioned the fact that we have to have extensive revision of our mining laws that were passed in 1872. I hope that some of the succeeding witnesses from the mining industry will listen and take heed of your discussion for the need for amendment, and, perhaps, during the course of their testimony address themselves to some of those needs.

You must have seen, as we did yesterday, that a good deal of the disturbance up in Stillwater was just the result of exploration. As you pointed out, it is a much more technical and sophisticated job of exploration than was done in 1872 by a man with a pickax and a mule. He went out into that country and located a mining claim. I think that not only do we need decent legislation, but, perhaps, we need revision on our whole concept of \$100 per claim for development work, and the leasing program would take care of that. Really, we in the Federal Government and the State government, require a lot of this disturbance just because of our requirements that they go out and do a hundred dollars worth of development work every year, run a bulldozer or do some drilling, where they might do something for the reclamation or rehabilitation. I am looking forward to working with you next year on some rather comprehensive revisions of some

of the mining laws. I am looking forward to hearing some of them today on possible suggestions they have to offer.

Congressman MELCHER. Well, I think the fact that it is 1971—almost 100 years after the 1872 act—points up the need for recognizing the difference in technology. The prospector, with the pick and shovel, is just a very minor thing compared to the bulldozer that does a hundred dollars worth of work, as required, to maintain the claim or to establish the claim.

I am sure that the mining interests will have some very pertinent observations on this. I join with you, Senator, in welcoming their observations and wanting to have their observations and suggestions on these particular facets.

Senator Moss. Thank you very much, Congressman Melcher.

Mr. Steve Yurich, regional forester for the northern region of the Forest Service will be our next witness. He will be followed by the Hon. George Darrow.

Mr. Yurich was our host yesterday, and we are most grateful to have him here and for what he was able to show us in the Stillwater area. We are anxious to have his testimony in the record.

STATEMENT OF STEVE YURICH, REGIONAL FORESTER, NORTHERN REGION, FOREST SERVICE, U.S. DEPARTMENT OF AGRICULTURE

Mr. YURICH. Mr. Chairman and members of the committee, my name is Steve Yurich. I am the regional forester, northern region, Forest Service, U.S. Department of Agriculture. With me is Bill Worf, Chief, Division of Recreation and Lands, northern region, who will assist in giving this statement.

Senator Moss. We welcome you, too, Mr. Worf.

Mr. YURICH. On behalf of the Forest Service, we want to thank the committee for this opportunity to discuss with you the impact of mining activities in the northern region and how we deal with these activities to minimize adverse environmental impacts.

Mining and mineral activities in the northern region are vital industries that make important contributions to the security and economy of our Nation. We recognize the importance of the mining industry and, at the same time, we want to minimize to the greatest extent possible the damage that mineral development activities do to other resources. As you have seen in your trip thus far, and as we will show in our presentation, mining activities in this area do have substantial environmental effects.

National forest lands which were reserved from the public domain are subject to location and entry under the U.S. mining laws.

We have two maps of the northern region on display before you. The first map showing locatable minerals illustrates how extensive present mineral activities under the U.S. mining laws are in this region. For whatever reasons, the search for minerals is turning more and more to our public lands.

The second map shows the present extent of activity in connection with leasable minerals. The national forest lands withdrawn from the public domain are subject to mineral leasing under the 1920 Mineral

Leasing Act, and acquired national forest lands are subject to mineral leasing under the 1947 Mineral Leasing Act for Acquired Lands. There has been considerable mining under the mineral leasing acts. Under these acts we have discretionary authority as to whether to permit mining activity. The Secretary of the Interior, upon our recommendation, may include conditions in mineral leases which are needed to avoid unnecessary damage to the land.

You have seen the impacts of mineral exploration and mining development in the Stillwater-Cooke City area. To give you a further quick insight into some of the problems here, Mr. Worf will present some slides that highlight the situation in the Stillwater-Cooke City area and on other national forest areas as well. He will also tell you what the State of Montana has done this year to assure better management of the mineral and related surface resources.

(Following slide presentation, Mr. Worf continues:)

Mr. Worf. As you saw in the slides, much of the surface disturbance was caused by the miners in complying with the Montana State mining law requirement that a discovery pit or cut be made on each mining claim to perfect a location. The mandatory discovery pit requirement was eliminated by the Montana Legislature this year with the passage of extraordinary session senate bill No. 7. This eliminates an unnecessary expense for the mining companies and the cause of much needless degradation of national forests.

Concern by the people of Montana for their land also resulted in the passage of two reclamation laws, the Hard Rock Minerals Reclamation Act and the Montana Open Cut or Strip Mined Land Reclamation Act. These two laws, which are generally applicable on national forest lands, require the submission of an acceptable reclamation plan before development of mining begins. The filing of a performance bond to insure compliance is required. Both Idaho and Washington also have laws requiring mined land reclamation.

Another important related legislative enactment in Montana this year is the Landowner Notification Act which requires that a prospector or miner must first ascertain the ownership and possessory right of any land before performing an operation causing surface disturbance. He must then submit in writing details of the proposed operation together with the measures for protection and restoration of the land and waters. This will allow the owner or manager of the land to evaluate the extent of disturbance contemplated and the effectiveness and sufficiency of the protection and restoration measures planned.

Mr. YURICH. Thank you, Bill.

Earlier this year the northern region of the Forest Service issued instructions to field offices which are in effect guidelines for cooperation between the Forest Service and mining operators in efforts to minimize land disturbance.

The guidelines for cooperation emphasize our willingness to make available advice of the experts within the Forest Service to help develop a feasible plan to minimize any adverse environmental effects of a particular operation.

The guidelines I have just discussed are regional guidelines and do not apply to all national forests. However, the Forest Service this

past spring developed and proposed servicewide regulations relating to mineral development activities authorized by the U.S. mining laws on the national forests. These proposed regulations are based on the act of June 4, 1897, which provides that entry upon the national forests for purposes of prospecting, locating, and developing mineral resources must be in compliance with the rules and regulations covering those national forests. Hence, with respect to both access to minerals and their development, the Secretary of Agriculture may reasonably regulate mining activity so as to avoid or minimize the adverse impact of mineral access and development on other authorized forest purposes, including improving and protecting the forest, watershed protection, maintaining a continuous supply of timber, outdoor recreation, range, and fish and wildlife.

The proposed mining regulations were made available to conservation, mining, and other interested groups for review and comment. These comments are now being reviewed. We hope to present a new draft of these regulations for formal public review this fall.

We have copies of our first draft of these regulations available for your use. When promulgated, these regulations will give the Forest Service man on the ground a needed tool to help achieve sound land management practices. We recognize, though, there will still be a need for a great deal of cooperation from the miners themselves. It may be expected that heated differences of opinion will arise between intelligent and honest men as to what are reasonable required practices. We can only promise that we in the northern region will make a sincere effort to achieve and maintain a sound land management program.

I would like to discuss now the specific situation in the Stillwater complex. During the fall of 1970, mining activities in the Stillwater complex attracted national attention. There were a number of reports of damage to the national forest lands in the area. Consequently, the Forest Service requested that the mining companies voluntarily cease activities until an ecological study could be made. The mining companies agreed, and assured their cooperation.

Through the combined efforts of the companies and the personnel of the Custer and Gallatin National Forests, a number of meetings were held to draft guidelines of operation to assure minimum environmental degradation, maximum protection of fragile lands, and future productivity of other renewable forest resources. An excellent working relationship has evolved from these meetings, with the mining companies voluntarily agreeing to reclaim surface disturbance of the past 2 years wherever practicable and reasonable.

Another series of meetings between the Montana Board of Health, Montana Fish and Game Department, U.S. Geological Survey, mining companies, Forest Service, and several faculty members of the Montana State University produced a proposed water quality monitoring program. Approximately 80 water monitoring points have been established throughout the Stillwater complex and the Goose Lake area north of Cooke City. Information gathered will be available to any interested party. This information, together with recommendations received, will guide the companies in their activities to reduce or avoid damage to the environment.

All phases of development of an operating mineral property have different environmental impacts. The exploration stage may have the greatest public impact because it may be the first to disturb the existing ecosystems as roads and drilling sites are established. The development and operation phases then are often acting on an already disturbed environment, but their consequences are more severe.

Here on the Stillwater complex we are cooperating with Montana State agencies and the mining companies, to minimize this initial impact. In May of this year the personnel of the Custer and Gallatin National Forests with the assistance of other agencies, organizations, and individuals completed the Stillwater complex area environmental management study. The study contains the presently available ecological and resource information for the Stillwater area together with basic description of geology, soils, climate, and other environmental factors applicable to it.

The study examines current management and use of the area with emphasis on mineral activity and incorporates an action program which is expected to reduce environmental degradation and set the stage for future management to assure compliance with the National Environmental Policy Act of 1969. At this point, I would like to submit a copy of this study to the committee for your use and as a part of the record of this hearing.

Senator Moss. We would be glad to receive that study and it will be made a part of the record, by reference, and remain in the files of the committee.

(The Stillwater complex area environmental management study is available in the official files of the Senate Interior and Insular Affairs Committee.)

Mr. YURICH. This type of study has proven extremely useful and is needed elsewhere in the national forests in such areas as the Hedleston district near Lincoln, and the Spar Lake area near Troy, Mont.

On August 7, 1969, Chief Edward P. Cliff made the following statement:

Our general objective in minerals management is to integrate the development and use of the mineral resources with the use and conservation of the renewable natural resources. This embodies the concept of multiple use in its broadest sense. We recognize that our mineral resource is essential to human needs, but we also need outdoor recreation, a supply of timber and forage, food, and habitat for wildlife, quality water, and pleasant outdoor environment.

We are doing our best to follow this philosophy in the Stillwater area and on all the national forests in the northern region. However, the framework which governs most of our efforts is the U.S. mining laws. You have seen and heard about the results of these laws. We understand that the administration hopes soon to present to the Congress its proposals for revisions to update these statutes. These revisions are being designed to better provide for environmental protection in connection with proper mining activities. In the meantime, the Forest Service will strive to do a quality on-the-ground management job of coordinating mining use with the many varied and complex programs on the national forests. We will do this to the best of our ability with the manpower available to us. I want it clearly understood we are in favor of a change in the 1871 Mining Law.

This completes my statement. We will be glad to try to answer your questions.

Thank you, Mr. Chairman.

SLIDE SCRIPT TO ACCOMPANY STATEMENT OF STEVE YURICH, REGIONAL FORESTER,
NORTHERN REGION, FOREST SERVICE, U.S.D.A.

Slide 1: This picture shows two discovery pits on the Custer National Forest in the vicinity of Cooke City. The General Mining Law of 1872 requires that the miner expose minerals in place. However, it leaves the method of exposure to the miner. Most States have enacted laws which require pits or shafts of specific dimensions in order to perfect a location. Until this year, the Montana State laws required a discovery pit which displaced at least 150 cubic feet of material. These two pits were dug to meet the mandatory requirement. However, as you can see, the use of a bulldozer has resulted in considerably more than 150 cubic feet.

Slide 2: In addition to the discovery pit, the miner often makes exploration trenches in order to examine the sub-surface structures. These trenches sometimes serve to meet the discovery pit requirements, but often are a separate operation. This is an exploration trench in Placer Basin which has not only created a lasting scar, but will affect the water table in this meadow and will contribute to the siltation of the small stream in the right side of the picture.

Slide 3: This dozer cut is typical of many you saw yesterday which were constructed to meet the mandatory discovery pit requirements. This is also typical of the kind of work which is often done to meet the federal law requirement for annual assessment work. Since it does not expose minerals, it has served no useful purpose.

Slide 4: This view of the Goose Lake Area, Custer National Forest, illustrates the indiscriminate bulldozer mineral exploration that has taken place in recent years. This work is on valid mining claims, and it is within the miner's rights. However, other methods of exploration would have obtained more and better information with less impact on the land and water resources. A claimant who recently acquired mining rights in this area has agreed to rehabilitate past disturbances to the extent practical, even though some of this disturbance took place years ago. I should also mention at this time that the major mining companies operating on the Stillwater Complex have agreed to apply rehabilitation measures in those areas disturbed in the last two years.

Slide 5: This bulldozer is stripping the overburden from gravel in Big Creek on the Lolo National Forest near St. Regis, Montana. This is in preparation for a placer mining operation. The miner is within his rights under the existing Federal mining laws.

Slide 6: This is another area on the Lolo National Forest where a placer operation is underway. Once again, the miner is operating within the rights granted him by the Federal mining laws. The present State water pollution laws will require that he take measures to prevent siltation from entering the stream.

Slide 7: This is an example of how an area looks when the placer miner has completed his work. The present Federal mining laws have no requirements for rehabilitation.

Slide 8: This overburden is being stripped from uranium-bearing lignite coal beds on the Custer National Forest in the Cave Hills area of northwestern South Dakota. These uranium-bearing coals are locatable, and we have no control over mining methods or reclamation plans.

Slide 9: Fisher Mountain area, north of Cooke City, has been the site of considerable mining activities since the late 1800's. The massive disturbance in the right-hand side of the picture is the result of mining and development work on establishing mining claims and land which has gone into private ownership under the mining laws. The present mining laws and regulations do not give us authority to control this kind of operation. The Multiple Use Mining Law of 1955 charges the Forest Service with responsibility for managing the vegetative and other surface resources on claims subject to that law, but it specifically states that such management must not "... endanger or materially interfere with prospecting, mining, or processing operations ..."

Slide 10: The slides we have seen illustrate the disturbance which occurs from mineral location, exploration, and development work. However, this is only part of the story. The transportation of equipment to the site in order to do this work has resulted in many miles of access road which have often created more disturbances than the planned activity itself. These are access roads in the Nye Creek area which you saw yesterday. They were constructed primarily to get large drills into the area for sampling of underground formation. These roads are on both patented and unpatented mining claims.

Slide 11: On the right-hand side of the picture is the Mount Mine which was developed during World War II for the purpose of extracting the highly strategic chrome ores. The large number of roads, located near the center of the picture, were constructed in more recent years to provide access in the search for nickel and copper. The right-hand portion of this disturbance is on land acquired in fee by the mining company under the general mining law. The balance of the disturbed area is on National Forest lands which are covered by mining claims.

Slide 12: Miners are not required under present Federal laws or regulations to notify the land managers of their plans. This road on the Lolo National Forest in western Montana was constructed, without the knowledge of Forest personnel, in order to provide access for mandatory location work.

Slide 13: The effect on water quality has been one of the major impacts of past mining activities. This road, on the Lolo National Forest, constructed without the knowledge or advice of the Forest Officer in charge, is poorly located and has no provision for drainage. It will contribute to the lowering of water quality in the streams for years to come unless rehabilitation measures are taken.

Slide 14: The brown line down the valley in the center of the picture is not a road. This is the headwaters of the Stillwater River carrying extremely heavy sediment load originating from mining exploration and development activities off the picture to the right. You can note the change in color of the water which indicates the point at which the sediment is entering the stream.

Slide 15: This is a sediment pond constructed below a placer mining operation on the Lolo National Forest in western Montana. This pond may not achieve the objective; the stream channel has been diverted, and the pond is so located that without maintenance in perpetuity it will almost surely breach discharging any trapped sediment into the stream again. Present Federal laws do not prevent the miner from walking off and abandoning this facility at any time.

Slide 16: This picture illustrates another aspect of the total mining situation. Here a miner's dream apparently did not materialize, and he has abandoned the site leaving this debris behind. When a situation such as this is discovered, the miner has often left the area, or if he has not, is often physically or financially unable to clean up the mess.

Slide 17: One aspect that is particularly disturbing to Forest Service land managers is the fact that much of the land damage that occurs serves no useful purpose. A number of the previous slides have illustrated this. In the western Montana situation pictured here, the miner has excavated a discovery pit, in compliance with the State laws, and in the process has completely dammed this small stream. The pit is solely within the soil horizon and exposes no minerals. Thus, it contributes nothing toward the development of our Nation's mineral resources.

TITLE 36—PARKS, FORESTS, AND MEMORIALS

CHAPTER II—FOREST SERVICE, DEPARTMENT OF AGRICULTURE

PART 251—LAND USES

Prospecting and Mineral Development Under the United States Mining Laws

Section 251.12, Part 251, Title 36 of the Code of Federal Regulations, is revised to read as follows:

§ 251.12 *Mining Regulations.*

(a) *Authority.* Pursuant to the Act of June 4, 1897 (30 Stat. 35, 36; 16 U.S.C. 551, 478), persons entering National Forests for the purposes of prospecting, locating, and developing mineral resources must comply with the rules and regulations covering National Forests. Section 4 of the Act of July 23, 1955 (69 Stat. 368; 30 U.S.C. 612) provides that mining claims subject to the provisions of that

Act are to be used only for prospecting, mining, or processing operations and uses reasonably incident thereto, and the rights under such claims are subject to the right of the United States to manage and dispose of the vegetative surface resources and to manage other surface resources thereof. The Multiple Use-Sustained Yield Act of June 12, 1960 (74 Stat. 215; 16 U.S.C. 528-531), authorizes and directs the Secretary of Agriculture to develop and administer the renewable natural resources of the National Forests for outdoor recreation, range, timber, watershed, and wildlife and fish purposes. Section 102 of the National Environmental Policy Act of 1969 (83 Stat. 852; 42 U.S.C. 4332) authorizes and directs that to the fullest extent possible the policies, regulations, and laws of the United States shall be interpreted and administered in accordance with the policies of the Act, which include the requirement that environmental amenities and values be given appropriate consideration in decision making.

(b) *Purpose.* It is the purpose of these regulations to set forth the rules and procedures through which use of the surface of national forest lands in connection with operations authorized by the United States mining laws shall be conducted so as to avoid or minimize adverse environmental impacts and loss, damage, or adverse effects on national forest resources.

(c) *Scope.* These regulations provide for the protection and conservation of environmental quality and the surface resources on national forest land under the jurisdiction of the Secretary of Agriculture which are subject to location and entry under the United States mining laws of May 10, 1872, as amended: *Provided, however,* That any area of national forest lands covered by a special Act of Congress (16 U.S.C. 482a-482q) is subject to the provisions of this section and the provisions of the special act, and in case of conflict the provisions of the special act shall apply. Operations under the United States mining laws in National Forest Wilderness units of the National Wilderness Preservation System are subject to the provisions of sections 251.83 and 251.84 of this Part.

(d) *Definitions.* The following definitions shall apply to all regulations in this section:

(1) The word "operations" means all functions, work, or activities in connection with prospecting, exploration, development, mining, or processing of mineral resources and uses reasonably incident thereto, including roads, conducted on national forest lands whether on or off the claim.

(2) The word "operator" means a person conducting operations.

(3) The word "person" means an individual, corporation, or other legal entity.

(e) *Use of Mining Claims, Vegetative Resources.* (1) All mining claims subject to these regulations shall be used by claimants only for prospecting, exploration, development, mining or processing operations and uses reasonably incident thereto. Except for claims not subject to surface management under the provisions of the Act of July 23, 1955 (69 Stat. 368; 30 U.S.C. 612), other uses of the surface or surface resources are subject to use or occupancy by the United States, its licensees or permittees, so long as the use or occupancy does not endanger or materially interfere with the prospecting, exploration, development, mining, or processing of the mineral resources thereon and uses reasonably incident thereto. (2) All vegetative resources on mining claims subject to these regulations shall be used only for prospecting, exploration, development, mining, or processing operations and uses reasonably incident thereto, and such resources may be severed or removed only when necessary for construction of buildings or structures or for clearance for such operations and uses. Any severance or removal of vegetative resources, except to provide clearance, shall be conducted in such manner as to avoid or minimize adverse effects on national forest resources and environmental and esthetic values, and any severance and removal of timber, except to provide clearance, shall be in accordance with sound principles of forest management.

(f) *Plan of Operations—Requirements.* (1) Any person, before conducting prospecting, exploration, development, mining, or processing operations on national forest lands requiring the use of vehicles or equipment other than non-powered hand tools, shall submit a proposed plan of operations to the District Ranger having jurisdiction over the land involved. Any person conducting prospecting, exploration, development, mining, or processing operations on the effective date of these regulations shall within one year from that date comply with the provisions of this section, including the submission of a plan of operations: *Provided,* That in no event shall the provisions of this section apply to

operations concluded prior to the effective date of these regulations. (2) The plan of operations shall include: (i) a description sufficient to identify the area on the ground within which the operations are to be conducted and the estimated period of activity; (ii) means and other conditions of access as set forth in subsection (1) of this section; (iii) the methods of and the type and size of equipment to be used; (iv) the location and size of areas upon which it is expected vegetation or soil will be disturbed; and (v) a description of measures to be taken to meet the requirements of subsection (h).

(g) *Plan of Operations—Approval.* (1) An authorized Forest Officer shall promptly review the proposed plan of operations and shall notify the operator, in writing, within thirty (30) calendar days of the date the plan was submitted of approval or of any changes or additions to the proposed plan of operations, or that it has been determined that the provisions of section 102(2)(c) of the National Environmental Policy Act apply. Where the provisions of section 102(2)(c) apply no operations shall take place until there has been compliance with those provisions. If such a notice is not given within (30) calendar days, the plan shall be deemed to be approved and the person submitting the plan of operations may proceed in accordance with the plan. A plan of operations may be changed by mutual consent of the Forest Service and the operator at any time. (2) If development of a plan of operations for an entire operation is dependent upon unknown factors which cannot or will not be determined except during the progress of the operations, a partial plan may be approved and supplemented from time to time. A plan of operations covering only a defined phase or stage of an entire operation may be approved.

(h) *Requirements for Environmental Protection and National Forest Resources Conservation.* All operations shall be conducted in accordance with the following requirements:

1. *Air Quality.* Operators shall comply with applicable Federal and State air quality standards, but in no event shall operations be conducted in such a manner as to cause air pollution which can be avoided or minimized through such measures as dust control, treatment of stack gases, and emission control devices on equipment.

2. *Water Quality.* Operators shall comply with applicable Federal and State water quality standards, but in no event shall operations be conducted in such manner as to cause water pollution from tailings, dumpage, sedimentation or discharges into receiving waters which can be avoided or minimized through such measures as ponds, settling or catch basins, or treatment facilities of sufficient capacity for the life of the planned operation.

3. *Solid Wastes.* Operators shall comply with applicable Federal and State solid waste disposal standards, but in no event shall operations be conducted in such manner as to cause adverse effects of solid wastes on air and water quality, scenic beauty, and public health and safety which can be avoided or minimized through such measures as careful design and location of tailings, spoil, and trash pipes.

4. *Scenic Values.* Operators shall, to the greatest extent practicable, minimize adverse impacts of operations on scenic values of the surface of national forest lands through such measures as the design or locations for roads and facilities, vegetative screening of operations, and use of materials and colors for permanent structures which blend with the landscape.

5. *Streams and Lakes.* If operations in streams or lakes are to be undertaken, they shall be conducted in such manner as to cause the minimum practicable disturbance of the lake or stream bed and to maintain the highest practicable quality of the waters of the lake or stream.

6. *Fisheries Habitat.* If operations adjacent to or within the watersheds of streams, lakes and ponds valuable or potentially valuable for fish are to be undertaken, operators shall take all practicable means to maintain and protect fisheries habitat, including, but not limited to, maintenance of water temperature and unobstructed fish passage, and protection of fish spawning, rearing and feeding areas.

7. *Roads within Mining Claims.* Operators shall construct and maintain all roads within mining claims to assume adequate drainage and to prevent damage to soil, water and other resource values. Unless otherwise requested by the Forest Service, roads no longer needed for operations shall be closed to normal vehicular traffic, bridges and culverts removed, cross drains, dips or water bars constructed, and revegetated or surfaced to provide a permanent protective cover.

8. *Reclamation, Rehabilitation, Restoration.* Except for roads within mining claims, at the conclusion of operations on mining claims, operators shall take measures to promptly stabilize, rehabilitate, and, when practicable, restore disturbed areas. Such measures shall include, but not be limited to:

- (i) Control of erosion and landslides.
- (ii) Control of storm water runoff.
- (iii) Isolation of toxic materials.
- (iv) Reshaping of all disturbed areas to facilitate drainage and revegetation or other planned uses.
- (v) Revegetation of disturbed areas.
- (vi) Elimination of hazards to public health and safety.
- (vii) Restoration of fisheries and wildlife habitat in surface water bodies.

(i) *Maintenance during Construction and Operations; Public Safety.* Throughout all construction and operation stages, the operator shall maintain his structures, equipment and facilities in a reasonably safe, neat, and workmanlike manner. Hazardous sites or conditions shall be signed, fenced or otherwise identified to protect other national forest users.

(j) *Removal of Structures and Equipment.* Upon completion of operations, abandonment, loss, or relinquishment of mining claims, operators shall remove within a reasonable time all structures, machinery, equipment, tools, and materials, and shall clean up the site of operations.

(k) *Prevention and Control of Fire.* The operator shall comply with all applicable Federal and State fire laws and shall take all reasonable measures to prevent and suppress fires on the area of operations, and require his employees, contractors, and subcontractors to do likewise.

(l) *Access to Mining Claims.* Any person holding a valid mining claim under the United States mining laws shall be permitted access to such claim, but no road or other means of access, including landing areas for aircraft, shall be constructed or improved on national forest land until he has received authorization, in writing. Application for such access shall be filed with the District Ranger and shall include a description of the type and standard of the proposed means of access, and a plat of its proposed location. Authorization for such use shall provide the mode of access, route, location design standards, and other conditions reasonably necessary to protect environmental value and national forest resources, including vegetative screening or other measures to protect scenic values and measures to assure against erosion or pollution.

(m) *Performance Bonds.* (1) To assure the faithful compliance with the regulations of this section and the plan of operation as approved, amended or supplemented, a performance bond shall be required unless waived by the Forest Service. In determining the amount of the bond, consideration will be given to, among other factors, the character and nature of the restoration and reclamation requirements and to the estimated costs thereof in the event that the operator forfeits his performance bond. (2) The authorized Forest Officer shall determine whether the operation has been carried out and completed in accordance with the approved plan of operations and related permit for access insofar as restoration and reclamation aspects are concerned before releasing the performance bond.

Senator Moss. Thank you for your excellent statement. Thanks to Mr. Worf for the excellent presentation accompanied by the slides that were most revealing.

You have indicated that in the management of this Stillwater complex, you have received excellent cooperation from the mining companies there. Are these large mining companies or are there any small miners involved in there?

Mr. YURICH. Most of our cooperation, as I understand it, Senator Moss, has been primarily from our large mining companies. I would have to check with the local forest supervisors to see if there are other individuals that participate in the effort.

Senator Moss. Is the rehabilitation work sufficiently expensive that a small mine operator might have difficulty meeting it and remain competitive?

Mr. YURICH. In many cases, I am sure that this is true. The small miners that we have in our national forests are certain individuals that are out prospecting with the type of equipment that they have available, and usually it is a kind of a short-term operation, and he is out there improving on his claim. Many times, he can barely afford to do this.

Senator MOSS. One of the hard decisions that will have to be made on a congressional level is how we can permit any prospector to go out and seek to discover minerals and develop them, and, at the same time, be assured that he will be able and required to replace disturbances or degradation of any kind that he might cause in his exploration or production of minerals.

Would the possibility of requiring a bond be feasible, or would that eliminate many who otherwise might want to go out and discover minerals?

Mr. YURICH. Our feeling is that anyone who has access to the type of modern equipment that they have today which is in use, such as bulldozers and what not, whether he is a large mining operator or a small one, they can do damage to our environment or to our surface resources. We are hopeful that any type of laws that are enacted would require all miners to secure some type of permit so that we know of their plans and also work with them in developing restoration plans to assure that the area is put back in its proper order. How this may be done, I am not quite sure—whether it would require a bond to give us this assurance—I don't know, but it would be one possibility, yes.

Senator MOSS. You think the prospector, with his pick, has already been pretty well eliminated by the competition of other available machinery and materials that are used in the discovery work now?

Mr. YURICH. I think that is true. Most of our prospecting is done with modern equipment. Of course, beginning with the jeep, with four-wheel drive, that alone has eliminated the burro and the horse, as we used to know them in the earlier days; therefore, he has other types of equipment that are available for his use. There are small types that are not really that expensive. There are small types of bulldozers that people can afford. I think, in this type of exploration, that we have gotten away from the pick and the shovel.

Senator MOSS. Well, I was interested in that. I noticed that you recommend that the 1872 law be amended extensively, and these are some of the problems that are going to present themselves in Congress, of course, as we consider the revision of the 1872 laws. We have the constant shearing point between the economics and protecting the environment.

Thank you very much, Senator Metcalf?

Senator METCALF. Thank you, Mr. Chairman. Thank you for the splendid presentation, Mr. Yurich and Mr. Worf.

Senator MOSS. Thank you, gentlemen.

We will now hear from the Honorable George Darrow, representing District 9, which is Yellowstone County, in the Legislature of the State of Montana. Mr. Ted Schwinden will follow him.

Mr. Darrow, we are glad to have you appear before us.

STATEMENT OF HON. GEORGE DARROW, REPRESENTATIVE, MONTANA STATE HOUSE OF REPRESENTATIVES, DISTRICT 9, YELLOWSTONE COUNTY

Representative DARROW. Senator Moss and members of the committee, I want to thank you for the interest which your committee has evidenced in its concern for the environmental impact of mining operations in the Western United States.

Especially, I want to thank you for your concern with the ecological problems created by recent mining operations in Montana's Bear-tooth Mountains. We appreciate your scheduling of this hearing in Billings so that the people of this area could have an opportunity to outline the extent of the disturbance and offer their recommendations.

Much of the testimony today will concern itself with documenting the visible damage resulting from exploration work that has already occurred. Further damage and greater disturbance of the fragile ecosystems of the Beartooth area may be anticipated when large-scale mining operations are initiated.

These accumulated and anticipated symptoms of environmental abuse are ample evidence of the need for this public review of the policies which permitted them to occur.

The real reason that this hearing was necessary is the century old anachronism of the mining law of 1872. The abuses invited by this obsolete law are the root cause of the environmental degradation with which this hearing is concerned. As with many laws it contains the unexamined assumptions of its era:

(1) It accepted the myth of inexhaustible resources. We now know how rapidly these resources are dwindling.

(2) It presumed a primitive frontier mining technology. We now view this equipment, with its quaint "tinkertoy" scale, as historical relics in museums.

(3) It contained the common understanding of a "mine" as a portal in the mountainside large enough to admit men and mules and the ore cars that could be moved by animal muscle.

(4) It presumed that in the vast, empty wilderness which existed in 1872 there were no undesirable side effects to be considered.

(5) It presumed as a national purpose that the public domain was to be disposed of as rapidly as possible.

Any legislation concerned with regulating an economic activity unthinkingly presumes a given technology and the "mind-set" of its era. As these change, the legislative concepts become obsolete. The general mining laws will be a century old on May 10, 1972. There is little cause for celebration as the centennial date of this archaic legislation grows near.

Mining, in decades past, used to be concerned with extracting high-grade ore from veins. Now, having exhausted the limited supply of high-grade minerals which occurred in veins, our industrial civilization is busily engaged in consuming the corpus of low-grade ore bodies. The very term mining in its common usage of the past was the act of extracting ore from under the ground. With contemporary open pit mining techniques, the renewable forest and plant life, even the very soil itself, are not merely disturbed, they are destroyed. Re-

classified as overburden, the living forest community becomes merely an impurity in the waste-rock dump.

The damage occurs not only at the site of the open pit itself, but spreads its consequences throughout the local ecosystem to affect streams, airsheds, and the plant and animal communities of the area.

In the Beartooth-Stillwater area, we have the circumstance of low-grade ore deposits in a unique high-grade environment. The application of advanced earthmoving technology to mining such low-grade ore bodies results in greater environmental destruction than the techniques used in the past, not less.

According to data published by the Forest Service, the ore body of the Stillwater complex contains 0.4 percent nickel and 0.35 percent copper. This means that the ore body is 99.25 percent waste rock. It means that a living mountain will be converted into a hole in the ground and a new, manmade mountain of sterile rock will be created.

A total of 17,920 acres of mining claims have been staked. When these claims are all mined, there will be created an open pit area nearly twice the size of the present area of the city of Billings. The attendant development will, of course, extend its environmental impact far beyond.

This area of mining activity truncates the headwaters of two major tributaries of the Yellowstone River, rivers which largely determine the water quality available to the cities and agricultural users in the valley below. This is an area of national park quality which still retains its unspoiled beauty after generations of largely pastoral use. Mining of the 40-mile-long Stillwater complex will also interpose a barrier of blight between the public and the wilderness beyond.

All of this massive disturbance and environmental degradation is occurring because of a century-old law which says in essence, "stake and take without regulation." Mining under the 1872 law is a pre-emptive use, superior in right to grazing, logging, fishing, picnicking, or any other human purpose.

The U.S. Forest Service, empowered by the Organic Administration Act of 1897 to promulgate regulations for mining activity on its lands, is only now, after a lapse of 74 years, proposing to do so. These regulations are not yet in effect.

Confronted by Federal negligence in controlling mining use of the public domain, the Montana State Legislature enacted earlier this year two mining reclamation bills in an effort to ameliorate the damage which will arise from future mining operations. It also passed the Landowner Notification Act which requires prospectors whose activities will disturb the surface to give advance notification to the landowner or public land administrator of their proposed operations and obtain permission before proceeding with their work.

Such legislative efforts by Montana and other Western States are necessarily limited by the basic bias of the 1872 law, granting pre-emptive rights on the public domain to locators of metallic minerals.

There is a better way, long established, to administer mining use of the public domain. Over half a century ago, the Congress enacted the Mineral Leasing Act of 1920, covering coal, oil, gas, phosphate rock and other nonmetallic minerals. Under the provisions of the act,

every lessee must comply with extensive lease requirements designed to protect and restore the surface environment.

Regulations developed under this act require that an oil company, for example, intending to drill a single 9-inch test well on national forest lands, must be in full compliance with extensive environmental safeguards. In contrast, a mining company under the 1872 law can obliterate the living resources of plants, trees and soil on these same lands as a right obtained by preemptive claim.

To allow one category of resource use automatic preemptive rights superior to all other resource uses is no longer in the public interest. In a time of growing pressure upon all resources, whether mineral or organic, the 1872 law has become an indefensible anachronism.

Not only does the 1872 law disregard all other resource values, it fails to return any revenues for the minerals extracted from the land. All other users of the public domain pay for the privilege of use. Grazing fees, royalties, stampage, special use permit fees and the golden eagle passports purchased by recreational users contribute substantially to the Federal Treasury. The mining industry has a standing invitation to "stake and take."

The further continuation of this century-old policy is insupportable. The mineral policy inherent in the mining law of 1872 has become absurdly irrational. The effect of this policy is to subsidize the extraction of new metals. As lower and lower grade ore deposits are mined, this is accomplished with increasing environmental damage. The new metals are fabricated into products to be used once and then discarded on our overflowing junk heaps.

As all resources become more scarce and multiple use competition requires more intensive resource management, we abdicate these responsibilities to continue the preemptive rights of one industry. Then surprisingly, we find it "uneconomic" to recycle our metals.

The scars on the Beartooth Mountains are mute testimony to the urgent need for repeal of the 1872 mining law. New legislation to provide for the orderly easing of metallic mineral deposits on the public domain should be given a high priority on the congressional agenda.

Beyond this overdue legislation, there is demonstrable need for a national resource policy which will provide some basis for evaluating the alternative uses of natural resource systems. Our grandchildren may not be entirely enthusiastic about our unquestioned presumption that the mountains should be lower and the junk piles higher.

Mr. Chairman and members of the committee, I thank you for your attention. [Applause.]

Senator Moss. Thank you. Well, I appreciate the enthusiasm of the applause. However, it will not show in the record. So, we will just all assume that all of these witnesses are giving their views on the matter before us, and I must say that Congressman Darrow's was certainly a great contribution.

Obviously, you have thought a great deal about this and you are concerned about it in your district, and you know what the problem is. However, I am sure you recognize that we must produce some metals and we can't close out the mining industry.

When you said 99.25 percent waste, it seemed to me it had some implication that maybe we just ought to forego mining any of those areas up in that beautiful mountain complex area that we viewed. Would you go that far and say that we shouldn't recover those metals?

Representative DARROW. I would say this, Senator Moss. I would say that in the same way that the people of this country have set aside national park areas, recognizing the outstanding scenic and recreational values of those areas, that there are areas in the United States on the public lands where there may be other resources of greater value than the metallic minerals under those lands, even if metallic minerals are present. I think there ought to be an opportunity for the benefit of the people, for the Congress, in some way, to evaluate the alternate resource of values that are present. If we consider the environmental costs of extracting minerals from lower and lower grades of ore deposits, I think that they are not cheap. I think that maybe a major effort to recycle our minerals and our metals, in order to minimize the need to invade high-grade environment, such as the Stillwater area is, might deserve some very serious consideration.

Senator Moss. Well, you have hit a responsive chord for me there. I have two recycling bills now before the Senate. I agree that we need to begin to recycle most everything. It could be put back in its original area, whether it be metals or paper or glass or organic matter, or whatever else. It is simply a matter of developing the means of putting it back in the cycle and using it over again. Even with maximum recycling, we do, of course, have to add some new metals, glass and paper to the stream.

Now, I would take it that you would feel that the national beauty and the values of recreation and scenic qualities are such in the Stillwater area that you would prefer that not be mined at all and that we seek metals elsewhere. Is that what you feel?

Representative DARROW. I don't think I would want to make that judgment at this point, but I would hope that there might be some decisionmaking process established whereby the alternatives might be considered and resources—in a broad sense, including biological resources, ecological resources, including resource quality, the quality of streams, the quality of airsheds—weighed and evaluated in comparison with the mineral values and in comparison with other alternatives sources of supply in other environments.

Senator Moss. In recommending the revision of the 1872 mining law, you are, in effect, saying they ought to contain some of the provisions that give a decisionmaking power the right to decide what areas could be completely excluded from mining operations.

Representative DARROW. We have already done this in our stipulation that mining is not to take place in national parks. This is one administrative device that, again, has been used for a hundred years. I would say that we ought to explore, perhaps, other categories, other kinds of public land status, besides national parks, where these factors might be evaluated.

Senator Moss. Well, you are "right on" on the problem, and I am just trying to find out where the happy solution is. I appreciate your contribution.

Representative DARROW. You see, Senator, if I might add one other comment, Yellowstone Park, for example, was set aside at a time when

the Nation was interested in geological freedoms, natural wonders more so than natural beauty. Natural beauty a hundred years ago could be taken for granted in this country. This is not the case now. Were the people of the United States to reconsider, I would submit at this point, the Beartooth Mountains, the Beartooth Plateau, the Stillwater Valley, that this area considered scenically, environmentally, ecologically is of national park quality.

Senator MOSS. I think it is. It is marvelous alpine country, it is just beautiful. Of course, it does have a primitive area designation in part of it. Perhaps that ought to be extended to wilderness designation and maybe it should be broader.

Well, it is very interesting, but because so much of our hardrock mining occurs in beautiful areas, we are put in a tough dilemma.

Thank you. Senator METCALF?

Senator METCALF. Thank you very much for a most eloquent statement, Representative DARROW.

I think the whole point today is that it is just not dollars and cents as to how much it costs to extract the ore. It is how much it costs in loss of intangibles, of public interest, of water quality, or recreational areas, of all these other things that you pointed out. Back a hundred years ago, we didn't think very much about them.

Representative DARROW. Well, all of these costs heretofore have not been considered on a systematic basis. We have only looked at cost in one realm. We have not looked at costs and benefits on an ecological basis throughout the whole complex of environmental systems. If we were to make the effort, I am sure that these can be quantified and be valued in dollars in the same way. We have not done this up to this point. Our economics have only considered one small slice of the total system.

Senator METCALF. It would seem to me that if we have strong requirements for restoration and rehabilitation of these areas, which would be added into the mining company's cost, that is one way to get them considered without having a "czar" or someone in Washington to say, "You can mine this area here, but you can't mine this area," if we say they have to restore both areas. You have to give us the financial assurance that you can do that. Then we don't have to worry about who makes the decision.

What Senator MOSS was concerned about is having to have the Chief of the Forest Service or the Secretary of the Interior to make the decision. It is the mining company that makes the assessment of his costs for exploration or development of the mining property.

Representative DARROW. Yes, well, I think that would be very much in order, of course. It goes without saying that the public would pay the costs in increased prices for metal products.

Senator METCALF. But if it is not competitive, they wouldn't mind.

Representative DARROW. I would as soon pay those costs as to pay increased taxes for public expense of restoration.

Senator METCALF. So would I.

Senator MOSS. Isn't the economy of Montana still pretty much tied up in the metals industry? We always think of Montana as a great mining State and assume that is one of the largest bases of the economy here. That is so, isn't it?

Representative DARROW. Mining, as a portion of our economy, has been dwindling. Our production of oil resources is roughly an equivalent amount. Incidentally, it is accomplished with far less environmental damage. We also have timber products and agriculture.

Until such large-scale developments as mining in the Stillwater area come into existence to change this, mining is a dwindling, diminishing aspect of Montana's economy.

Senator MOSS. It is still important but not presently eminent.

Representative DARROW. Yes, sir.

Senator MOSS. Thank you very much, Representative Darrow. We appreciate that very much.

We will now hear from Ted Schwinden, land commissioner, State of Montana, to be followed by Bill Hand.

STATEMENT OF TED SCHWINDEN, LAND COMMISSIONER, STATE OF MONTANA

Mr. SCHWINDEN. Senator MOSS, members of the subcommittee, my name is Ted Schwinden and I am commissioner, department of State lands. Under the jurisdiction of the State board of land commissioners, I am directly responsible for the management of more than 4½ million acres of State-owned land—held in trust for the support of public education. Since March 9, 1971, my department has also been charged with the administration of laws regulating and enforcing the reclamation of mined lands in Montana.

Chapter 252, session laws of 1971, requires licenses or permits for exploration and mining in Montana where such activities result in the removal of 100 tons of material in a 24-hour period. Section 2 of that act sets out forcefully the legislative objective.

"The purposes of this act are to provide: (i) that the usefulness, productivity and scenic values of all lands and surface waters involved in mining and mining exploration within the boundaries and lawful jurisdiction of the State will receive the greatest reasonable degree of protection and reclamation to beneficial use; (ii) authority for cooperation between private and governmental entities in carrying this act into effect; (iii) for the recognition of the recreational and esthetic values of land as a benefit to the State of Montana; and (iv) priorities and values to the esthetics of our landscape, waters and ground cover. Although both the need for and practicability of reclamation will control the type and degree of reclamation in any specific instance, the basic objective will be to establish, on a continuing basis, the vegetative cover, soil stability, water condition and safety condition appropriate to any proposed subsequent use of the area."

One further excerpt from that law summarizes the legislative intent and underscores the dilemma which faces your committee, the Congress, and the Nation.

The legislature finds that land reclamation as provided by this act will allow exploration for and mining of valuable minerals while adequately providing for subsequent beneficial use of the lands to be reclaimed.

In 1969, Governor Anderson initiated a thorough evaluation of Montana mining law and reclamation requirements on mined lands. A select committee, and the Governor's Council on Natural Resources,

held hearings and developed comprehensive recommendations for legislative consideration in 1971. We take pride in the assertion of State leadership in mined land requirements and respectfully urge your consideration of action that will bring Federal reclamation standards up to a level consistent with the needs and desires of the people of Montana.

Just this week, the Land Board set September 15, 1971 as the promulgation date for rules and regulations to implement chapter 252, the "Hard Rock Mining Act." At a public hearing on June 14, affected industry and the interested public gave testimony on proposed reclamation rules and regulations. Particularly gratifying was the relative lack of adverse criticism. This pointed up in a most meaningful manner an increasing rapport between the mining industry and the environmental groups.

A year ago, Governor Anderson urged that Federal-State reclamation requirements be standardized not only within Montana but on a regional basis. In the 5 months that have elapsed since passage of Montana's new reclamation acts, our Department has met frequently with the Federal land managing agencies. A substantial portion of the Montana regulations relating to exploration roads was extracted from guidelines developed by the Forest Service and the mining industry for application to the Gallatin and Custer National Forests. Some progress has also been made in the development of cooperative enforcement of reclamation standards. I do wish to make it clear to the committee, however, that we interpret our responsibility as defined by the boundaries of our State. The State of Montana through the department of State lands cannot, and will not, ignore the application of our reclamation law where the Federal agency lacks the capability, or the resolve, to enforce standards equal to our own.

Under the provisions of chapter 252, criteria are established for the issuance of a permit for mining operations. Section 14 provides that the permit may be denied if the " * * * reclamation plan does not provide an acceptable method for accomplishment of reclamation as required by this act." The responsibility for such decisions will inevitably be difficult.

Reclamation experience would greatly aid in evaluating future mining operations in the Stillwater. Kennecott's reclamation of the McLaren's mill site near Cooke City, for example, demonstrates that given proper soil and moisture conditions, revegetation is possible at elevations of 7,600 feet. Consideration of the adequacy of reclamation on any future development or mining sites in the Stillwater would be greatly facilitated if present surface disturbances are successfully graded and reclaimed.

There will be no easy solution to the problem of conflicting resource use philosophies. This is as it should be, for hard decisions require exhaustive analysis. As reclamation director I am deeply gratified that your committee and the Congress are demonstrating renewed concern in this area. I pledge our full cooperation to the Congress and the executive agencies in developing and enforcing reclamation requirements that will safeguard the future of our State. A healthy mining industry is vital to Montana and to the Nation at large. Montanans are

not prepared, however, to accept a generation of prosperity if the price is the permanent loss of irreplaceable resource values.

Thank you.

Senator Moss. Thank you very much, Mr. Schwinden, for that fine statement and your description of the new requirements now in the Montana State law, which you said you intended to enforce, even where it might be somewhat in conflict with that of the Forest Service.

By that, I take it you mean that if the requirements are greater for restoration than preservation, under the Montana law, that you are going to see that it is observed even if the Forest Service regulation doesn't come up that high.

Mr. SCHWINDEN. That is right, or, Senator, if there are no applicable Federal laws or regulations in an area. One case in point is Bent Knife area, which is under the Bureau of Land Management, and, is, at the present time, to the best of my understanding, almost totally unmanageable by the responsible Federal agency.

Senator Moss. From that, I take it that you would much prefer that we had a Federal law that was uniform and of sufficient stringency to obtain these goals so that there would be uniformity not only between State and Federal within Montana, but it would apply to all neighboring States, as well.

Mr. SCHWINDEN. My answer to that would be "Yes." I say that because, No. 1, of the obvious desirability of securing adequate environmental protection, and, second, the concern that was expressed in Governor Anderson's comments earlier, that disparity of reclamation standards between the States has some very undesirable effects, in terms of what could be reduction of reclamation requirements in order to attract industry in to exploit the resources there.

Senator Moss. We are very conscious of that. Of course, we are talking mostly about mining here, and minerals are where they are. You can't do much about changing that, but industries that utilize the stream for getting rid of pollutants—if one State enforces the law against that, while the other State lets them go—does have a competitive advantage in attracting that industry to the State. It is this general idea to which the Governor referred and to which you are referring here.

Senator Metcalf?

Senator METCALF. Thank you, Mr. Schwinden.

Senator Moss. We will now hear from Mr. Bill Hand of the Southwestern Montana Mining Association and the Mining Association of Montana.

Following him, there will be Mr. Hannifan, Frank Laird, Dr. Charles S. Park, three witnesses who will appear together.

You may proceed, Mr. Hand.

STATEMENT OF BILL HAND, SOUTHWESTERN MONTANA MINING ASSOCIATION AND MINING ASSOCIATION OF MONTANA

Mr. HAND. Senator Moss, Senator Lee Metcalf, ladies and gentlemen, the Southwestern Montana Mining Association represents the grassroots of mining and numbers some 300 strong and we find it indeed a privilege and a pleasure to address this most important committee.

I am Bill Hand, a small mine operator located a short distance west of Dillon, Mont., which lies in the southwest corner of our great State of Montana. There we mine and sell a crude ore of gold, silver, and lead to the American Smelting & Refining Co. in East Helena, Mont. Fortunately, because these ores lie close to the surface of the ground, they are void of sulphur dioxide materials.

We are probably yesterday's counterpart to today's "hippy" in that we sufficiently are strongly willed to defy the conventional in all our beliefs to pursue a showing that captures our faithful imagination and to extend our time and money in the hopes of developing a profitable mine.

This association began as a counter organization, loosely bound together by the ardent belief that we are the benefactors of rich mineral endowments, that await research, development, and exploitation and, that, by resourceful vigilance the protection of these certain requirements, we, and generations to come, can enjoy production from these vast mineral riches.

Like the grizzly bear we, in mining, are forced and squeezed from our natural and limited habitat, withdrawal of primitive area discourages and limit mineral pursuit.

Legislation saddles us with untimely requirements, further dampening the enthusiasm of the pick and shovel prospector. From Washington comes the rumble to repeal the mining law of 1872, and, certainly today, we have heard enough about it. They want to replace it with a leasing act or another hodge-podge of other unworkable and disconcerting programs.

We are sure that those of you who are professional people would not diligently pursue an investigation without prior assurance of compensation, if our Government were to auction our efforts to the highest bidder, you being among the bidders; nor, would an inventor be motivated if the fruits of his endeavors were similarly auctioned. A leasing arrangement and repeal of the mining law of 1872 would virtually eliminate the prospector.

Again, like the grizzly bear, we, too, must fight, but in the form of greatly increased numbers and participation. As the pressure mounts so does the determination and efforts of our sympathizers. Our strength in numbers is rising weekly.

We seek and support a resourceful and orderly exploration and utilization of our Nation's resources. Like shepherds of old, we represent a fine and dedicated flock, but occasionally, a lamb will stray, and through the critical eye of hindsight, many times magnified in the eyes of the public, an injudicious prospecting move is made; but, by and large, like the elusive Indian, more and more the prospector is brushing his past away behind him. He is turning less and less to the bulldozer and more and more to his sample pick, his gold pan, his knowledge, geochemistry, geophysics and his plain, old conscience. Like Ponce de Leon sought a means of reaching the "fountain of youth," so, too, must the prospector be granted peaceful passage to his hunting ground.

While technology has led the search for minerals from both the ground and the air and additional space, they occur on the crust of the earth and that spot must be reached. The mining industry must share

its agriculture, timber and recreation to privilege of access to the public lands, as well as its responsibility for its conservation.

That this great American society can arrange its resources and men to successfully traverse the space from earth to moon is a source of astonishment and real pride. It would seem to follow that with these achievements, the prospector is a dream of the past. True, perhaps, the prospector, with the burro, gold pan, the pick and the shovel are a color from the past; but his modern counterpart adds to his store of knowledge from his esteemed predecessor, and, more importantly, assumes the extremely high risk, the cost of which no company, nor probably our own Government, could bear. The prospectors, from the pick and shovel on up, are a necessary link in the chain of mineral and metal production. He is the mouse upon which the fox must feed to sustain life.

Impossible? Yes, perhaps impossible. To go to the moon, to sit in this building, to draw a glass of water, to travel, except by walking or riding animals, and what of all these good things without the product of this generation—the most basic of all raw materials?

Gentlemen of this committee, the mineral industry cannot produce sufficient gold to remove the pressure from our dollar, nor can no country or group of countries, nor should we, if we could. We can provide and encourage competitive domestic production of metals and other products, whereby creating a more favorable trade position. This is the only real medicine that can be administered for the basic responsibility and the future security of our great land.

This association reiterates its appreciation to this distinguished committee and concludes that ways are, and can be, implemented to explore for minerals without undue ecologic and environmental damage.

May I summarize briefly? Our youth organization coined a phrase, "Mining is needed for everyone," appropriately enough initialled "M-I-N-E."

Here I have tried to bring out the reasons why. First, it is vital to our national security; second, it is vital to the internal, economic well-being providing payroll; thirdly, it is absolutely essential to provide, and, more importantly, maintain an increase in the standard of living which we now enjoy; fourth, to help maintain a favorable balance of payments with our countries. Because our minerals are a one-crop harvest, we must continually search for replacement, and, therefore, exploration must be fostered, promoted, supported with access to and upon public lands and private properties where mineral rights have been retained by the Government.

All of this must be provided within the framework of private enterprise causing initiative along the lines of the mining law of 1872.

SOUTHWESTERN MONTANA MINING ASSOCIATION,

August 14, 1971.

Senator FRANK E. MOSS,

Chairman, Senate Interior Subcommittee on Minerals, Materials and Fuels, Field Hearings in Library Lecture Hall, Eastern Montana College, Billings, Mont.

DEAR SENATOR: During the past Winter and Spring a group of solid "John Q. Citizens" were deeply moved and prepared the following text dated April 25, 1971 at Dillon, Montana and presented it to Senator Metcalf with 169 signatures attached.

They have asked that it be entered in the proceedings of this hearing:

BILL HAND, Delegate.

DILLON, MONT., April 25, 1971.

HON. LEE METCALF,
Senate Building,
Washington, D.C.

SIR: We, the undersigned, are members of your constituency, and do by our signatures express opposition to the provisions of S.B. 921, as now submitted.

We are small miners and/or prospectors. Not one of the undersigned is on relief or welfare or otherwise a drag upon the economy of the state. We believe the ecological movement has great merit but should not be adhered to totally at the expense of mineral development, which is vital to the continued development of the nation. There is an area for compromise; a middleground can be sought and reached.

We believe, according to the information that we have been able to acquire, that S.B. 921 as it now stands will serve the purpose of eliminating the small miner. We find especially onerous the provisions for exploration permits, lease arrangements and performance bonds. We feel also that the present bill will draw no fire from the corporate giants. It might well have been written by them.

Under existing law the locator of a claim must establish the fact that a bona fide mineral vein has been exposed. The small miner must abide by this provision by reason of economic circumstance, while all about him the industry giants claim vast areas by indiscriminate bull-dozing of the land without regard to vein exposure. The small miner gets underground immediately. He must produce or fail. Who is the real environmental criminal?

This petition represents our only medium of expression. We do not have a campus backdrop for demonstration nor an organization to provide a lobbyist.

We ask your consideration.

Senator Moss. Thank you, Mr. Hand.

You very clearly tell us that you don't think there should be any amendment of the mining law of 1872; that it is adequate now to serve the purposes of this country.

To what extent is your organization and the other small miners—and I take it you are more or less representing the small miners—able to restore the surface areas that you mine?

MR. HAND. Well, first of all, I think there has been a general awakening to the ecologic situation. I think less of it is being done now. In our country this year, at least, I saw where they didn't use bulldozers. I didn't see any scars, and I do think it can be restored. I think it is our responsibility to clean up the place.

Senator Moss. Do you mine underground, mostly, or do you have any open-cut mining?

MR. HAND. We mine mainly underground, Senator.

Senator Moss. That does have some dumps, though, where you have to dump outside the mine, doesn't it?

MR. HAND. I don't think you would want to use our property for a park, no.

Senator Moss. I have never seen it; so, I don't know. [Laughter.]

It may be a beautiful area, too, or it may be an area not considered so scenic. Of course, we are well acquainted with this down in Utah. We have a lot of mines, too.

In fact, in the Salt Lake Valley, we have the great open-cut Kennecott Mine that you can see anywhere in the valley by looking to the west.

I am a little concerned because there is such a strong feeling that we ought to have some kind of regulation or requirement, recognizing the ecological impact. You have made your statement, wholly, it seems to me, on the economic penalty that might be inflicted upon the smaller miners if we change the mining law of 1872. I agree with you that we

have to continue to discover and to mine all of our hard metals. There is no question about that, in my mind, but I think we need to find some middle ground some way to be sure we do that without inflicting damage on the environment. Unless we have some change in the law, we can't do it very effectively.

Senator METCALF?

Senator METCALF. Mr. Chairman, you are perfectly correct in that Mr. Hand, probably more than anybody else in the State of Montana, represents and is a spokesman for the small-mine operators of the State and has been, and is, a very eloquent and articulate spokesman for their interests for a number of years.

I would hate to have you leave the stand, Mr. Hand, with just the impression that you feel that the mining law of 1872 is so sacrosanct that we can't amend it in any way. For example, in the presentation by the Forest Service, there were slides that showed bulldozer scars which had no use for either the mining operator or the public interest, or anything else. They were there just in order to take care of a \$100-a-year assessment or requirement that we used to have in the State of Montana.

Now, don't you think that we could find some other way to preserve the public interest and the public lands without making those disturbances?

Mr. HAND. I think you can. I think they are doing it. They are being done.

Senator METCALF. Yes; but don't you think that probably if we changed the law so that you don't have to have that \$100-a-year assessment, so that you don't have to do \$100-a-year work on every claim, that would be helpful to you, as a small miner?

Mr. HAND. Yes; yes, it would.

Senator METCALF. That would be helpful to you, as a small miner.

Mr. HAND. Yes.

Senator METCALF. So, the mining law of 1872 should be amended in that direction, shouldn't it?

Mr. HAND. Yes, there are amendments to the law that perhaps are necessary, but the basic things, I think, should be left.

Senator METCALF. The second thing is, as it was suggested yesterday, that perhaps we should give credit for assessment work for rehabilitation and reclamation. Even the directives of the mining law could be amended in that respect, couldn't they?

Mr. HAND. Yes.

Senator METCALF. That would be helpful to the small miner, too.

Mr. HAND. Yes.

Senator METCALF. It has been suggested that perhaps instead of giving credit for restoring a physical disturbance, we give credit for chemical analysis or research—in that kind of an area, or something of that sort. Now, as I understand it, you get credit for 2 years, but maybe it should be a credit for a longer period of time. That would be helpful to the small miner and to the large mining company.

Mr. HAND. Yes.

Senator METCALF. Now, you said that you felt that the mining operators should share with the timber operators, recreation and agriculture in their access to the public lands, but we charge grazing fees to agri-

culture. We require oil people to pay leases. We require timber to pay stumpage, and we now require recreationists to pay fees for their access to the public lands. It is only the mining industry, who is exploiting natural resources, that doesn't have to make some payment.

Mr. HAND. Well, I don't think the payment should be in the lease form. I think that this is one of our big differences.

Senator METCALF. Well, how would you suggest it be done?

Mr. HAND. Well, maybe on a fee basis, on a day basis, if you wish to assess them; but, I think these minerals that we are talking about are something different than coal and oil, inasmuch as they are deeply hidden. They do not expose themselves easily. It takes a lot of effort and a lot of gambling to bring those out.

Senator METCALF. I know we are all impressed by your opinion and your testimony, because, as I say, you are the spokesman for the small miner.

Senator Moss has just suggested to me that I get your opinion on what you would think about a royalty.

Mr. HAND. The rank and file of our members are not in favor, of course.

Senator METCALF. Thank you very much.

Senator Moss. Thank you, Mr. Hand. We are glad to have your point of view that you expressed representing many of the small miners and mining operators of the State.

The gentlemen that I named before Mr. Hand came forward, Martin Hannifan, Frank Laird, and Dr. Chas. S. Park, will come forward. They will make a presentation on behalf of the Anaconda Co. Dr. Park is a professor of mining at Stanford University.

STATEMENT OF MARTIN K. HANNIFAN, GENERAL MANAGER, MONTANA OPERATIONS, ANACONDA, CO.

Mr. HANNIFAN. Senator Moss, Senator Metcalf, we do appreciate the opportunity to appear before this subcommittee here today. With some of the problems I have in Butte, I think I should be here to counsel with you on how I can get 6,500 strikers back on the job, in view of the wage-price freeze.

Senator Moss. Well, we will sit and talk on that another time.

Senator METCALF. If you can help us on that, we'll be delighted. [Laughter.]

Mr. HANNIFAN. My name is Martin Hannifan. I am general manager for the Montana operations of the Anaconda Co.

I have with me today Mr. Frank Laird, who is director of Anaconda's environmental engineering department, and Dr. Charles F. Park, professor of geology and mineral engineering at Stanford University. He is the author of the book "Affluence in Jeopardy," and he is a well-known consultant to industry and government.

Following my remarks, Frank Laird will discuss some of our environmental vacuities in regard to our operations in the Stillwater River area.

Dr. Park will be telling us something of the Nation's present and future needs for minerals and what we must do to fulfill these.

As background information I would like to tell the subcommittee something of the history of the Stillwater area, what our interest

there has been, what we have done so far, why we have proceeded as we have and what we have found.

We assume that the subcommittee shares our conviction that the continuing development of the Nation's mineral resources is one of the basic foundation stones in the continuing development of the Nation's prosperity—that any debate centers not on whether our resources shall be developed, but on how they shall be developed.

Indeed, this position has been set forth as national policy by the Congress in the Mining and Minerals Policy Act of 1970 which declares that—

It is in the national interest to foster and encourage private enterprise on the development of economically sound and stable domestic mining, minerals, metals and minerals to help assure satisfaction of industrial security and environmental needs. . . .

A publicly held corporation has many responsibilities. A primary one is to make a profit. Otherwise the corporation and the jobs it creates will cease to exist. The corporation also has social responsibilities, high among which is a concern for the environment. Not only is such concern in the best interest of the corporation, but also of the individuals who comprise it. We, too, breathe the air, drink the water, and seek recreation and scenic beauty. We also comply with the laws of the jurisdictions within which we operate. We believe, however, that technology should not be stopped, and that if it were, chaos, not Thoreau's Walden Pond, would be the result. It is possible for us to change priorities in our society, but no matter what priorities we choose, we are going to require more and more metals. To meet this requirement, there is one inescapable fact—mining must continue.

An indication of what the future will demand of the metals and mining industries, Dr. Elbert F. Osborn, Director of the Bureau of Mines of the Department of Interior, stated on May 20 of this year:

In the year 2000, annual copper demand is projected to more than triple the demand of just two years ago. Projected world demand for copper between 1969 and the beginning of the 21st Century amounts to 375 million tons of red metal. Meeting this demand would require the discovery in the next 30 years of 300 new copper deposits, each of a size and grade now considered median. One deposit like this is now under development in Arizona. The ore averages less than 0.4 percent copper, so only the presence of molybdenum makes it commercially attractive. Ask any geologist what he thinks of the chances for finding 10 new copper deposits like that one every year from now on into the 21st Century, and don't be surprised when he laughs at you. But that's the situation, and it is much the same for other minerals we now consider conventional.

In view of Dr. Osborn's statement, the mining industry will find it exceedingly difficult, if not impossible, to meet these future demands. If overly burdensome restrictions are placed on our ability to search for and develop new mineral sources, the chances of ever meeting these needs are very remote. We are certain that the search and the development can continue with all due consideration of environmental values.

I certainly concur with the recycling principle. As a matter of fact, something like 75 percent of all copper products produced today are done on a recycling basis.

The United States is now involved in making the decisions about what we want in the way of environmental quality and how we shall go about achieving it. Dozens of points of view are heard.

Out of all the discussion and reporting and special pleading, some distortion of the facts is bound to occur, some mythology is bound to develop.

This has happened in the discussion of mining activities in the Stillwater area. There has grown up an inference that the exploratory activities are being conducted in a virgin paradise that has never felt the touch of man. Nothing could be further from the truth.

With the help of some slides, I would like to take you quickly through some of the history of the area.

Prospecting and development of the area started in territorial times. The oldest mining claim that survives in the Stillwater area is dated 1883. Others were located in 1885 and 1887.

Slide, please.

This raised map of the area will provide some orientation. Here are the old Benbow Mines, Stillwater River, Mouat Mine property and, to the far west, the Boulder River. The mines with important claims are designated. Anaconda virtually holds claims in the red coloring. Others shown are Amax in the yellow-colored area. Cyprus in the green-colored area, and Johns-Manville in the orange-colored area.

What drew the early prospectors to the area was this rust-colored, barren sulphide outcrop in the Verdigris Creek area for thousands of years. It contains nickel-copper sulphide mineralization. Best remembered of the early mining men are Mr. Mott and Mr. Pennymoe, who worked for many years with claims which covered these important mineral areas. It is these claims, many of them patented as a status of private land that form the core and section of the land on which Anaconda has its exploration.

Although nickel-copper mineralization was the initial attraction, chromite-bearing rock also was found and claims were filed on it. Exploratory activity in the area has been continuous since the staking of the early claims.

In 1942, the U.S. Government stepped into the picture when Hitler's submarines closed off the flow of chrome supplies from overseas sources.

Under Federal contract and Federal supervision, the Benbow and Mountainview chrome mines were developed in the Stillwater River area. Townsites were built to house more than 1,000 miners. Mills were constructed and more than half of the roads that exist in the area today were built to service the chrome operations and to conduct further explorations.

This picture shows the old Benbow Mine during 1960 when it was active. This mining installation and townsite on the Mouat property was built high on the western slope of the mountain and rises above the Stillwater River. This is a 1960 photograph. This 1960 photograph shows the mill and townsite constructed to mine low-level ore from the High Level Mine on the Mouat property.

The Government chrome mines were closed at the beginning of 1944 after the shipping lanes were reopened and higher grade chrome ore from overseas once again became available.

As a point of interest, I was informed this morning that Africa has refused to ship any further chrome to the United States, as of this

week, until the dollar value has stabilized. Again, we are facing a possible crisis situation—if not, certainly, a war situation.

Federal interest again revived with the advent of the Korean war. Another Government contract was issued to American Chrome Co. and work at the mines started in 1952. Mining continued until 1961. In addition, the U.S. Bureau of Mines was maintaining the Benbow through an experimental stoping operation during this period. The American Chrome operation produced 930,000 tons of chrome concentrates which remains today in our national stockpile and is stacked along the road that parallels the Stillwater River.

During the same period in the 1950's and into the 1960's, United States Steel Corp. conducted extensive prospecting operations on Chrome Mountain, Iron Mountain, and built the roads which today form the main access to the central part of the complex. These roads are used today by the Forest Service, campers, and hunters, as well as by exploration parties.

I understand you gentlemen landed your airplane in the area of Iron Mountain yesterday. It is a beautiful area.

When chrome mining came to an end in the early 1960's, the Government abandoned the operations. Many of the houses at the town-sites were sold and moved away, but most of the mine buildings—the mill, offices, and structures used to house conveyor equipment—still stand, in deteriorating condition, waiting for the snow and weather to completely destruct them. In addition, the chrome operation left an extensive tailings pond on the east bank of the Stillwater which creates problems when the wind blows fine particles through the valley.

Now I would like to show the subcommittee a brief film of some of the older structures that exist in the area. Here we see the buildings constructed around the turn of the century.

I guess we will have to do without the film.

The Anaconda Co.'s involvement in the area began in 1937 when 11 drill holes were completed in the Verdigris Creek-Gossan area. Results at that time indicated a mineralized body of too low a grade to be commercially attractive. The company came in again during the World War II period of chrome mining as a contractor at the request of the U.S. Government.

This is not an activity we would have undertaken on our own, since the grade of chrome ore is such as to make commercial success impossible.

Anaconda's interest in the copper-nickel sulphide mineralization was revived in the fall of 1966 when more favorable metal prices and the existence of new mining techniques made a reassessment advisable.

Our geologists knew a large area of mineralization existed and, although their analysis of the geology of the general area indicated the metal content was low, they felt a careful exploration program could reveal locations of higher grade. We had to know more and only by an extensive exploration program, the first step in creating a mining venture, could this knowledge be secured.

Platinum is of great interest to ecologists, because it has been found to be the catalyst that has been proven to be advantageous in the destruction of automobile exhaust, and, to our knowledge, Stillwater is the only real potential platinum source in the United States.

If areas of higher grade material of sufficient magnitude could be found, then, with a thorough understanding of the geology and development of the metallurgical techniques to extract the copper and nickel from the ore, a mining venture would be feasible.

A first step in a project such as the one on the Stillwater is to begin assembling the claims necessary to conduct exploration. This was started in 1966 with the acquisition of old patented and unpatented claims that would eventually encompass most of a 29 by 4 mile strip running east from the Boulder River across the Stillwater and into the Benbow Mine area. Anaconda presently has claims in 23 miles of that area.

With this underway, geologic mapping and geochemical soil sampling of the area begins. This is accomplished on foot or on existing roads and is not a disruptive activity. Investigation of surface rocks and chemical analysis of soil samples develop the first set of clues about what lies below the surface and help determine where more intensive investigation must be made.

To gather more information on specified areas, geophysical equipment is brought into use. This is a truck-mounted equipment that directs electrical impulses through the rocks and provides information about the size and extent of the formations below. To use this equipment, we frequently must build rudimentary roads.

To confirm and expand on the information gathered by mapping, geochemical and geophysical techniques, drilling to obtain core samples is the next indicated step. This operation involves heavy equipment and the building of the type of roads necessary to gain access to the drill sites.

There usually is a pause after this operation to provide time for a complete analysis of samples. If the data from the samples indicates a continuance of the project, the next phase is to drive exploratory tunnels to discover more about the shape of the ore body, the variations within it, and to provide large enough samples to develop the metallurgy necessary to extract the metals.

All of these steps have been involved in our work on the Stillwater. All are necessary if we are to gather enough information to make that ultimate decision about investing an estimated \$100 million to open a mine. To date, we have invested more than \$4 million, including land acquisition, to gather information.

As a result of this program we have located a substantial mineral reserve, in excess of 150 million tons, containing values that will average 0.25 percent each in both nickel and copper.

Sufficient ore has been mined to provide material for a detailed metallurgical investigation and the exploratory activities on the Stillwater have been reduced to the required assessment work.

We know there are tremendous technical obstacles to be overcome in our metallurgical investigation, and, to date, the results have not been too encouraging. However, this investigation continues and we're convinced that with the eventual development of the necessary technology these reserves must be mined to meet the long-range needs of our Nation.

In conducting our operations on the Stillwater, we used all the modern methods that are available to mining explorations. Our work

has involved roadbuilding, clearing for drill sites, some trenching and the construction of two tunnels.

This is an aerial photograph taken in 1954. It shows a part of the 29 miles of road built by the Moutat Mining Co. and the U.S. Government during the two mining periods I mentioned earlier. These roads were used to service the chrome mines, to reach drill sites and for water systems and other uses. All of these roads, except for the main road to the chrome mine, which is a full two-way road of permanent design, are bulldozer roads, many of which are extremely steep and have shown evidence of erosion.

This is an aerial view, also taken in 1954, showing existing roads long before we came into the area in 1966.

Here is an aerial view of the entire area taken in 1969 which shows additional roads built.

Since 1966, Anaconda has built 23.47 miles of roads to reach drill sites and study areas. Some older roads were rerouted to eliminate the steep grades, to eliminate erosion and permit access by heavy equipment.

Anaconda has been investigating claims over a 29 by 4 mile strip. Many are patented claims, which have the same status as private land. A rather amazing statement has been made that mining in this area would produce an open pit 30 miles long and 4 miles wide. If mining were to commence, a small open pit operation might be contemplated, but the downward tilt of the mineral-bearing strata would make underground operations a necessity for the bulk of the work. I might also point out that in 100 years of mining in the Butte area, our entire operation, including the Berkeley Pit and the waste areas, has been confined to less than 3 square miles of land.

During our exploration work in the Stillwater area, as is our regular corporate policy, we have conformed with all regulations and laws affecting this type of operation. Indeed, we have gone beyond the applicable regulations in several instances. From the outset in 1967, we have been in contact with the U.S. Forest Service and have worked in cooperation with that agency.

We have created no more disruption than we felt was absolutely necessary to gain the information required. In doing discovery work required by the State law in order to hold mining claims, we have used techniques we have developed to minimize environmental impact. Two examples are the dropping of exploration teams into remote areas by helicopter, and using dynamite to move the 150 cubic feet of earth that the State required as evidence of discovery. A technique such as this eliminates the need to build roads and move heavy equipment to exploration sites at the outset. The results are barely noticeable.

Another point that should be emphasized is the fact that the area under investigation constitutes only a minute fraction of a mountain complex that stretches to the north, west and south for hundreds of miles.

It is our firm belief that, when and if a decision is made to conduct a mining operation in the Stillwater region, such a mine could be made compatible with all of the other activities that would be natural and desirable in such an area. This would include recreation and resort facilities, the maintenance of wilderness areas nearby and whatever commercial endeavors might be conducted in the area.

The environmental impact of our exploration work is the direct concern of every person involved in these activities, and supervisors in the field are issued a set of written guidelines. Overall responsibility is centered in our environmental engineering department which has qualified scientific specialists in air and water quality, solid waste handling, scientific monitoring and reclamation of timber and mine lands.

Now, I would like to introduce Mr. Frank Laird, who is director of Anaconda's Environmental Engineering Department on a national scale.

STATEMENT OF FRANK LAIRD, DIRECTOR OF ENVIRONMENTAL ENGINEERING, ANACONDA CO.

Mr. LAIRD. Senator Moss, Senator Metcalf, in a project such as ours in the exploration program in the Stillwater region, the two prime areas of environmental concern are surface disruption and water quality.

First, let's relate to the question of water quality. The Stillwater is a recognized trout stream and a beautiful scenic river. It is certainly natural for people to become concerned about what effect an exploratory or mining operation might have on its quality. We also share that concern.

But we have been faced in the past year with some misunderstandings about what our operations might do to the river. One of these is that all mining operations result in rivers becoming red and dead. Others have had to do with siltation from Verdigris Creek as it empties into the river after passing over the naturally exposed Gossan formation on the western slope above the Stillwater. Regardless of what any industry might wish to do, the water laws of the State of Montana prohibit any company from creating a red and dead river. The present laws specify that water quality cannot be reduced to less than its natural state.

This law has been called weak by some, but I believe that there can be no tougher law than one that stipulates no degradation of water quality. The Anaconda Co. and all others must conduct their operations in accordance with this law.

To insure that we had a complete knowledge of the water quality in the Stillwater area, we began a water quality sampling program in the early spring of 1968. In the ensuing years, we have taken numerous samples at 86 points along the Stillwater and in its tributaries.

The colors on this map indicate the established water sampling points. Our sampling locations are noted by the red dots and the U.S. Forest Service by blue dots. There are numerous groups defining water quality and/or quantity in the area.

Included among them are the following agencies: The U.S. Forest Service, the U.S. Geological Service, Montana State Board of Health, Montana State Fish and Game Department and the Soil Conservation Service. Discoveries by Anaconda extends from Rocky Creek, on the extreme east, to the Boulder River on the extreme west, a lateral distance of approximately 23 miles. Sampling is done both upstream and downstream of our exploration area in both the Stillwater, West Fork of the Stillwater, and the Boulder River, as well as the important tributaries of these respective drainages.

Our studies have focused on three primary categories: (1) A surface water quality study and underground water study to determine the flow, quantity and quality; (2) hydrological studies of the maximum yield, frequency of maximum runoff and drainage area runoff characteristics; and (3) a study of the fauna on stream bottoms that provide fish food.

We have worked in cooperation with the U.S. Forest Service in planning these studies, and we have entered into agreement with two other companies, Johns-Manville and Cyprus, to conduct studies for them. The studies have been conducted by our own people and by outside consultants.

To date our analyses have shown no changes in the quality of the water that are not natural and seasonal. Whatever happens in the future in regard to mining, it will be our charge to see to it that no manmade changes do occur in the Stillwater. There is available the knowledge and technological skills necessary to insure that the quality of the Stillwater will be maintained no matter what kind of operation goes in there in the future.

On Verdigris Creek we have sometimes been held responsible for what nature does every year during the heavy spring rains. The creek runs very steeply across this naturally occurring outcrop of the Gossan formation. During a heavy flow the stream does entrain a large amount of sediment that is transported to the Stillwater River. This has been occurring since the Gossan formation was uncovered after the last ice age, and will continue until there is some further major change in the topography.

During one period early this year our operations may have added to the natural turbidity of this stream. After a heavy rainstorm in June, our project geologist reported a flow of red water below Verdigris Creek and we immediately dispatched a team of water specialists to investigate. They reported that, during the heavy flow, the stream apparently left its channel and traveled down a roadway for approximately 200 feet before returning to the natural channel.

As a result of this report, we changed the road grade, removed a plugged culvert in the creek, and diverted the water to its natural channel.

In summation in regard to water quality, the Stillwater River maintains its trout stream character and our tests show that it has not been degraded by our exploration. If in the future a decision is made to begin mining in this area, we have full confidence in our ability to design and install the type of facilities that will guarantee that the Stillwater will be maintained as it is.

The other important area of environmental impact that must be considered in exploration and mining is surface disruption. It is something of a truism that you cannot hunt for or extract minerals without opening the earth. The questions here involve finding the means to rehabilitate those areas that no longer are of any use to the operation, and devising means to minimize the impact of exploration and mining operations on the surrounding countryside.

The State of Montana recently passed a law dealing with rehabilitation. The administrative structure and regulations needed to implement the law are currently being worked out by the appropriate State

officials. Basically this law calls for a mining company to apply for a State permit to conduct operations. Obtaining the permit will involve filing a rehabilitation plan in advance of operations, and posting a bond to insure that the work is done at the conclusion of the project.

Federal mining law sets forth the basic steps and requirements to obtain a mining claim. Montana mining law supplements the Federal laws, and both must be complied with in order to hold a mining claim on the Federal lands.

Basically, the Federal law simply requires that a discovery of valuable minerals be made and that thereafter at least \$100 worth of labor and improvements be made yearly on each claim. This is referred to as "annual assessment work."

Montana law, in addition, required us to excavate at least 150 cubic feet of earth on each claim as evidence of the discovery, in effect a good-faith requirement that the claimant is serious about the development of his claim. This discovery excavation requirement was removed from Montana law just this year, and we wholeheartedly supported this change.

Federal law, however, still requires us to perform our annual assessment work. This also is founded on the good-faith principle that a miner must diligently pursue work upon his claim if he is to retain it, and also in accordance with the expressed intent of the Congress that the development of minerals is necessary and good for the Nation.

In previous years we were allowed to do this assessment work in one location for a contiguous block of claims, with no limitation on the number of such claims in the block. Unfortunately, Montana has just passed another law that requires this annual work to be done on each block of 10 claims. This law is going to require more disruption and the need for more rehabilitation. This law appears to be something of a contradiction in a time when environmental concern calls for fewer rather than more disruptive practices.

The Forest Service is another agency that is developing regulations concerning roadbuilding and other activities on unpatented claims in national forests where the Service has jurisdiction. The Forest Service has no jurisdiction over the private lands held as patented claims. However, we recognize our responsibility to maintain these properties in a manner compatible with the surrounding area.

These are some of the present and future regulations that affect exploratory and mining operations. When the Montana law on rehabilitation goes into effect this fall, all mining companies conducting operations in the State will have to comply for their activities thereafter.

But up until this point there have been few guides available and few regulations to be met. I stress this because I think it is important to realize that all the steps that Anaconda has taken, has underway and planned are voluntary measures being done out of concern for the environment.

At the outset of the exploratory activities in the Stillwater area, Anaconda's project geologists visited the U.S. Forest Service office in Red Lodge, Mont., to describe their plans to the Forest Service officials.

Since then, cooperation has been on a more or less continuous basis. The Forest Service has been involved in planning the water quality sampling program, and last year and this year there have been numerous discussions of proper rehabilitation measures for the area. A commitment was made in February to rehabilitate the land.

An agreed upon plan was finalized in July and work already is underway on erosion control work and preparation for revegetation of disturbed areas.

Water erosion control barriers have been completed on many of the roads in the Nye Basin-Benbow area. Exploration trenches are being filled from Little Rocky Creek northwest toward Nye Basin. All of this work will be completed toward the end of September, and seeding will be done this fall.

The seeding program will start approximately September 15 in the high country and work toward the lower elevations. This is work that must be done in the fall to insure a good seed catch.

We recognize the ecological fragility of Alpine and high elevation areas. At the elevation of our operations we have observed that nature unaided has revegetated areas disturbed by man—although admittedly it takes a long time.

Some of the older areas dating from work in the 1940's and 1950's are being covered with vegetation indigenous to the area. At the old town site at Mouat Chrome Mine, for example, natural grasses and plants have spread to give the site the appearance of a meadow, and lodgepole pine has reseeded naturally in some of the old roadways.

When this sort of revegetation takes place naturally in areas Anaconda is exploring, we are confident that we can get quicker and more impressive results with the aid of scientific soil preparation, seed, and fertilizer.

There are approximately 175 acres in the Stillwater complex that will be seeded with grass. This acreage is comprised chiefly of roads, trenches, drill sites, and mine portals. The grasses that will be seeded were ordered as recommended by the U.S. Forest Service. They are comprised of various mixtures of domesticated species compatible with the major eco-types existing in the area. The seeding will be accomplished by harrowing the soil surface, broadcasting seed, and covering the seed with a top mantle.

In addition, we will go a step further and encourage the establishment of trees by using locally available Lodgepole seed and Douglas fir trees grown from local seed.

Another extra measure of rehabilitation that we are planning involves the abandoned tailings pond that was left by the Government after the last chrome mining episode. It should be remembered that Anaconda did not create the pond and has no responsibility for its enhancement.

Nonetheless, our forest rehabilitation specialists have been conducting research on the possibilities of growing plants on the pond and have developed the means to do so.

Several methods of stabilizing these ponds are under consideration. One such method is hydroseeding which incorporates a soil stabilizer, mulch, and fertilizer with the seed being planted at a time that most

encourages growth. When the project is completed, blowing and water erosion of the dried tailings will be negligible.

(At this point Mr. Hannifan reads from prepared text.)

The measures described should be completed this fall.

We have gone far beyond any regulatory requirements in initiating and carrying through this program.

It is our understanding that this subcommittee's interest goes beyond what is happening on the Stillwater and in Montana to encompass the national environmental aspects of mining and exploration.

This subject gets a great deal of attention at Anaconda also. Earlier in this statement, reference was made to Anaconda's policy guidelines on the proper steps to be taken in protecting the environment while conducting exploratory projects.

These guidelines are printed in leaflet form and distributed to all of our field crews, their supervisors, and others involved in exploration. They also apply to any contractors working for Anaconda on exploration projects.

Copies of the guidelines are attached.

We make it known that these guidelines are a matter of top level company policy and are to be followed to the letter in any activities that we conduct or contract for.

The basic principles we are asking our people to live by are summed up under the three R's:

Respect the environment you work in; it's the only one you have.

Restrain from unnecessarily disturbing nature's balance.

Restore the natural setting of areas where you have worked.

By following these basic guidelines in a reasonable fashion in both mining and exploration, it is our firm belief that the development of our valuable and necessary mineral resources can continue in a manner that is compatible with all other appropriate uses of our national forest lands * * * and in a manner that causes the minimum possible impact on the environment.

This concludes our statement. Dr. Park will provide additional background on the Nation's resources and future mineral needs. Although we have asked Dr. Park to appear here, he is appearing as an independent professional and will be expressing his own views.

(The guideline referred to follows:)

ENVIRONMENTAL AWARENESS IN MINERAL EXPLORATION

The Anaconda Company as a developer of natural resources continues on a company-wide scale to increase its efforts to maintain environmental quality. As members of Anaconda's Geology Department we indirectly participate in all of our companies control programs but we also have individual responsibilities for the preservation of the natural environment. These individual efforts require a minimum of time and expense in contrast to the extensive anti-pollution programs sponsored by the mining industry.

The disciplined use of our resources presents the opportunity to preserve our environment to future generations. We are in accord with Federal and state regulations providing for multiple use of public lands and will make all reasonable efforts to insure that our operations cause as little disruption as possible.

There are three basic R's which we should all consider in environmental procedures during exploration programs:

Respect the environment you work in; it's the only one you have.

Restrain from unnecessarily disturbing nature's balance.

Restore the natural setting of areas where you have worked.
The following practices are considered standard procedures for Anaconda exploration personnel:

FIELD RECONNAISSANCE

1. Investigate the land status and ownership of an area and obtain permission from owners of private property before entering.

Study and follow regulations governing access to state or federally controlled land.

In the event of conflict over land ownership or rights, contact the Land and/or Legal Department of Anaconda for consultation.

2. Respect fences and gates to minimize disturbances of livestock and observe signs posted by land owners.
3. Avoid unnecessary disturbance of vegetation and wildlife.
Keep vehicles on established roads wherever possible.
4. Do not burn or bury trash. Place it and other refuse in appropriate receptacles. Attempt to leave an area cleaner than when you arrived.
5. Be familiar with all state hunting and fishing laws and obtain permission from property owners before hunting or fishing on private property.
6. Carry fire fighting equipment such as shovels, picks, extinguishers, in all field vehicles.

Be certain campfires are out before leaving an area.

PROPERTY ACQUISITION

1. Investigate the status of both surface and mineral rights before taking action to acquire an area.

Know the regulations and mining laws relating to property acquisition and exploration procedures for the particular region in which you are working.

2. After mineral rights have been acquired, discuss Anaconda's presence in the area with surface right owners to avoid misunderstandings.

Maintain cordial relations with local residents during the course of the program.

3. Whenever possible utilize drill holes to satisfy location work requirements rather than pits or cuts.

If pits and cuts are necessary, limit excavations to a minimum size.

GEOPHYSICAL AND GEOCHEMICAL SURVEYS

1. Avoid unnecessary brush cutting and blazing of trees in the course of laying out lines.

2. Remove all wire, flagging, stakes, and other extraneous material upon completion of the survey.

3. Avoid contamination of soil and water in the use of chemicals and of other material necessary to accomplish your function.

DRILLING PROGRAMS

1. Be familiar with regulations regarding road and drill site construction before beginning such work. Consult with the appropriate governmental agency, such as the U.S. Forest Service or U.S. Bureau of Land Management, regarding permission and procedure in the required construction.

Encourage government representatives-in-charge to review the planned work in the field prior to commencement and maintain communications during the program.

Attempt to resolve differences before initiating the program.

2. Emphasize to all contractors involved in the exploration program that they represent Anaconda while under contract and must abide by our environmental control regulations.

3. Keep noise pollution produced in road construction and drilling to a minimum by requiring appropriate mufflers on contractor's equipment.

4. Choose the location of drill sites whenever possible so that access and site will result in a minimum disturbance of the surface and be generally inconspicuous.

Minimize approved road penetration to support water shed management programs supervised by federal and state agencies.

5. Attempt to use minimum size drilling equipment and drill holes whenever feasible to reduce the need for elaborate access roads.

6. Obtain permission of the owner before using water from or cutting vegetation on private land.

COMPLETION OR ABANDONMENT OF DRILLING PROGRAMS

1. Cap drill holes and seed drill sites areas with vegetation indigenous to the area.

2. Remove all trash and other foreign material from the drill site premises.

Do not burn or bury trash.

3. When feasible, fill in location pits, cuts, and drill sumps and seed the disturbed surface with appropriate vegetation.

4. Inspect gates and fences used for access to ascertain that no significant damage exists.

5. If an area acquired by the location of claims is abandoned, remove physical evidence of location.

These procedures should be generally followed in all exploration projects. Each project is unique in some respect, and consequently we must adapt accordingly. When a serious problem regarding environmental controls arises, contact our Department of Environmental Engineering in Butte, Montana.

Mr. HANNIFAN. I would now like to introduce Dr. Park. Dr. Park is professor of geology and mineral engineering at Stanford University, and a well-known consultant to industry and Government. He is the author of the book "Affluence in Jeopardy."

Senator Moss. Dr. Park, we will be glad to hear from you, sir. You may proceed.

STATEMENT OF DR. CHARLES S. PARK, PROFESSOR OF MINING, STANFORD UNIVERSITY

Mr. PARK. A great deal has been said in recent years concerning the rapid increase in consumption of all minerals, both on a national and an international scale. For example, the world consumption of copper in 1965 was 6,121,000 metric tons. At present the annual consumption is close to 7 million tons. This increase, in a period of 5 years, is based upon two factors: (1) A continuing increase in world population, and (2) An annual increase in per capita consumption as standards of living improve. Unless either or both of these factors change radically, and evidence does not indicate such a change, the curves of consumption will continue to increase rapidly.

The only way in which densely populated nations can attain prosperity and an acceptable standard of living is through the establishment of industry, and developing nations are striving mightily to industrialize. In order to do this, both abundant and cheap minerals and energy must be made available from the world's already hard pressed sources of supply. Without these commodities, the economies of any nation will revert to a subsistence form of agriculture, if it survives at all.

Peoples throughout the world want the modern conveniences of civilization. They want automobiles, refrigerators, freezers, washing machines, televisions, radios, and telephones. In short, they want all the things that we have come to regard as necessities for modern civilized living. These items all require minerals—as national development proceeds and industrialization increases, so does the demand for the minerals grow rapidly. Japan, for example, is now using many times

the materials she needed prior to World War II, and their government recently announced that they expect to double their consumption of copper within the next few years. Japan now has an enviable raw materials position, a position that her government has long sought and one that she is still pushing vigorously.

Many developing nations with surplus raw materials for sale see this increased demand as an opportunity to improve their lots and as an opening wedge to industrialization. They may or they may not resort to expropriation as Chile and Zambia have done in recent times, but all demand higher prices and other concessions as the price for their products. Even such friendly nations as Canada and Turkey will demand high prices for their nickel and chromium. International competition to obtain all metals is keen at present and is expected to become keener as more nations industrialize and require additional resources. It would seem that the international problems of shortages and of maldistribution cannot help but get worse.

Brazil, a rapidly developing nation, used only 0.44 pounds of copper per capita in 1966, while France, an industrialized nation, consumed 5.45 pounds per capita in the same year (the United States consumes about 18 pounds per capita). Should Brazil, with a population approaching 100 million people, succeed in its current program to encourage industrialization, then it is easy to see how the demands for copper, nickel, chromium, in fact all metals, will accelerate rapidly.

Fortunately the world has abundant and widely distributed supplies of iron, aluminum, titanium, and magnesium, and shortages of these commodities are not expected. Many other minerals are less abundant and actual shortages of some are anticipated. Where, for example, can the world, and the United States, turn for increased supplies of silver and chromium?

The United States has been most fortunate in having within its boundaries large amounts of many of the materials we have needed for industrial development. However, within the past 20 years or so, the country has become increasingly dependent upon imports. The U.S. Bureau of Mines has estimated that in recent years our imports of some 80 mineral commodities have increased at the rate of about 1 percent a year.

This increasing dependency upon foreign supplies for essential materials is disturbing to many thoughtful people. It has an adverse effect upon the balance of payments, it results in loss of jobs, and it means that our national defense must depend upon distant and possibly unstable and unfriendly sources of materials. As demands and prices increase, the United States will of necessity turn more and more to the development of its own resources that at present are uneconomic.

A factor that is of increasing significance in recent years, and one that many people do not recognize, is the pattern of changing grades of the minerals being mined. In the case of copper, only a few years ago mineralized rock containing 1 percent or 20 pounds of copper per ton, was considered marginal. At present the average grade of copper ore being mined in the United States is said to be only about 0.60 percent, or 12 pounds per ton. Possibly because their economics permit it or in order to conserve their metal supplies and to lengthen the lives

of their mines, many copper companies today are mining rock that contains 0.35 percent or 7 pounds of copper per ton. This use of ever lower grade of ore demonstrates clearly a principle that is well known to all mining men. This is that the uneconomic, but mineralized, rock and marginal ore of today are the ore of tomorrow.

Who can say that mineralized rock containing 0.25 percent or 5 pounds of copper per ton will not be mined as ore 10 years from now? Many of us think it will be. It is a mistake to assume that because material cannot be used today that it will not be needed and profitable in the future. If we cannot mine 0.25-percent copper in the future, many people in mining cannot see where the needed materials will come from to maintain our civilization. Substitutes for certain materials and uses are available, of course, and better methods of gathering and recycling scrap metals should be attained, but these will still not answer the needs for additional primary metals.

The continued prosperity of the United States is of first concern to all of us. In large part this prosperity depends upon the continued availability of metals in large amounts and at reasonable prices. We cannot afford to place the prosperity and safety of this Nation in the hands of developing and at times unfriendly nations, while at the same time we have some of the needed resources here at home. Under existing circumstances where Federal lands are mineralized and even a remote chance exists that they contain useful minerals in quantity, these lands should not be removed from the possibility of future development. No matter how much we like the wilderness and want to keep parts of our national lands in their primitive state, where minerals are known to exist a policy of multiple use of lands seems to be the most reasonable approach.

Senator Moss. Thank you, Doctor Park, for your statement and for bringing to our attention the great need for minerals which we have in our society. I think we all must recognize that we can't just turn off production. We have to continue to produce minerals.

I am wondering, Mr. Hannifan, after we have seen these slides and learned of the measures you are taking in rehabilitation of the surface and protecting the water, how has this affected the economics of your operation? Is it tolerable or does it place you at a disadvantage, competitively?

Mr. HANNIFAN. Well, naturally, this is an expense. We feel that it is a reasonable expense. We see our competitors also doing it, and we are sure that, whatever legislation and regulations are passed, everyone will be governed by them, big or small; therefore, as far as competitive position, it should be equal.

Senator Moss. Therefore, I would assume that you would approve of having national legislation requiring certain standards to be maintained. Now, you are doing some of them voluntarily. It would be better if this was a requirement of all of your competitors, is that right?

Mr. HANNIFAN. Yes; I think we would agree with that, and certainly we would hope to have some voice in these regulations as to what they are, how practical they are, how feasible they are.

Senator Moss. What is your opinion about the need for revision of the 1872 mining law? Of course, that could require an extensive answer, but isn't that the place where we are going to have to begin?

MR. HANNIFAN. Well, I am sure our lawyers would agree that there is reason for and room for amendment to this law. It is quite antiquated. There are some good points about it. I am not lawyer enough to argue the case, in any event, but I believe certain amendments are in order.

Senator Moss. Would the shift from obtaining patents, and, therefore, a fee title to the land over to one that is simply a lease or permit basis, would that be too drastic for the mining industry, do you think?

MR. HANNIFAN. It would depend, I would say, on how it were applied. I would think that patented mining land would come under some sort of grandfather clause so you wouldn't be in double jeopardy in the situation of certain public lands. With regard to public lands not now held under any mining claims, possibly a lease program could be equitable to all.

Senator Moss. Well, thinking roughly in terms of the leasable minerals that we have—petroleum, for example—as long as the fee is paid for the lease and then as long as production is continued, the lease is continued. At the time of termination, of course, that land reverts to the Federal Government. Would that sort of thing be acceptable in the mining field, do you think?

MR. HANNIFAN. I would have to speak for myself or I might get fired, but for myself, I would say it would be feasible; yes.

Senator Moss. Well, I appreciate your volunteering on it, and I understand it is not a statement for your company, as such. I was just probing a little, because we get to the next step where lands have been taken to patent. They are no longer used as a mine, but they are a patented piece of land and may be setting right in the midst of a scenic or other usable area. And the Federal Government owning everything around it still has no control of these little, isolated areas.

I appreciate your presentation. I think you have made a very good one. Of course, I want to commend the Anaconda Co. for taking the steps that it has taken to cooperate with the Forest Service and to do what it can to restore the surface, to prevent pollution. I was quite impressed with the discussion about the efforts to protect the water quality, as Mr. Laird pointed out. This indicates the same general awakening we have had all over our country that our environment is being degraded and we must do something to protect it. I am glad to see steps are being taken by your company, and by other companies, who now protect the environment to the maximum degree.

I know you recognize the dilemma of how much can we afford to degrade the environment in order to have the economic advantage and how much must we give on each side.

Senator Metcalf?

Senator METCALF. I have a little to add, Mr. Chairman. I think Mr. Hannifan and his colleagues from Anaconda Co. have made a splendid presentation. I, too, congratulate you on your voluntary cooperation with the Forest Service in carrying out the rehabilitation and restoration of these lands in the Stillwater. I would hope that we would be able to work with you and with your company in bringing the mining laws up to date so the Federal Government doesn't have to police the kind of disturbance at the present time in order to keep and perpetuate your right to a mining claim. I would also hope that we would be

able to work with you as to practical and feasible manners of restoration, important discoveries and natural mining operations so that we could, at the same time, secure the minerals that Dr. Park is talking about and preserve the other values that are so precious and desirable, especially in the western area.

I am looking forward to a continuation of this dialog in the next session of Congress and hope that we can work out some moderate approach to this problem. We have to have the mining industry, but it seems to me that we don't have to destroy our environment in order to carry on mining.

Mr. HANNIFAN. We would agree with that.

Senator MOSS. Well, thank you very much.

I think we will have time for one more witness before we take our luncheon recess, and that will be Robert B. Kayser, senior geologist of International Minerals & Chemical Corp.

We are very glad to have you, sir, and you may proceed.

**STATEMENT OF ROBERT B. KAYSER, SENIOR GEOLOGIST,
INTERNATIONAL MINERALS & CHEMICAL CORP.**

Mr. KAYSER. Senator Moss and Senator Metcalf, in view of the fact that we are approaching the lunch hour and the diminishing audience, I think I will dispense with the reading of my statement and let it stand as part of the written record.

Senator MOSS. It will be in the record, in full.

Mr. KAYSER. Thank you.

There are, however, several points that have been brought up on which I would like to comment. I think the presentation by Anaconda is just the sort of thing that we in the mining industry would like to see. We wholeheartedly agree with their approach, and we hope to follow this sort of thing.

The question has been brought up in regard to the mining law of 1872, and what our position might be on that.

International Minerals & Chemicals has operated successfully under a mineral leasing system in phosphate and potash, of course. We feel that we could probably operate just as successfully in the future with other minerals. Our concern would, however, be with the method of initiating that lease. I think this is also the small prospector's concern. If it is done on a competitive bidding basis, he will no longer be able to compete with the major mining companies. From our standpoint, if a lease is required to competitive bid, this is money which we spend which is not productive in gaining additional knowledge about the particular area. If we go into a leasing system, I think we would prefer to see leasing simply through application, except in those very few areas where known mineral reserves are present.

Just a brief statement—

Senator METCALF. We have an analogy in oil leases where we have some known and proven areas where we go into competitive leasing and others where we just have a license and require a royalty. I have often agreed with Senator Jackson, that it seems to me that sometimes we impose a penalty on small operators when we just throw an unknown area open to competitive bidding, because Gulf or Standard can go in

there and bid them out of the area. It would seem to me that we could work out something that would protect the rights of the small miners, and, at the same time bring the income into the Federal Government for exploration of leases.

Mr. KAYSER. Well, I would worry less about the income to the Federal Government. They will get it through the corporate income tax, eventually. [Laughter.]

I think that we would support and recommend the findings of the Public Lands Law Review Commission in this area. Again, it is something that is going to require lots of cooperation and lots of work. As far as regulations pertaining to the exploration activity, we feel that the guidelines which have been suggested by the Forest Service, with the modifications that have been suggested by the mining companies, will be a workable sort of thing. I am not sure that it is necessary at this time to enact these as formal laws. It might be worth trying them out to see how they work. We are anxious to cooperate with the Forest Service, and I think we can include reclamation and restoration as part of the normal activity.

Those really were the only comments I wanted to make at this time.

Senator METCALF. May I interrupt, Mr. Chairman.

Senator MOSS. Yes.

Senator METCALF. For instance, it has been pointed out already that the Forest Service has some authority for regulation, but the Bureau of Land Management, which is also an agency upon which there is considerable mineral activity, has no authority whatsoever. Wouldn't you feel there should be some statutory regulation along the lines that have already been granted the Forest Service for regulatory action?

Mr. KAYSER. Yes; I think, again, any reasonable company or individual has to go along with something like this. Our point would be that we do have knowledge of what is practical from an exploration standpoint; therefore, we would like to have a strong voice in establishing those regulations and also in how they are enforced.

Senator METCALF. Thank you.

Senator MOSS. Thank you, Mr. Kayser. That is a very fine statement. I will look through it, and we appreciate your comments that you made on a number of points we have been discussing and your method of putting your statement in and making these comments is something I would like to stress for those who are to appear this afternoon.

We have had some very excellent testimony. We have been sitting for a solid 3 hours without a break, but we are less than a third through the witnesses that are on the list. Obviously, we are going to have to increase the tempo some way, and perhaps this example of the last witness is the one that ought to be followed.

When a statement is presented here, and it is seven or eight pages, I would like to have that go in the record and have the person, rather than read the whole eight pages to me, make some comments out of his statement that he wants to emphasize or something he has heard here before on which he wants to comment with which he disagrees or wants to emphasize. This is what helps us build a full record and, at the same time, the hearing stays within manageable limits. Senator Metcalf and I are only two mortals, and we are going to have to sit here as long as we are conducting the hearings. We want to give everybody

a chance and we want to make a good record, but we do want to run it off as expeditiously as possible.

This afternoon, we will be coming into the period of much being repetitive. If your statement is repetitive of what has gone in before, we want it in the record, but we don't need to hear it orally again. I say that because we do want to move this along this afternoon. I also want to stress that I am not being critical of any statements that have been given, because we have certainly had some very fine presentations this morning. They have been well organized, the presentation of pictures and slides and things of this sort have all made it an excellent hearing at this time.

(The complete statement of Robert B. Kayser follows.)

SUMMARY OF ROBERT B. KAYSER, SENIOR GEOLOGIST, INTERNATIONAL MINERALS AND CHEMICAL CORP.

International Minerals & Chemical Corporation is actively interested in mineral exploration in the Custer and Gallatin National Forests. We feel that these areas have a valuable mineral resource potential and we are interested in maintaining our exploration access to them.

Most of our exploration activities leave no permanent mark on the landscape. Those activities which do have an impact on the environment are limited to a few relatively small areas. The effect of such activities can be minimized by careful advance planning in cooperation with the U.S. Forest Service.

STATEMENT OF ROBERT B. KAYSER, SENIOR GEOLOGIST, INTERNATIONAL MINERALS AND CHEMICAL CORP.

My name is Robert Kayser: I speak on behalf of International Minerals and Chemical Corporation, for whom I am Senior Geologist for the northwestern region of the United States.

As a corporation actively interested in mineral exploration in the Custer and Gallatin National Forests, we are concerned about limitations to our access or changes in our ability to acquire mineral rights in this area. There are several points which we would like to respectfully submit for your consideration in this hearing.

The areas of the Custer and Gallatin National Forests being considered have been subjected to the variety of geologic events favorable for the formation of mineral deposits. Such a coincidence of events is uncommon in nature and such areas represent prime exploration territory. It is our feeling that this sort of area is a valuable resource to the United States and that if the usefulness of this resource is to be realized, then exploration access must be maintained.

Successful mineral exploration is time dependent and rests upon ideas and concepts which are evolutionary in their development. As our knowledge of geological processes develops and as changes occur in the demand for mineral commodities, that which is simply an interesting mineral occurrence in 1971 may be developed as a valuable ore body in 1981. Examples of such developments are numerous. In order for this to occur in the future, however, exploration geologists must have relatively free access to investigate large areas.

We feel that it is important to emphasize that most modern techniques of geological, geochemical, and geophysical exploration leave no permanent mark on the forest landscape. To be effective, these techniques must be applied on a broad regional basis. As favorable results are obtained, the areas of interest are narrowed to a relatively few square miles of the total forest area. At this stage, detailed exploration including land acquisition and drilling is necessary to test for the presence of an economic mineral deposit. The recently proposed Forest Service Guidelines for Mineral Resource Management in the Northern Region contain ample provisions to safeguard the environment during this later stage of mineral exploration.

As a responsible mining company we are confident that we can conduct effective exploration under these guidelines while minimizing any impact our exploration might have on the environment. We would, of course, work closely with the Forest Service as we conduct our exploration programs.

In conclusion, the future ability of the United States mineral industries to meet the rapidly increasing demands for mineral raw materials is a matter of national concern. This would be seriously hampered by a rapidly decreasing area in which to securely explore for such materials. The Custer and Gallatin National Forests are more significant to the national welfare than simply an area with fine scenic and recreational values but remote mineral value. These forests are areas with very real and valuable mineral resource potentials and we would like the opportunity to develop those potentials to the benefit of the America people.

Senator Moss. We will recess now until 1:30. We will go into session again at that time and move on as rapidly as possible.

(Whereupon, at 12:10 p.m. the hearing recessed, to resume at 1:30 p.m.)

AFTERNOON SESSION

Senator Moss. The hearing will come to order.

We had a series of outstanding witnesses this morning, and I think there were many outstanding presentations made by those who appeared before us. I am sure we can look forward to an equally good contribution this afternoon.

I admonish the witnesses again to shorten their oral part as much as they feasibly can, because the entire written statement will go into the record and will be available there for the examination of all of the members of the committee and the staff.

Our first witness this afternoon is Mr. Giles Walker, regional geologist, American Metal Climax Association. He will be followed by Frank Dunkle.

Mr. Walker, you may proceed.

STATEMENT OF GILES WALKER, REGIONAL GEOLOGIST, AMERICAN METAL CLIMAX ASSOCIATION

Mr. WALKER. Thank you, Senator Moss. I will try to abbreviate this as much as possible, because some of it is repetitious of what has preceded earlier today.

My name is Giles Walker, and I am district geologist in Helena, Mont., for AMAX Exploration, Inc., a subsidiary of American Metal Climax, Inc. In this capacity, I have been associated with AMAX activities in the Stillwater Complex area from the beginning of our work there in 1968.

Thank you for inviting us to testify at this subcommittee hearing and, thereby, giving us a chance to tell you how we are conducting our exploration activities in Stillwater. On behalf of AMAX, I want to state our appreciation to the Forest Service personnel for their able assistance and cooperation in the past and our intention of continuing to work closely with the Forest Service in the future. In the Stillwater area, this mutual effort has resulted in open discussions, meaningful advice, and interested followup.

AMAX is a widely diversified natural resources and minerals development company with worldwide operations in exploration, development, production, and sale of metals, nonmetallic minerals, and fuels. The corporate policy governing AMAX activities has been expressed as follows by Mr. Ian K. MacGregor, chairman of the board and may be summarized briefly, as follows:

AMAX evaluates natural resource development plans with full consideration of their impact on the environment that has created these resources. There is no

fundamental incompatibility between man's economic progress and the quality of life.

We recognize a responsibility to assist in the development and implementation of appropriate environmental regulations at all levels of government. In the absence of defined environmental guidelines, AMAX will govern its actions in keeping with the highest standards of responsible conduct.

Some specific examples which illustrates the range of application of this policy are:

a. The field of air pollution control: Sophisticated equipment was installed several years ago at our Carteret, N.J., copper smelter to further reduce emissions. This refinery, by the way, is a good example of metal recycling.

b. Mined land reclamation: Our subsidiary, Ayrshire Coal Co., has had a program of mined land reclamation for over 20 years. Meadowlark Farms, an Ayrshire subsidiary, reclaims the surface mined land, after coal has been removed, to a useful state and harvests a wide variety of agricultural products from the reclaimed land.

c. In the field of total environmental planning, all of our projected new mines, whether in the United States or abroad, are planned to minimize disruption of the natural environment. The Henderson molybdenum mine project of our subsidiary Climax Molybdenum Co. is a notable example in this regard.

In the Stillwater area, exploration is being done by AMAX and other companies because copper and nickel mineralization is known to be present, and the geologic situation is considered to be favorable for significant deposits. Our work in the Stillwater Complex is still exploratory; therefore, it would be premature to speculate that AMAX will ever develop a mine on our claims in this region. However, we have encountered sufficient mineralization to warrant further exploration.

Our efforts in the Stillwater area have concentrated largely on Iron Mountain with some exploration devoted to holdings on Chrome Mountain. The work has involved geologic mapping, geochemical sampling, geophysical surveys, and diamond drilling. Of course, this activity was preceded by claim location work required under Federal and State laws.

Due to the remoteness of the location, we maintain a camp just west of Iron Mountain during the summer field season for all personnel working on the project. We have endeavored from the outset to make environmental protection a way of life at the camp and on the entire project.

In brief, at the camp we have tried to give due consideration to the following areas:

Cleanliness, garbage disposal, camp water supply, and sanitation.

I am not going into all the various aspects, and that will save some time.

I would state that in the water monitoring program that AMAX is conducting, with the assistance of outside consultants, is monitoring all of these aspects to keep tabs on them.

Road construction has been minimal and is only done where necessary to provide access to drill sites within our claim holdings. As these areas are completed, they are closed and reclaimed. The main roads, and the roads in use, were present prior to our entry into the area.

Drilling activities are closely supervised for environmental protection. Drilling crews are required to maintain and use trash barrels on

every site. They are required to use only existing roads. The muddied return drill water is collected in specially prepared sumps or recycled. The return drill water, in no instance, is permitted to enter into any stream.

As an added incentive for drilling contractors to control the environmental impact of their activities, all of our contracts, for several years, have included a significant financial penalty clause. This clause requires that all drill sites be thoroughly cleaned by the contractor prior to their departure. If the sites do not pass our inspection, the financial penalty is invoked, and I can assure you that this has been an effective control mechanism.

Any of the areas that we have disturbed on the surface, such as the drill sites and access roads, are reclaimed as soon as possible. It is our practice, as we finish with a site or access road, to close it off, smooth it out in relation to the surrounding topography, where possible, and reseed the disturbed area using a mixture of grasses and fertilizer recommended by the Forest Service. The initial seeding which we did last year has shown some partial success. I say, "Partial," but based in the total experience and in consultation with the Forest Service, we are trying to establish a favorable micro climate to enhance germination, moisture retention, and reduce erosion by placing available slash and down timber in strategic parts of reclaimed areas.

We fully endorse the "Code of Exploration Practices" adopted by the Colorado Mining Association. Basically, this code requires that all exploration activities be conducted in accordance with applicable mining or other laws and regulations and in cooperation with the Forest Service, the Bureau of Land Management, and other authorized regulatory agencies.

All practicable reclamation possibly is a principal point, as is respect for private property rights.

In summary, we of AMAX have worked and will continue to work to live up to the mandate incorporated in the company philosophy that as a supplier and developer of natural resources, AMAX has a vital obligation to protect the environment in which we all must live. We pledge our support of legislation concerning exploration, development, and mining activities, along with attendant mined land reclamation, which will provide a reasonable framework within which these activities can proceed.

We hope and trust that the citizens of this great Nation will never lose sight of the facts that industry is the life-blood of this Nation, and that the minerals required by industry to supply the goods and energy that our society demands are obtained by mining.

Thank you again for giving us this opportunity to make this statement.

Senator Moss. Thank you very much, Mr. Walker, for a very good statement, and the entire statement and the two articles which you have appended will appear in the record, in full.

(The complete statement of Giles Walker and the two articles attached including the Code of Exploration Practices of the Colorado Mining Association follow:)

STATEMENT OF GILES WALKER, REGIONAL GEOLOGIST, AMERICAN METAL CLIMAX ASSOCIATION

My name is Giles Walker, and I am District Geologist in Helena, Montana, for AMAX Exploration, Inc., a subsidiary of American Metal Climax, Inc. In this capacity, I have been associated with AMAX activities in the Stillwater Complex area from the beginning of our work there in 1968.

Thank you for inviting us to testify at this Subcommittee hearing, thereby giving us a chance to tell how we are conducting our exploration activities in the Stillwater area.

On behalf of AMAX, I want to state our appreciation to the Forest Service personnel for their able assistance and cooperation in the past, and our intention of continuing to work closely with the Forest Service in the future. In the Stillwater area this mutual effort has resulted in open discussions, meaningful advice, and interested follow-up.

Before discussing our activities in the Stillwater area, I would like to outline AMAX's philosophy on environmental protection and briefly mention a few examples of the types of work that are undertaken under this policy.

AMAX is a widely diversified natural resources and minerals development company with worldwide operations in exploration, development, production, and sale of metals, non-metallic minerals and fuels. For many years, AMAX has taken the position that all feasible precautions should be taken at the Company's many different operations in order to protect the surrounding environment. The corporate policy governing all AMAX activities was expressed as follows by Mr. Ian K. MacGregor, Chairman of the Board:

"AMAX evaluates natural resource development plans with full consideration of their impact on the environment that has created these resources. There is no fundamental incompatibility between man's economic progress and the quality of life.

"AMAX management believes that the mineral wealth of this earth can be utilized for human progress in complete harmony with conservation and recreation. Protection of the environment and recycling of waste materials is implicit in the proper utilization of the world's natural resources.

"Dedicated to sound environmental planning, AMAX is vigorously attacking its own problems and making environmental considerations an integral part of the decision making process.

"We recognize a responsibility to assist in the development and implementation of appropriate environmental regulations at all levels of government. In the absence of defined environmental guidelines, AMAX will govern its actions in keeping with the highest standards of responsible conduct."

Some specific examples which illustrate the range of application of this policy are:

a. *Air pollution control:* Sophisticated equipment was installed several years ago at our Carteret, N.J. copper smelter to further reduce emissions.

b. *Mined land reclamation:* Our subsidiary, Ayrshire Coal Co., has had a program of mined land reclamation for over 20 years. Meadowlark Farms, an Ayrshire subsidiary, reclaims the surface mined land, after coal has been removed, to a useful state and harvests a wide variety of agricultural products from reclaimed land. They also maintain several herds of beef and dairy cattle on some of this land.

c. *Total environmental planning:* All of our projected new mines, whether in the U.S. or abroad, are planned to minimize disruption of the natural environment. The Henderson molybdenum mine project of our subsidiary Climax Molybdenum Company is a notable example in this regard.

Consistent pursuit of this policy has resulted in widespread recognition. For example, AMAX has received six awards during the past three years for its activities in pollution control and protection of the environment. These were from the Sports Foundation, Inc., *Business Week*, *The Environment Monthly* (three), and the Colorado Water Pollution Control Commission. We have worked closely with conservationists, and they have praised our efforts to protect the fragile alpine ecology and preserve the natural setting at our huge Henderson molybdenum project in Colorado. Some of the many favorable comments on this work are found in newspaper articles by Stewart-Udall and Jeff Stansbury and Robert Cahn, copies of which are attached hereto. We have also been called upon a number of times by various local, state, federal, and foreign legislative

commissions and administrative officials to assist in modernizing mining legislation and regulations, including environmental control factors.

In the Stillwater area, exploration is being done by AMAX and other companies because copper and nickel mineralization is known to be present, and the geologic situation is considered to be favorable for significant deposits. Our work in the Stillwater Complex is still exploratory; therefore, it would be premature to speculate that AMAX will ever develop a mine on our claims in this region. However, we have encountered sufficient mineralization to warrant further exploration.

Our efforts in the Stillwater area have concentrated largely on Iron Mountain with some exploration devoted to holdings on Chrome Mountain. The work has involved geologic mapping, geochemical sampling, geophysical surveys and diamond drilling. Of course, this activity was preceded by claim location work required under federal and state laws.

Due to the remoteness of the location, we maintain a camp just west of Iron Mountain during the summer field season for all personnel working on the project. We have endeavored from the outset to make environmental protection a way of life at the camp and on the entire project. Some specific examples:

1. Cleanliness in the camp area has been mandatory from the outset. No accumulation of garbage or trash is permitted.

2. Refuse is disposed of in a special garbage pit which was dug some distance from the camp. This is frequently limed over and backfilled to prevent animal entry.

3. The camp water supply is obtained from a small spring which is fenced to prevent human or animal contamination. Refuse water is disposed of in an earth covered sump located below the camp and at some distance from any free flowing water. Samples of surface drainage in the area were taken prior to commencing operations for control purposes.

4. Sanitary facilities are also located some distance below camp away from any surface water source in order to prevent possible stream contamination.

5. Road construction has been minimal and is only done where necessary to provide access to drill sites within our claim holdings. As these areas are completed, they are closed and reclaimed. The *main roads* in use were present prior to our entry into the area. In some places, however, we have graded these or improved the surface drainage by installing culvert pipe. A specific parking area was prepared at the camp with parking elsewhere prohibited.

6. Cutting of trees or other vegetation is avoided as much as possible.

7. Drilling activities are closely supervised for environment protection. Drilling crews are required to maintain and use trash barrels on very site. They are required to use only existing roads. The muddied return drill water is collected in specially prepared sumps to effect settling out of the fine rock material before filtration of the water back into the ground water table. The return drill water is never permitted to enter directly into any stream. As an added incentive for drilling contractors to control the environmental impact of their activities, all of our contracts include a significant financial penalty clause. This clause requires that all drill sites be thoroughly cleaned by the contractors prior to their departure. If the sites do not pass our inspection, the financial penalty is invoked. I can assure you that this has been a very effective control mechanism.

8. Essentially, the only new ground affected by our bulldozing work has been that required to prepare claim locations or level out drill sites. On the other hand, more extensive cat work has been done in performing reclamation work and clearing snow from roads.

9. Any of the areas we have disturbed on the surface, such as drill sites and access roads, are reclaimed as soon as possible. It is our practice, as we finish with a site or access road, to close it off, smooth it out in relation to the surrounding topography where possible, and re-seed the disturbed area using a mixture of grasses and fertilizer recommended by the Forest Service. Based on earlier experience, and in consultation with the U.S.F.S., we are trying to establish a favorable micro climate to promote germination, moisture retention and reduce erosion by placing available slash and down timber in strategic parts of reclaimed areas.

It should be noted here that our reclamation efforts in the Stillwater region are directly related to data furnished to us by the Forest Service and ecologists regarding vegetation that is likely to grow in those areas where revegetation is necessary. Our efforts are showing encouraging results as noted by the Forest Service.

10. We fully endorse the "Code of Exploration Practices" adopted by the Colorado Mining Association. Basically, this Code requires that *all* exploration activities be conducted in accordance with applicable mining or other laws and regulations and in cooperation with the Forest Service, the Bureau of Land Management, and other authorized regulatory agencies. The Code also requires that exploration activities be conducted in a manner that minimizes environmental disturbance. All practicable reclamation possible is a principal point, as is respect for private property rights. I might add that every AMAX geologist throughout the West has a personal copy of this Code and is expected to follow it, as well as insuring that any work under his direction will comply with it.

Our past actions reflect our position and are indicative of future efforts. Obviously, all exploration work will be conducted in compliance with governing federal and state laws and regulations. In addition, we intend to keep working closely with the Forest Service and other governmental agencies and conservationists in our efforts to protect and maintain the ecology of the Stillwater area as much as possible. Should our exploration efforts determine that a mine is feasible, development would be conducted in strict compliance with the Company's policy that calls for minimizing all adverse impacts of mining and attendant activities.

In summary, we of AMAX have worked and will continue to work to live up to the mandate incorporated in the Company philosophy that as a supplier and developer of natural resources, AMAX has a vital obligation to protect the environment in which we all must live. We pledge our support of legislation concerning exploration, development and mining activities, along with attendant mined land reclamation, which will provide a reasonable framework within which these activities can proceed.

We hope and trust that the citizens of this great Nation will never lose sight of the fact that industry is the lifeblood of this Nation, and that the minerals required by industry to supply the goods and energy that our society demands are obtained by mining.

Thank you again for giving us this opportunity to make this statement.

[From the Denver Post, Dec. 8, 1970]

NEW MOLYBDENUM MINE MODEL OF ECOLOGICAL SANITY

(By Stewart Udall and Jeff Stansbury)

(This marks the first appearance of Jeff Stansbury as co-writer with Udall of this environmental column. Stansbury, 35, is managing editor of the Washington-based Population Reference Bureau, a non-profit private organization devoted to public education on environment and population problems.)

DENVER—When you drive 50 miles due west from this mile-high city to the foot of Red Mountain, you can see why the U.S. mining industry so richly deserves its reputation as a pillager of lands. Hundreds of mine holes pock the slopes. Road clearings needlessly erode the pine-aspens forest. And down along the banks of Clear Creek, old tailing mounds run gray with acid during rains.

Generations of miners have gouged wealth from the Rockies with little thought for the care and renewal of land. Even today most mining companies regard the environmental awakening as a threat. But at Red Mountain you find the beginnings of change.

Here, at a little over 10,000 feet, the Climax Molybdenum Co. has started work on a giant underground mine that challenges a whole industry to respect environmental values. The mine will extract over 300 million tons of molybdenum ore, source of the strategically important metal that strengthens steel in missiles, automobiles and most machinery.

By 1975, when the mines comes fully "on stream," America may face a molybdenum shortage. Climax could have exploited this fact to mount a cheap, spoiling attack on Red Mountain's deep deposits, it has wantonly scarred the land at other sites and other times. Why not now?

The answer, it seems clear, is that Climax has moved far ahead of its industry in responding to the legitimate demands of environmentalists. Rather than fight them every step of the way—thereby risking stiff legislation—three farsighted company executives have persuaded their parent corporation, American Metal Climax, Inc. (AMAX), to seek out and follow ecological advice.

Since 1967 these executives (Stan Dempsey, Bill Distler and Don Stephens) have met four or five times a year with members of two citizens groups, the Colorado Open Space Council (COSC) and the Rocky Mountain Center on Environment (ROMCOE). The resulting hybrid committee is the first of its kind in American mining. It has been dubbed the "Experiment in Ecology."

Three past presidents of COSC now serve on the committee, "We're quick to smell out half-hearted compliance and public relations gimmickry," say ROMCOE's Roger Hansen, who first worked out the Experiment idea with Dempsey. "Climax has gone out of its way to make environmental expenditures."

Indeed, most of the innovations at Red Mountain have been proposed by the company itself. Breaking with precedent, it has:

- Bulldozed as little as possible, left strips of forest standing at its mine and mill sites, and stockpiled topsoil for eventual land reclamation;

- Mulched and reseeded over 300 acres of terrain, including road banks;
- Built an aerating system and two ponds to cool mine shaft water before releasing it into Clear Creek;

- Temporarily diverted a mountain stream through gravel to prevent its siltation while culverts were laid;

- Designed a railway to accommodate the movements of elk and deer;

- Held the burning of slash to a minimum, sold the logs that had to be cut, chopped up the smaller branches, and sprayed the chips back into the forest;

- Hired ecologists to study Red Mountain's terrestrial and stream ecosystems; and

- Persuaded a power company not to bulldoze a right-of-way straight across the mountains to the mine. Instead, the Public Service Co. of Colorado has artfully concealed its zig-zag route, left most timber standing, skated out the few cut logs by horse, and used a helicopter to haul in the wooden utility poles and lay the wire.

While all these constraints impressed environmentalists, Climax's number one problem was finding a "tailings" site that would not pollute or esthetically scar an entire watershed.

Its new mine will eventually produce nearly 300 million tons of finely powdered waste. Naturally, such refuse, or tailings, is dumped into a man-made pond near the main shaft. At Red Mountain, however, such a procedure would have gravely threatened the narrow, fragile Clear Creek drainage.

The company chose, therefore, to spend \$25 million on a 14-mile electric railway—two-thirds of it tunneled through mountain rock—to carry the ore clear across the Continental Divide. There, above the Williams Fork, the ore tailings will be trapped in a hydrologically sealed pond, whose water will be recycled back to the mill's grinding and flotation system.

Such environmental protection is clearly costing Climax money—though the company says it doesn't keep track of how much. "Ten years ago we would have gone right in and got the ore out, period," says chief engineer Max Gelwix. "Now we think it's worth the extra expense to do things differently."

Other mining firms may have begun to think so, too. In the last year, Anaconda, Kennecott, American Smelting & Refining, and Molycorp of America have carefully studied the Red Mountain operation and adopted some of its innovations.

The Experiment enjoys the good will of most Rocky Mountain conservationists. "Two years ago a good friend told me I had 'sold out' to industry," says Elizabeth Willard, a committee member and president of the Thorne Ecological Foundation. But when she toured the mine site, she completely changed her mind.

The day is fast approaching, however, when environmentalists will challenge not only the HOW of every new mining operation, but also the WHY and WHEN. "Moly appears to be an essential mineral," says Experiment member Bob Weiner, "but do we have to open up Red Mountain right now? While Climax races its competitors to see who can get moly out of the ground the fastest, the price structure of the metal bears little relation to its depletion. Shouldn't we save some of our known deposits for future generations?"

The Experiment in Ecology was not set up to consider this question. But within its more modest confines the Experiment has sought, and surprisingly nurtured, a revolution in mining.

[From The Christian Science Monitor, Jan. 16, 1970]

MINING ORE WITH MINIMAL DAMAGE TO NATURAL BEAUTY

(By Robert Cahn, Staff Correspondent of The Christian Science Monitor)

EMPIRE, COLO.—Here in the mountains of Colorado, someone has changed the script.

Ordinarily, when an industry—in this case a major mining firm—plans a new development that may disrupt the environment permanently, conservationists are up in arms, writing to congressmen, threatening law suits, fighting the "polluters" every step of the way.

But for once at least, the would-be protagonists are sitting down over a conference table and trying to work out the problems before they happen.

The new Henderson molybdenum mine of the American Metal Climax Company (AMAX) is not due to go into operation until 1974. Yet since 1966, a nine-member committee of company officials and representatives from the Colorado Open Space Council (COSC) have been holding frequent meetings.

Their purpose: to figure out ways in which the ore can be mined and a mill operated with minimal harm to the forests, streams, and wildlife and to the natural beauty of this Rocky Mountain area which straddles the Continental Divide, 40 miles west of Denver.

UNPLANNED MEETING

This "Experiment in Ecology," as it is called, is all the more unusual in that a "sister" mine of the company near Climax, Colo., is an acknowledged scar on the landscape. And conservation groups are protesting, and threatening a lawsuit, to stop a proposed molybdenum operation by another company in the Challis National Forest of central Idaho.

These days, starting any new mining development in wooded natural areas is to conservationists like waving a red flag in front of a bull.

The experiment came as the result of a mistake late in 1966 by two young lawyers, Stanley Dempsey and Roger Hansen, when both of them showed up for a conservation meeting at the right place on the wrong night.

Mr. Dempsey was then assistant counsel for the AMAX molybdenum division, and Mr. Hansen was executive director of COSC, the Rocky Mountain area's biggest conservation organization. Being a week early for the scheduled meeting, they decided at least to have dinner and discuss their mutual interest in conservation.

INITIAL HESITANCE

The talk quickly centered on the company's "Henderson" site near Empire, which Mr. Dempsey said might turn out to be one of the world's largest molybdenum deposits (molybdenum is an alloy used mostly for strengthening steel).

'The conservationists . . . felt it might just be a public-relations gimmick'

They agreed that a way should be found to avoid repeating the environmental damages of past operations in developing the Henderson site, and decided to see if the new mine could become an example of environmental planning. Shortly thereafter, four AMAX officials and five conservation leaders held their first meeting at the company office in Golden, Colo.

Both of the instigators of the experiment in ecology at first met doubt and resistance from within. Company officials felt that no matter how much they spent on environmental safeguards, they couldn't win—the conservationists would still be critical for the least changes that were made on the resources of nature.

The conservationists hesitated because they felt it might be just a public-relations gimmick, and that the company would do as little as possible. Also, they were looked on with suspicion by other conservationists for consorting with the "enemy" and were accused of selling out their principles.

Mr. Hansen, who now is executive director of the Rocky Mountain Center on Environment, admits that if the proposed mine had been in a wilderness area, conservationists generally would have opposed it. But in this case the company had a right under existing mining laws to pursue the development and could not be legally stopped: The site was not in a protected wilderness area, nor was the land of unique and outstanding recreational or esthetic value.

FLORA AND FAUNA EXPLAINED

At the first committee meeting, Dr. Beatrice E. Willard of the Thorne Ecological Foundation showed color slides of the flora and fauna, and explained the interrelationships of resources in the fragile alpine ecology of the area.

The company executives, somewhat hesitantly at first, divulged in detail their plans for development of the mine and mill which would transform the buried ore into the powder-like molybdenum disulfide.

The major problem was: what to do with the finely ground rock tailings, the waste coming out of the mill which ordinarily is stored in ponds near the mine? More than 300 million tons of tailing are expected before the mine is exhausted.

The company planned, before the experiment in ecology started, to place the mill and the pond near the mine alongside a major highway through the scenic Rockies. But at the suggestion of the conservationists, a search was started for a new location.

EXPENSES REDUCED

After checking all possible locations within a 25-mile radius of the mine, company engineers discovered a site 13 miles away that was hidden from public view and where the mill could be built in a way that would create a minimum of pollution potential. But there was a catch. To reach this site the company would have to tunnel under the Continental Divide.

Company studies showed, however, that the \$25 million cost for a nine-mile tunnel and a rail line above the Williams Fork Valley could be economically justified.

At first, the ideas for environment improvement came from the conservationists. But now, says Mr. Dempsey, the spirit of conservation has caught hold with the engineers who seek new ways of doing things so that as much as possible of the natural setting can be preserved. And although many of the changes are costly and have to be absorbed in the interests of a better company image, some of the changes have resulted in reducing expenses.

On their part, the conservationists question everything, Mr. Hansen says. They even want an explanation for every tree the company wants to remove.

Some of the charges are small—but the cumulative effect is significant.

'But now . . . the spirit of conservation has caught hold with the engineers'

Instead of the ordinary galvanized steel buildings at the mine site, colored siding which blends with the setting is being used.

Culverts and trestles are planned so that the railroad will not cut off the natural animal trails.

The topsoil and dirt removed from the main mine shaft is being kept in a pile, and the land will be reclaimed when the shaft is no longer needed.

Slopes that have been denuded around the mine for construction purposes are being reseeded. And operations have been kept as compact as possible so that only 300 acres are being used for the mine.

PUBLIC ACCESS PERMITTED

The mill will use water recycled from the tailing pond. And a series of canals will be built above the pond so water running off the mountain will bypass the pond. This should remove the danger that floods might carry tons of waste tailings into the valley below the ponds.

The company is permitting public access on thousands of acres of land around the mill site which had been closed to the public by the previous owners.

The conservation spirit was even infused into the utility which provides power to the mine site. The Public Service Company of Colorado was persuaded to cut selectively only a few trees where power lines were to go instead of bulldozing a swath through the forests.

WIND PATTERNS CONSIDERED

A team of horses was then used to bring out the cut trees. The transmission towers were brought in by helicopter. And instead of using shining aluminum towers, the utility supplied wooden ones painted a shade of green designed to weather and blend into the setting.

Not all of the ecological problems have yet been solved. Dr. Willard, for instance, feels that information about wind patterns in the area of the tailing pond

is inadequate, and that studies should be made to find out if the molybdenum tailings might be swept into the air on strong winds and carried into areas where they could affect plant life.

"We feel the experiment has been a success so far," says Mr. Dempsey. "However, we have a lot to learn about how we are going to do reclamation work on the tailing ponds. And we are planning to hire a fulltime ecologist next month.

"The experiment has proved that an industry can work with conservationists in developing an operation. We hope it will serve as an example to others in industry and in conservation."

Mr. Hansen agrees that the experiment has proved that conservationists can cooperate with industry in some cases. But he points out that some types of development in some locations are not consistent at all with protection of environmental values.

In these cases, where environmental damage would far outweigh the gains, conservation groups may legitimately oppose any kind of development, or seek to have the development moved to an area where it will not cause damage.

MINERAL INDUSTRY

CODE OF EXPLORATION PRACTICES



**COLORADO MINING
ASSOCIATION**

CODE OF EXPLORATION PRACTICES

As evidence of our concern that a quality environment be maintained and as a demonstration of our interest in adapting to sound ecological practices as we search for new mineral interests, we voluntarily subscribe to the following ten point "Code of Exploration Practices" as recommended by the Colorado Mining Association and will use our best efforts so that all of our employees and contractors comply with it.

- (1) Know and comply with the mining laws relating to exploration in Colorado.
- (2) Know and comply with Forest Service, BLM or other appropriate government agency's rules and regulations.
- (3) Establish and maintain cordial relations with land owners and/or lease holders in the area of activity. These may be owners of private lands or administrators of public lands such as U.S.F.S., U.S.B.L.M. or state agencies.
- (4) Avoid harmful impacts upon the environment. For example:
 - (a) Deposit lunch sacks, cans or other litter in containers provided by U.S.F.S. or other agencies or dispose of such debris in a manner consistent with sound conservation and environmental practices.
 - (b) Use all reasonable efforts to avoid spillage of petroleum products and other noxious materials in connection with drilling activities.
 - (c) Plug or cap drill holes upon completion and abandonment.
 - (d) Inspect each drill site upon abandonment to make sure it has been properly cleaned up.
 - (e) Remove plastic flagging and/or aluminum foil used in geochemical, geophysical or other surveys when no longer needed.
- (5) Keep excavation (roads, drill sites and cuts) at a minimum. When no longer needed, reclaim to the extent practicable including efforts to reestablish vegetation.
- (6) Conduct all activities in the manner which minimizes danger of man-caused fires either in timber lands or grass lands.
- (7) Drive vehicles and conduct other activities in a manner such as to minimize disturbance of people and livestock in the area, keeping to established roads or trails when possible. Leave stock control gates in the position found (closed or open), unless a sign advises to the contrary or other advice is obtained from property owners.
- (8) Do not hunt or fish on private lands except with full permission of the land owner or authorized agent and then only when properly licensed.
- (9) Use no timber, water or other resource on private land without permission of the owner.
- (10) Promptly initiate negotiations with the owner for settlement of any claims for damages resulting from activities of the exploration group or contractors.

Senator Moss. We observe that you are, indeed, cooperating with the Forest Service out in Stillwater.

Are there other areas where the same sort of cooperative work is going on, other than Stillwater?

Mr. WALKER. I, personally, am not familiar with the East, but speaking from the information provided to me, there is one good example. That would be the Missouri Lead Operating Co., in Bixby, Mo., I believe it is, where this effort is similar from the point of view of checking into discoloration of vegetation, in this particular instance, around one of the plants there, there is a very wide cooperative effort between AMAX, Federal agencies, and State agencies. As I understand it, AMAX is underwriting the entire cost of this.

Senator Moss. Would it be helpful to your company to have the general regulations nationwide so that your company could address its work in any part of the country, understanding generally what the requirements were?

Mr. WALKER. Well, I think very definitely, sir. If we had standardized guidelines to work to, it would be a lot easier.

Senator Moss. We appreciate very much your testimony.

Senator Metcalf?

Senator METCALF. I have no questions. Thank you very much.

Senator Moss. Frank H. Dunkle, State Fish and Game director, and he will be followed by Brock Evans.

It is good to have you, Mr. Dunkle. We will look forward to hearing from you.

STATEMENT OF FRANK H. DUNKLE, STATE FISH AND GAME DIRECTOR

Mr. DUNKLE. Chairman Moss, Senator Metcalf, my name is Frank Dunkle, and I am director of the Montana Fish and Game Department.

As you might suspect, the department is profoundly interested in activities that are now occurring, and activities that may occur, in the Beartooth Mountains.

May I call to your attention, just behind you, a map of the area, and I think it emphasizes the extensive nature of the mineral exploration and of the development activities that are presently going on in the area. The little red hands that you see represent mineral activity. The blocked-in areas are the Stillwater mineral complex. It covers quite a bit of the country. I don't think you can deemphasize, in any way, what is happening in the area.

Here, also, are some photographs that I would submit to you. They are of the area. You may wish to go through them as I go on. I would like them introduced into the record.

Senator Moss. They will be incorporated, by reference, into the record and will be in our file and utilized.

Mr. DUNKLE. Thank you.

I also have a short film that will appear somewhere [Laughter.]

The film represents the condition of the land we are talking about, and it is less than 2 weeks old. It is silent. We don't have a piano player, Mr. Chairman, I am sorry to say. It does give you an idea

of the country and what is happening in the area. As I say, it is very recent, within the last 3 weeks that it was filmed.

Senator MOSS. Is that color true; is it as brown and yellow as it shows?

Mr. DUNKLE. Yes, sir.

Senator MOSS. These are in Stillwater.

Mr. DUNKLE. These are a couple of trout spawning in one of the areas, and then you run across situations like this where there is not too much spawning in the heavy sedimentation area. This shows the runoff going down over the snow. There you see water caught in one of the large bulldozer slits. Mine wastes in a stream.

Senator MOSS. There is enough there to kill off the fish?

Mr. DUNKLE. Yes, sir; here we see acid wastes again. This is primarily exploration activity, not mining, that I would like to call to your attention. This is exploration. Some of this is from old mines that have been there a good many years, but you can see what can happen just from exploration. You can see other things that are long in coming back. Here is an area that is being reclaimed. It shows that something can be done. It takes time, effort, and money. This still has a long way to go. Acid waste again. This activity is all in the headwaters, as you can well understand and some of the major rivers that are flowing into Montana, through Montana and out of Montana. This is some of the activity of the Mout area. Any of you who rode in the helicopter yesterday can understand why that film seems to be shifting a little bit. [Laughter.]

However, we didn't take out any trees on this trip.

Senator METCALF. It was because their hands were so cold, they couldn't hold a camera.

Mr. DUNKLE. This exploration shows a hole going back into the mountains. That concludes the film.

Those of you who flew yesterday, of course, saw some of this area. Those of you who did not, have an opportunity to see what we are talking about.

The Montana Fish and Game Department has the responsibility of managing the fish and game populations of this State; therefore, we must be concerned with the environment or the habitat that produces our fish and game and wildlife. The problem there is, even though the acreage affected is small, their impact is being felt throughout the Beartooth Mountain complex. An example of this is the winter bighorn sheep range located on the hills above the main Stillwater River near the Mout mining site. These animals have a rather specific habitat needs, and it is not likely that they can be relocated. Should mining activities disrupt their traditional winter range area, they would suffer untold hardships. During other seasons of the year, these animals range throughout the Beartooth Mountains, and should this range be damaged, the impact would be felt over vast areas traditionally used by these magnificent big game animals.

Goose Lake affords us another classic example of the far-reaching efforts of tampering with key portions of an animal's environment. Between Goose and Little Goose Lake is a short spawning stream. Any damage done to this stream, either physically to the channel itself, or through the sedimentation resulting from mining or exploration activ-

ity, will affect the fish populations in both of these lakes. Further, improvements to the access road in the area will affect the acreages of public land on either side of the road. Finally, there is the aesthetic impact. Can you imagine standing on the path between Sawtooth and Iceberg Mountain viewing Grasshopper Glacier, an awe-inspiring scenery in the headwaters of the West Rosebud River, and then turning 180 degrees and looking into an open pit mine? Yet, this can happen.

Another example of total effect on the ecosystem can be seen along the Boulder River in the vicinity of Graham Creek. There, mining interests have staked a critical elk winter range, and this area is particularly important during severe winters. If this range is lost, it will affect a much larger total area where elk are hunted and enjoyed by sportsmen today.

Acid mine drainings further emphasize this point. Presently, the Stillwater has acid mine drainage entering into its uppermost tributaries, mostly as a result of mining activities.

Now, additional acid mine waters have reached the middle sections of the Stillwater River near a probably open pit development, and acid mine waters or mill wastes could reach the lower Stillwater further downstream through contaminated ground water below the tailing ponds.

In this instance, we see the Stillwater River has been touched in only three points, but the quality of the water could be affected throughout its main course.

On Horseshoe Mountain, exploration activities have had a substantial impact on only a few acres of land, but it has removed the wilderness option for all of the Horseshoe Mountain. This area is used by elk, particularly during the mating season and perhaps requires a wilderness classification to preserve these elk.

Matters that you are hearing today are not matters that affect only the claim stakers or claims staked by miners, however large or small these claims may be. The activity on these claims will affect the ecosystems that are the Beartooth Mountains. Montana and Montanans are demanding respect of these ecosystems and the integrity of areas like these. They ask that we not be content with simply meeting air and water quality standards or criteria but that we take a total view of the area.

This request finds many caught in a painful period of transition from the days of simple exploration to the date of balanced development. During this period, meeting this public demand will be most difficult.

In the vicinity of Lincoln, Mont., Montanans demanded that we respect the environment. This request meant different things to different people. To the fish and game department, respecting the environment means providing for fish and wildlife that coinhabit the State. In the Lincoln situation, we proposed a plan whereby elk and trout were selected as indicators of quality environment, and we mutually agreed with the development company, with the Anaconda Co., that certain, specific steps would be taken to insure that their activity would not unnecessarily degrade the habitat that these various species depended upon. We are working within the concept that a liveable environment for wildlife is a quality environment for man.

We are now doing the primary studies to specifically define and identify these habitat requirements. Although this approach to environmental quality is still experimental, we believe it is a valid approach. This approach is new to most of the mining interests. When looking at the advantages and the privileges granted to the mining industry, it is difficult to see how they fit into a multiple-use concept of land management. Over the years, the subsidy to the mining interests have been considerable. It has been given the timber resource, free for its own use. If it destroys a fishery or a wildlife resource, in the past, it had little or no responsibility. Aesthetic values were sacrificed without penalty or concern. The miner has always enjoyed a priority use. While we all recognize the mineral industry, there is no second crop. We have also learned there is seldom, if ever, any other use that is compatible with his activities of the past.

Efforts to control the mining industry in the past has always met with a great deal of frustration, and, in recent years, we have seen this frustration turn to anger, particularly as it relates to the miner's activities on Federal lands. This frustration and anger were aggravated by Federal Land Management Agencies, who kept insisting that nothing could be done to control the miners from exercising the rights granted to them in legislation passed before the turn of the century.

The State of Montana, its citizens, and their representatives have, in their frustration, done everything possible to gain some degree of control over the mining interests and force them to join the rest of us in the 20th century.

The results of the 42d legislative assembly made this point undebatable. For example, House bill 243 was enacted. You have probably heard about this. Provisions for obtaining a license by an individual to reclaim his damage—I will just cut out part of this, because many other people have referred to it. I will jump a couple of pages, if you don't mind. I am back on page 11, for those of you who are following me.

These new laws that everybody else has talked about, and is in our written testimony, are in this booklet, and I would like to have these entered into the record, if I may.

Senator Moss. It will be incorporated, by reference.

Mr. DUNKLE. In conclusion, I would like to make the following general recommendations:

1. That this committee recognize the antiquity of the present laws governing the exploration of locatable minerals and work for the repeal of the laws which provide for such exploitation.
2. That a system of mineral leasing be established on Federal lands similar to the system currently practiced with the petroleum industry.
3. That in the immediate future Federal regulations be designed and patterned to supplement recent State legislation and that funds to support vigorous enforcement of their provisions be provided.

In addition to these general recommendations, I would like to recommend some actions that would deal specifically with present activity in the Beartooth Mountains:

1. That exploration activity in these mountains be limited to methods that will not preclude other classification or uses of specific areas.

For example: The mineral exploration and staking that was conducted on Horseshoe Mountain could have been accomplished with less surface disturbance, particularly under provisions of the new State legislation that has been passed. Had this been done, the land would not have been damaged to such an extent that it will now be difficult to obtain a wilderness classification for that specific area. Note, I said difficult, but nothing is impossible in Montana. Reclamation of these sites should begin immediately.

2. Each individually known ore body should be evaluated prior to its exploitation, and this evaluation should be based on what is in the broad public interest, not solely whether or not it is economically feasible to exploit the deposit.

3. For deposits that go to development, other public values must receive adequate compensation. The public is no longer ready or willing to sacrifice its fish and wildlife resources for a once-through mining development whose total social benefit is doubtful.

4. In order to obtain some degree of compliance with the above recommendations, it is recommended that all applications for special-use permits that accommodate mineral developments be granted only after full public discussion. For example, no special-use permit should be granted for reconstructing parts of the Goose Lake road until it is determined that developing of the potential ore deposit in the area is, in fact, in the public interest, and developing the area as a mine is the best and highest use to which the area can be dedicated. Hopefully, such a permit has not already been quietly issued in the cloakrooms of bureaucracy. While it would appear that this issuing of a special-use permit would be only a minor action, it is obvious it can lead to a major development that could have catastrophic environmental impacts.

In conclusion, I would like to return to a point touched on earlier. That point is that the public is demanding we all do a better job of extracting or utilizing Montana's natural resources. This is true for timber, grass, minerals, water, or any other natural resource we traditionally used for all it was worth. Today we still can and, perhaps, must use these resources, but now we must accomplish this utilization with a minimum disruption of other uses of the same or related resources.

In many cases we must still learn how to do this. The Montana Fish and Game Department stands ready to do its share. By the end of next month, we hope to have two ecologists at work in the Beartooth Mountains. Perhaps it is a small effort but it is a start. We again invite all interested parties to join and perhaps augment this effort. The public is demanding a better job, and their demands are completely justified. We must respond to this demand or prepare for a protracted period of conflict that will not only be costly to the industry, but it will also be costly in terms of resources abused.

If we approach our common problem cooperatively, much can be accomplished. There may be places where we will have to simply turn our backs on known deposits of ore and walk away. Let us also be prepared for that.

Mr. Chairman, that concludes my presentation.

(The complete statement of Frank H. Dunkle follows.)

STATEMENT OF FRANK H. DUNKLE, STATE FISH AND GAME DIRECTOR

Chairman Moss, members of the subcommittee, my name is Frank H. Dunkle, and I am Director of the Montana Fish and Game Department. As you might suspect, our Department is profoundly interested in activities that are now occurring, and activities that may occur in the Beartooth Mountains. Prior to beginning my testimony, I would like to call your attention to the map of the area I have brought with me, which I believe emphasizes the extensive nature of the mineral exploration and development activities presently going on in the area in question. I would also like to call your attention to some photographs that depict some of the reasons for our concern, and a short film that represents the condition of the land as little as two weeks ago.

The Montana Fish and Game Department is charged with the responsibility of managing the fish and game populations of this state. Our dependence upon the environment, or habitat that produces these fish and wildlife species, is, of course, obvious. It is equally obvious that we are having severe problems maintaining that habitat in the Beartooth Mountains.

I would like to start describing our problem by pointing out that in some of the specific areas where we are experiencing problems, even though the acres affected are small, their impact is being felt throughout the Beartooth Mountain complex. An example of this is the winter bighorn sheep range located on the hills above the main Stillwater River near the Mount Mining site. These animals are particularly sensitive to rather specific habitat needs, and it is not likely that they can be relocated, should mining activity be such that it would disrupt them from this traditional winter range area. During other seasons of the year, these animals range throughout the Beartooth Mountains, and it follows that should this range be damaged, or should the activity associated with mining adversely affect the sheep themselves, the impact of this action would be felt over vast areas of public land traditionally used by these magnificent big game animals.

Goose Lake affords us another classic example of the far-reaching effects of tampering with key portions of an animal's environment. Between Goose and Little Goose Lake is a short spawning stream. Any damage done to this stream, either physically to the channel itself, or through the introduction of sediment resulting from mining or exploration activity, will quite naturally affect the fish populations in both of these lakes. Further, should it be necessary to make improvements along the access road to the area, vast acreages of public land on either side of the road will be affected, and finally the aesthetic impact of a damaged environment at Goose Lake will have an impact on perhaps one of the most spectacular panoramas in the United States. For example, it is incomprehensible that an individual standing on the pass between Sawtooth and Iceberg Mountain viewing from Grasshopper Glacier the awe inspiring scenery of the headwaters of the West Rosebud River could turn 180 degrees and be confronted with an open pit mine. Yet, unless some action is taken to prevent it, this is what is likely to occur.

Another example of the total effect on an ecosystem of activity in key or critical areas can be seen along the Boulder River in the vicinity of Graham Creek. At this site, mining interests have staked an area of critical elk winter range; a range area that is particularly important during severe winters. As is the case with bighorn sheep, should this critical range area be lost to the elk, the net effect of that action would have an impact throughout a vast area of public land where elk are hunted and enjoyed by sportsmen.

Acid mine drainage further emphasizes the point I am trying to make. At the present time, the Stillwater has acid mine drainage entering into its uppermost tributaries, mostly as a result of past mining activities. It is now possible that some additional acid mine waters could reach the middle sections of the Stillwater River in the vicinity of the probable open pit development, and it is further possible that acid mine waters or mill wastes could reach the lower Stillwater further downstream through contaminated ground water below tailing ponds. We see in this instance where the Stillwater has been touched in only three points. However, the quality of its water could be affected throughout its entire course.

A final example of the net effect of activities that some individuals would have you believe are affecting only minor acreages can be seen on Horseshoe Mountain. Here exploration activity has had a substantial impact on a few

acres of land. This impact, although found on only a few acres, now seems to have removed the wilderness option for all of Horseshoe Mountain, an area known to be frequented by elk, particularly during the mating season, and one that perhaps requires wilderness classification to preserve the elk and provide a quality recreational experience.

I hope the testimony I have just given emphasizes that the matters you are hearing on today are not matters that affect only the claims staked by miners, however large or small those claims may be. What we are discussing is the effect of their activity on the ecosystems that are the Beartooth Mountains. The public is demanding that we respect the ecological integrity of areas like these. They are asking that we not be content with simply meeting air and water quality standards or criteria, but that we take a holistic view of the area in question and respect its environmental integrity. For public servants, this request raises more questions than we have ready answers for. We find ourselves caught in a painful period of transition from the days of simple exploitation to the days of balanced development, and during this period meeting this public demand will be most difficult.

We have gone through a similar experience in the vicinity of Lincoln, where, just as in the Beartooth Mountain complex, the public demanded that we respect the environment. This request meant different things to different people. To the Fish and Game Department, respecting the environment means providing for the fish and wildlife that coinhabit the state. In the Lincoln situation, we proposed a plan whereby elk and trout were selected as indicators of a quality environment, and we mutually agreed with the developing company that certain specific steps would be taken to insure that their activities would not unnecessarily degrade the habitat that these various species depended upon. In other words, we started practicing the concept that "a livable environment for wildlife is a quality environment for man." At the present time, we are engaged in preliminary studies to specifically define and identify what these habitat requirements are. It must be admitted that this approach to environmental quality is still experimental, but we believe it is a valid approach, and we believe that most Montanans accept the premise that "a livable environment for wildlife is a quality environment for man." This approach is, of course, new to most mining interests. It is more difficult to accomplish than publishing a Chamber of Commerce-type brochure or launching an advertising campaign to improve the industry's image.

When looking at the advantages and privileges granted to the mining interests, it is difficult to see how they fit into the multiple-use concept of land management. Over the years, the subsidy to the mining industry has been considerable. He has been given the timber resource, free for his own use. If he destroyed a fishery or a wildlife resource in the past, he bore little or no responsibility. Aesthetic values were sacrificed without penalty or even concern, so it is obvious that the miner has always enjoyed a priority use. While we all recognize that in the mineral industry there is no second crop, we have also learned that there is seldom, if ever, any other use that has been compatible with his activity in the past. Efforts to control the mining industry in the past have always met with a great deal of frustration, and in recent years we have seen this frustration turned to anger, particularly as it relates to the miners' activities on federal lands. This frustration and anger were aggravated by federal land management agencies who kept insisting that nothing could be done to control miners exercising the rights granted to them in legislation passed before the turn of the century.

The State of Montana, its citizens and their representatives, I believe, have in their frustration done everything possible to gain some degree of control over the mining interest and force them to join the rest of us in the 20th century. The results of the 42nd State Legislative Assembly make this point undebatable. For example, House Bill 243 was enacted, requiring licensing of individuals engaged in mineral exploration, development or actual mining. Provisions for obtaining a license revolve around the individual's requirement to reclaim the damage his operation does. Since state government could not gain control over the land being subjected to the greatest amount of damage, they have stepped in to try to control the individuals doing that damage. While this represents a most admirable effort on the part of the Montana State Legislature, it is a sad testimonial to the federal government's inability to regulate what occurs on the public lands.

House Bill 316 also requires that prospectors, miners, or other persons in the State of Montana advise the owner or manager of the surface of land in advance of any operation which will disturb the surface of such land, and to obtain authorization to operate on such land. Again, this was an effort on the part of the elected representatives of the people of Montana to spare the damage being heaped upon the public lands belonging to all the people of the United States.

Other legislation was also passed by the 42nd Legislative Assembly, that while not as direct as the bills I have just described, nonetheless was passed to alleviate the damage being done to Montana's environments. These are Senate Bill 70, which provides for the reclamation of surface mined lands, House Bill 66 which establishes a State Environmental Quality Council and staff, and House Bill 85 which essentially is a restructuring of Montana's Water Pollution Control Act.

Meeting in extraordinary session, the State Legislature also passed Extraordinary House Bill 7, which amended state laws relating to the location and assessment work requirements upon mining claims. Essentially this act was to eliminate the necessity for digging a discovery pit on each individual claim. All these new laws serve as evidence that the people of this state, and their elected representatives, are demanding that a better job be done, particularly on federal lands. It is equally apparent that the federal government simply has not been representing the public interest in its management of public lands.

All the new laws I have just mentioned are contained in this small booklet that can also be entered into the record.

In conclusion, I would like to make the following recommendations:

1. That this committee recognize the antiquity of the present laws governing the exploitation of locatable minerals, and work for the repeal of the laws which provide for such exploitation.

2. That a system of mineral leasing be established on federal lands similar to the system currently practiced with the petroleum industry.

3. That in the immediate future federal regulations be designed and patterned to supplement recent state legislation and that funds to support vigorous enforcement of their provisions be provided.

In addition to these general recommendations, I would like to recommend some actions that would deal specifically with present activity in the Beartooth Mountains:

1. That exploration activity in these mountains be limited to methods that will not preclude other classification or uses of specific areas. For example, the mineral exploration and staking that was conducted on Horseshoe Mountain could have been accomplished with less surface disturbance, particularly under provisions of the new state legislation that has been passed. Had this been done, the land would not have been damaged to such an extent that it will now be difficult to obtain a wilderness classification for that specific area. Note, I said difficult, not impossible but nothing is in Montana. Reclamation of these sites should begin immediately.

2. Each individually known ore body should be evaluated prior to its exploitation, and this evaluation should be based on what is in the broad public interest, not solely whether or not it is economically feasible to exploit the deposit.

3. For deposits that go to development, other public values must receive adequate compensation. The public is no longer ready or willing to sacrifice its fish and wildlife resource for a once-through mining development whose total social benefit is doubtful.

4. In order to obtain some degree of compliance with the above recommendations, it is recommended that all applications for special use permits that accommodate mineral developments be granted only after full public discussion. For example, no special use permit should be granted for reconstructing parts of the Goose Lake Road until it is determined that developing of the potential ore deposit in the area, is, in fact, in the public interest, and developing the area as a mine is the best and highest use to which the area can be dedicated. Hopefully, such a permit has not already been quietly issued in the cloakrooms of bureaucracy. While it would appear that this issuing of a special use permit would be only a minor action, it is obvious it can lead to a major development that could have catastrophic environmental impacts.

In conclusion I would like to return to a point touched on earlier. That point is that the public is demanding we all do a better job of extracting or utilizing

Montana's natural resources. This is true for timber, grass, minerals, water or any other natural resource we traditionally used for all it was worth. Today we still can and perhaps must use these resources, but now we must accomplish this utilization with a minimum disruption of other uses of the same or related resources.

In many cases we must still learn how to do this. The Montana Fish and Game Department stands ready to do its share. By the end of next month we hope to have two ecologists at work in the Beartooth Mountains. Perhaps it is a small effort, but it is a start. We again invite all interested parties to join and perhaps augment this effort. The public is demanding a better job, and their demands are completely justified. We must respond to this demand or prepare for a protracted period of conflict that will not only be costly to the industry, but will also be costly in terms of resources abused.

Much can be accomplished if we cooperatively approach our common problems. There will also be places where considering what is known and what we are likely to learn in the near future, we may have to simply turn our backs on a known deposit of ore and walk away. Let us also be prepared for that.

Senator Moss. Thank you, Mr. Dunkle, for a very complete and comprehensive statement and one that takes a rather severe line on the exploitation of minerals in the areas where there may be other values, and what you suggest might be feasible. I don't know. It is a little more shaded to the environmental side than most of our other testimony, but certainly what you say has great impact. I think it is a valuable part of our record. Your pictures were most illustrative, both the ones you showed in the movie and the ones that were made a part of the record for the committee to see. We saw many of those ourselves when we were out there yesterday on our field trip. I appreciate having this and I thank you for it.

Senator Metcalf?

Senator METCALF. Thank you, Mr. Dunkle.

Mr. DUNKLE. Senator Moss, I am very happy to hear what you said, that I seemed to represent an environmental side. That is exactly what I was trying to do. [Applause.]

Senator Moss. We will make a general note in the record that "on occasion, there was applause." [Laughter.]

We will now hear from Mr. Brock Evans, and he will be followed by Gay Easton.

We are glad to have you before us, Mr. Evans, and we look forward to hearing you.

Mr. EVANS. Thank you.

STATEMENT OF BROCK EVANS, NORTHWEST REPRESENTATIVE, SIERRA CLUB AND THE FEDERATION OF WESTERN OUTDOOR CLUBS

Mr. EVANS. Thank you, Mr. Chairman, and thank you for calling me in this order. I have a plane to catch shortly.

I am Brock Evans, Northwest representative for the Sierra Club, and I am also representing the Federation of Western Outdoor Clubs. I would also like to speak from an environmental point of view.

We feel very strongly that there must be legislation to regulate and control the impact of mining on our environment.

One of the strongest problems, in our opinion, is the right of unlimited, or almost unlimited, access of miners to nearly all public lands right now. It is incredible to us right now that only miners, out of all

segments of the body public, can go almost any place on public land. If they find ore, they can stake out these deposits and make them their own private property with all the attendant rights of access. A logger can't do this with a choice piece of timber that he sees on private land just because he likes the timber. Recreationists cannot do this with his favorite lake or stream. Only the miner still has these incredible privileges, all out of proportion, we think, to the needs of this country for minerals. We don't think we need minerals at such a rate to justify scarring up some of our finest scenic areas and ruining some of our best streams and our best farm land. We think we need never come to that point where we start thinking in terms of recycling and reclaiming much more than we do now.

We think there must be remedies, and I will just summarize, because it has been said by others here already. We think there must be a mineral leasing system for hard rock minerals as well as those now subject to lease.

We think, secondly, and very strongly, there must be authority within the land-administering agencies to say no, to forbid exploration or mining of minerals in areas which have other public values. There are other things at stake besides minerals on our public lands, and we think this should be one of the strongest parts of any mining legislation, Mr. Chairman.

Thirdly, wherever mining exploration or any other mineral activity takes place, there must be the strictest sort of regulation and constant supervision and monitoring to assure that equipment compatible with preservation of the environment is used, to assure that water quality is protected and kept the same as it was before, to assure that the land is adequately revegetated, that fertile soils remain fertile, and to assure that the land is not ruined forever for everyone else who uses our public lands.

Mr. Chairman, I have sat through this hearing this morning, and I was listening quite carefully. We have heard reiterations of old, familiar myths from the mining industry this morning. We heard the myth that more is better. We heard the myth that demands for minerals are going up and up, and, therefore, we must permit mining in every single place where there are minerals. We heard the myth that more consumption somehow means a better standard of living.

We submit, first, Mr. Chairman, that there is a distinction between what is called demand, which is fostered by avid promotion of the industry, and the basic needs of our society. We need other things besides copper cars and copper roofs on houses, just to name a couple of the ads I have seen from the mining industry recently. We think if there is any need which is really going up and up, it is the need for a high quality environment; it is the high quality for our scenic and wilderness resources, such as we have right now in the Beartooth and Stillwater country.

We submit that this is the need you must provide for. We think that fundamental survival is at stake and is vital to ourselves, as a species. That is what we are talking about. We think we have lost too much already because of the old myths that the mining industry keeps repeating. We think we have got to draw the line. We have to save the places we love and that make life worthwhile while there is still time.

So, instead of saying more is better and, therefore, let's mine every single place, let's do something meaningful about recycling. Let's talk about mining heaps in our garbage dumps instead of letting them pile up on us. Instead of saying more consumption automatically means a better standard of living, which is building all the time, let's realize what our present consumption patterns are doing to the things and places we love. Let's start talking about a new land ethic. Let's start realizing we are part of the earth and not apart from it. We can't live without it. We can't go on along in the old way. We think we must have strong changes in our outmoded mining laws.

Thank you, Mr. Chairman.

Senator Moss. Thank you, Mr. Evans. I appreciate your comments on some of the other testimony that has gone on, and I know that you are committed very strongly to the preservation of the environment. You appeared before us at Great Falls and talked to us there about the river, the Missouri River, and the bill that Senator Metcalf has on that. I can't quarrel at all with your objectives. I think we have talked earlier about the need for recycling and doing whatever we can to preserve the land. The crunch comes, however, when you consider the fact that we must have a certain amount of minerals and materials to carry on our life style, as we have it, and how we are going to make this accommodation between them.

I am glad to have a very strong statement on your side, just as we have strong statements on the other side. Our job is going to be to try to find the practical solution that we can live with, without degrading our environment and not degrading our standard of living.

Now, some may say that is impossible. Maybe it is, but we have to try to find a solution, in any event. I do appreciate your statement and your commitment. We are pleased to have your views.

Senator Metcalf?

Senator METCALF. Mr. Chairman, you mentioned that Mr. Evans testified at Great Falls, and I feel as Mr. Evans and I have been traveling around the country together. This is about the third time in a week I have seen him. We started out in Portland together a week ago. [Laughter.]

It has been like a traveling road show. In Portland, we were talking about the timber situation and timber resources; and here, we are talking about the harvesting of minerals. I think Mr. Evans and I are in agreement that we have to have houses and we have to have minerals, but we have other values, too, that we have failed to realize and work on.

In Portland, talking about the harvest of timber, we had a similar statement that there are going to be stands of timber that people are going to have to walk away from because of the destruction of the recreation areas, in the watershed, because of flood control, and the cost of reseeding and replacing it.

Again, we have the same sort of proposition. As my friend, Cecil Garland, says, "Everytime you see a mature tree, the lumberman wants to chop down the tree. When a man sees a vein of ore, he wants to harvest it." He calls that the "ripe tomato syndrome." [Laughter.]

We have to have a balance, and I think you presented a balance on another point of view.

Mr. EVANS. That is very true, Senator. We think the balance in this country for 300 years has been all the other way, and we would like to rectify that right now while we still have time.

Thank you.

(The complete statement of Mr. Evans follows:)

STATEMENT OF BROCK EVANS, NORTHWEST REPRESENTATIVE, SIERRA CLUB AND THE FEDERATION OF WESTERN OUTDOOR CLUBS

Mr. Chairman, we are sure that it is obvious to this Committee and to anyone else who has visited areas which are either being mined or explored for mining that all mining activities have a severe impact on the environment. The proposed large-scale strip-mining of coal in Eastern Montana and Wyoming, soon to begin in the Bull Mountains, will continue the same sort of earth-scarring that has already taken place in much of the Appalachians in the eastern part of the country. Indiscriminate exploration with bulldozers in the Rocky Mountains south of Lincoln has already ruined many thousands of acres of national forest land, much of it beyond repair or hope of restoration. And now, the massive and large-scale exploration activities of the Anaconda Company and others in the superlatively scenic Bear Tooth Mountains threaten to destroy another of our very finest wilderness areas.

Gentlemen, we very strongly feel that there must be legislation to regulate and control the impact of mining on our environment. It is incredible to us that nearly one hundred years since the passage of the mining laws, they have been changed in almost no meaningful environmental respect. Only miners, out of all segments of the body public, can still go almost anywhere on public lands, and if they find ore they can stake out such deposits and make them their private property, with all the attendant rights of access. A logger cannot stake out a choice piece of timber on public lands for his own and keep other people away; a recreationist cannot do this with his favorite lake or stream. Only the miner has these incredible privileges, all out of proportion to the needs of this country for minerals. We do not need minerals at such a rate to justify scarring up our finest scenic areas, ruining our best streams and our best farmlands. We need never come to that point if we can start thinking in terms of re-cycling and reclaiming. I read several years ago that we could obtain some 3 million tons of metal per year simply by mining our garbage dumps again.

There must be remedies. Our spokesmen have outlined such remedies in more detail at other hearings. Briefly, the major ones are as follows:

1. There must be a mineral-leasing system for hard-rock minerals as well as those now subject to lease.

2. There must be authority within the land-administering agency to say no, to forbid exploration or mining of minerals in areas which have other public values. There are other things at stake here besides minerals on our public lands.

3. Wherever mining exploration or any other mineral activity takes place, there must be the strictest sort of regulation and constant supervision and monitoring to assure that equipment compatible with preservation of the environment is used, to assure that water quality is protected and kept the same as it was before, to assure that land is adequately re-vegetated, that fertile soils remain fertile, and to assure that the land is not ruined forever for everyone else who uses our public lands.

These things can be done, although our mining industry does not appear willing to do it voluntarily. We must have legislation and we must change these out-moded laws.

Thank you.

Senator Moss. Thank you, Mr. Evans.

Mr. Harvey Frederick, vice president, Ravalli County Chapter, South-West Mining Association, has submitted his statement to be placed in the record, and it will be placed in the record at this point. We appreciate having that.

STATEMENT OF HARVEY FREDERICK, VICE PRESIDENT, RAVALLI
COUNTY CHAPTER, SOUTH-WEST MINING ASSOCIATION

Dear Senator Jackson: I would like to submit a statement concerning certain legislation before Congress at the present time and due to be brought to the floor of the Senate with a "pass" or "do not pass" recommendation.

The bills we are specifically concerned with are Senate bills 921 and 1576, and House resolution 6788.

The South-West Mining Association and the Ravalli County Chapter thereof, is primarily concerned with the enactment of Senate bill 921. Under title 1: Public Land Administration, section 207, I would like to quote:

The Secretary (of Interior) may dispose of Federal mineral interests by mineral lease and license under this title in any manner which, in his judgment, will meet the goals, objectives and other provisions of this title. He may use *competitive* means of disposal whenever he finds that a *competitive* interest exists and competition would otherwise be consistent with the requirements and goals and objectives of this title.

We, of the South-West Mining Association, believe that if this bill is passed in this form it will give unwarranted jurisdiction and dictatorial power to the Secretary of Interior. Competitive bidding would place the complete control of all valuable mineral resources in the hands of a favored and moneyed few. The independent prospector and small mineowners could no longer hope for any financial return from investment of time and money in the field. Incentive would be destroyed and one of our basic American economic privileges would be voided. Furthermore, Senate bill 921 is so loosely drafted and so lacking in specific assignment of responsibility and obligations, that the Secretary of Interior could seemingly interpret it in any way that he chose.

Senate bill 1576,, a companion to Senate bill, 921, appears to seek unnecessary and unwarranted expenditure of public funds to set up a national program to establish mining and mineral research centers. House resolution 6788 seems dedicated to the same proposition as noted in the previous bill.

We, of the South-West Mining Association, and of its Ravalli County Chapter, would like to state that we are unequivocally opposed to passage of all three of these proposed acts. We feel that these would be a drastic impact upon the total national economy if these bills and the resolution become law. In addition, it seems a very decisive inroad is being made upon the basic constitutional rights of the average American citizen.

Senator Moss. We will now hear from Gay Easton, president, and Donald Aldrich, executive secretary, Montana Wildlife Federation.

They will be followed by the Honorable Jeff Scott.

STATEMENT OF GAY EASTON, PRESIDENT, MONTANA WILDLIFE
FEDERATION

Mr. EASTON. HON. Senator Frank E. Moss, Chairman, My name is Gay Easton, 519 2d Ave., Laurel, Mont., president of the Montana Wildlife Federation, representing some 8,000 active members through-

out the State of Montana. We are concerned with the need for the wise use and proper management of those resources of the earth upon which the lives and welfare of man depends: the soil, the water, the forests, the minerals, the plantlife and the wildlife.

It is of my understanding that this subcommittee hearing will be dealing with surface mining on Federal properties, but more specifically interested in the Beartooth or more locally known as the Stillwater complex, therefore I will try and keep my comments relative to the Beartooth, but with other problem areas still in mind.

Ecosystems in Alpine and subalpine areas can be easily disturbed and very difficult to rehabilitate them if they are disturbed. The 1872 general mining law requires no reclamation of prospecting on mined areas. This results in varying amounts of damage to the soil and water resources and has reduced the esthetic or viewing values, especially in the "main" Stillwater and in the Daisy Pass area at the head of the Stillwater River. Through the Federal Sustained Yield Act of 1960, and the National Environmental Policy Act of 1969, along with others, helped to promulgate into effect the laws of Montana: House bill 243, requiring reclamation and development plans for disturbed lands; House bill 316, requiring notification of landowner, and his approval of plan for work and restoration; Senate bill 7, which eliminates the mandatory discovery pit, and the 1897 Organic Administration Act helps act to tighten mining regulations.

We, the citizens of Montana and the general public must make sure these provisions are properly funded to insure safeguards to public health and welfare.

The entire area is noted for its capacity to produce high quality water in significant quantities for downstream use, and domestic use by families. Public lands also supply the main source of the natural runoff creating a vital watershed. A water source which effects a large portion of Montana streams has to be protected. I believe the areas involved should be held in public ownership to insure proper watershed protection for downstream users from stream siltation caused by surface disturbances. The Organic Act of 1897, the Multiple-Use Sustained Yield Act of 1960, and the Multiple-Use Act of 1964, all embrace watershed protection.

If these provisions are not administered by governing agencies of the general public, we have no assurances that the management of the watershed will be properly managed for the health and welfare of the general public. Only through a leasing system can we, the public, be assured of proper management of the resources and the watershed.

Extension of roads for mineral exploration will have an effect in making the areas more accessible to recreationists resulting in greater people distribution. With this combined situation this could be detrimental if placed within a critical deer or elk summer range. This is at present, a situation that affects a wild game summer range along with an area which affects a vital fish spawning stream that definitely has to be corrected if we are to retain high-quality water for a fishery. Our fish and our wildlife are an important barometer for the protection of man's invested right to the highest quality environment.

I believe the general public must look deep into the laws relating to our public lands and the archaic laws of the 1872 Mining Act, for in-

stance, the Senator Henry M. Jackson's bill, S. 921, which is broadly based and has some very good merits. We, the people of Montana are vitally concerned with the outcome of environmental protection and still leaving room for economic advancement. The general public must be insured a voice in the long-range program affecting our total environment.

In my closing statement I would like to impress upon this committee the importance of conserving our natural resources that are nonrenewable. We see recycling of paper products to preserve our timber supply, bottles and cans from litter, but the greatest waste of the raw mineral resource is the junk auto. This resource is the greatest waste employed by the American people, which in turn places a tremendous burden on the mining of new minerals to meet the demands of the industry. I sincerely recommend to this committee to take steps, invested in their power, to make every possible effort to promote and finance, through local, State, and national participation the use of these valuable mineral wastes before consideration is openly given to the extraction of needed raw material. Through this, over a long-range program, we can be assured of being a wealthy Nation and live in an environment which we, the American public, can be proud of, live in, and enjoy.

I would still like to state again that I think recycling seems to be an answer. Senator Moss follows this very closely. The only thing about which I have a little concern is that the studies are geared for around the year 2000. It came to my mind today that if this is the year that the earth is going to come to an end, maybe we had better project this another hundred years. Maybe we had better look a little further into it.

I would like to know if this would be acceptable to the committee. I have several letters that were written to me. I am sure Senators from their home States like to get letters from their home people. These are some letters that were given to me. They didn't know where to send them; so, I would like to put these in the record.

Senator Moss. We will be glad to receive them if they are on this same, general subject.

Mr. EASTON. Yes; they indicate the point of view of those people who signed the letters.

Senator Moss. I hope their addresses are on there so they can get an acknowledgement. We do appreciate having that, Mr. Easton, and I think Mr. Aldrich is prepared to testify.

Mr. EASTON. Yes.

(The aforementioned letters are in the appendix.)

Senator Moss. All right, Mr. Aldrich, you may proceed.

STATEMENT OF DONALD ALDRICH, EXECUTIVE SECRETARY, MONTANA WILDLIFE FEDERATION

Mr. ALDRICH. Senator Moss, Senator Metcalf, again I want to take this opportunity to thank you gentlemen very much for giving up your short period of recess to listen to us and our troubles. We appreciate it very much.

Senator METCALF. Senator Moss, you will recall that Mr. Aldrich was camping near the Bitterroot, and he came out to attend this hearing.

Senator Moss. I remember telling him that he had made the sacrifice by coming out of that beautiful area to attend this hearing.

Mr. ALDRICH. I don't know whether it is legitimate or not or that the record would contain this, but I would like to say that the MacGruder Corridor is another area that Lee has helped us a great deal with, and we appreciate the effort to which he has gone to arrange this public hearing so that we can present our views on these areas, as well as the Lincoln Back Country and the Missouri River and others.

I have here another letter from another gentlemen in our organization, the president of district 3. He has a letter he would like entered into the record and a newspaper clipping from the *Lewistown Daily News*.

Senator Moss. That will be entered and printed in the record.

(The complete statement of Donald Aldrich follows:)

STATEMENT OF DONALD ALDRICH, EXECUTIVE SECRETARY, MONTANA WILDLIFE
FEDERATION

I am Donald Aldrich. I have lived in Missoula, Montana since 1930 and on the banks of the Clark Fork of the Columbia River my entire life. I was not born early enough to have witnessed the 1908 flood, the 1910 fire, nor the origin of the mining industry in Montana, but my life and my philosophy have been influenced by the destruction of resources that accompanied these three catastrophies.

To prescribe a cure I believe a history of the malady and an understanding of the symptom are essential. Living on a major east-west highway between the Butte-Anaconda desecration and the Mullan-Wallace-Kellogg disaster I have long been conscious of the resource despoilation, human exploitation, and greed that accompanies mineral development. The mountain valleys left boulder-side-up in the mad rush to extract placer gold gives further evidence that society now and for perpetuity has paid an unacceptable price to enrich a few of its members.

Men who should have been in the prime of their lives died of lung diseases attributed to dust conditions in the mines. The State Hospital at Galen cared for many of those afflicted with miners' consumption. Some turned to other employment in an attempt to restore their health and feed their families.

Mining and mineral processing was and, to some extent still is, a social disease or an addiction. Once a community is hooked, it is called upon to make more and more sacrifices until it dies in its own poverty and filth. For every active mining community there are many that never quite made it, or did make it only temporarily. The scars on the land, the dead streams, and the broken people are left in the wake of a prospering industry. An industry that writes its own laws and avoids just taxation.

Until now their bastions have been unassailable—their attitude toward man and land beyond comprehension. A prominent man in mining circles once observed that "multiple use" is what you do with the land after the mineral industry has established that it has no value to them.

This hearing authorized by the Senate Interior and Insular Affairs Committee indicates that we are at a turning point—that the mining industry will serve mankind. I hope your Committee will initiate laws that will improve health standards in mines, and processing of minerals; that will control polluting emissions; provide severance taxes; and establish leasing as the only condition for removal of minerals from public lands.

The reasons for requesting control or pollution are obvious, but eliminating the classification of locatable minerals and the introduction of severance taxes need some explanation.

We are currently faced with the prospect of smothering in our own waste—a waste composed for a good part of material that contains some of our non-renewable resources. We are told that these minerals cannot be reprocessed economically. That decision is based on the cost of producing new metals from mineral deposits located on public land and patented at \$2.50 per acre. If this land were leased as oil lands are, if the operators were paying a severance tax,

and if they were obligated to prevent pollution and to reclaim the land, it is quite possible that recycling would be more economically competitive.

If mineral exploration and development were done on a lease contract with the federal agency responsible for the management of the contiguous land, we could expect more consideration of other resource values, such as grazing, timber, and water. The right to uncontrolled mineral exploration on public lands has led to unnecessary, poorly engineered, and ecologically objectionable roads. Unreclaimed roads and discovery pits have caused serious erosion and siltation of our streams.

Federal minimum standards of operation will be essential to assure that the states do not compete for mineral exploration and development by sacrificing the quality of their environment.

Thank you for giving our problems consideration and for giving us this opportunity to express our wishes.

Senator Moss. Thank you very much, Mr. Aldrich. We are happy to have that statement, just as we were happy to hear from you on the Missouri River matter when we were in Great Falls. We do appreciate the fine work you do with the Wildlife Federation.

Senator Metcalf?

Senator METCALF. I have no questions. Thank you, Mr. Aldrich.

Senator Moss. Our next witness is the Honorable Jeff Scott, representing district 9, which is Yellowstone County.

We will be happy to hear from you now, Mr. Scott.

**STATEMENT OF HON. JEFF SCOTT, REPRESENTATIVE, MONTANA
STATE HOUSE OF REPRESENTATIVES, DISTRICT 9, YELLOW-
STONE COUNTY**

Mr. Chairman, honorable members of the subcommittee, my name is Jeff Scott. I am an attorney at law in Billings, Mont. I am a member of the Montana Legislature, serving my second term in the House of Representatives from Yellowstone County. I am a member of the Environment and Resources Committee and am chairman of the House Judiciary Committee. I appear today to plead for a rational approach to the exploration for and extraction of minerals from our Federal lands.

This past weekend, three companions and I climbed Granite Peak, the highest mountain in Montana. Granite Peak is located in the heart of the Beartooth Mountain Range, overlooking a vast area of wilderness. From its summit, one can see Yellowstone Park, Pilot, and Index Peaks in Wyoming; the beautiful Rosebud Valley, and hundreds of square miles of untouched mountain grandeur. One can also see the area where mining companies propose to lay bare the valuable mineral deposits that lie beneath the fragile surface of the earth.

As we made our 12-mile hike to the base of Granite Peak just last Friday, we saw no other human being. We passed through virgin forests, crossed numerous streams from which we drank with no fear of pollution, saw waterfalls rivaling in beauty those anywhere in the world, and finally passed the treeline at 10,300 feet and reached the Froze To Death Plateau. There we left the trail and went cross country to our base camp. We saw wild Rocky Mountain goats, wild flowers too numerous to count, grasses that slowly spring back after our feet walked on them, and snowfields producing the pure water that feeds the streams and rivers leading from the beautiful Beartooth Mountains.

We heard no sound, except the wind and our own voices. We saw no man nor evidence of man. The rocks lay undisturbed, the great distances unbroken by any evidence of man's intrusion.

The beauty of this country cannot be described by me and must be experienced by being there. What a magnificent resource. Surely we can rationally choose a course that will preserve this resource for future Americans.

Is the present law governing mineral development a rational one? I do not think so. It allows private interests to explore for and extract valuable minerals without restraint. No prior approval by any agency, private or governmental, is required. The mining law of 1872, that monolithic anachronism, has wedded us to a course of wilderness destruction for the purpose of economic gain on the part of private business.

Yes, the problem is one of balancing competing factors. Certainly, to some extent, our economy requires production of valuable minerals. But just as certainly, our society, increasingly disheartened by urban sprawl and human congestion, requires the existence of the purity of space and nature which I so recently experienced hiking in the Bear-tooth Mountains.

You, Senators, have the heavy burden of now choosing the right course. I recommend to you that you rewrite the Federal mining law, to place a high priority on the protection of wilderness values for the sake of mineral extraction.

I urge you to vote for bills like S. 1843, Senator Metcalf's bill for a mineral severance tax of 5 percent. Support S. 1032, the Federal Environmental Protection Act, giving citizens the right to sue to protect their environment. Support legislation to revise the feudalistic mining law of 1872 and provide for a balancing of the very real interests of wilderness preservation against economic exploitation of the mountains. I can tell you, Senators, that the people want such action.

As our group was hiking out from our climb of Granite Peak this past weekend, we crossed the high plateau at 11,000 feet, and had just walked across a snowfield and stopped for a rest. One of our group heard a sound, and we turned toward the valley formed by Mystic Lake and the West Rosebud River. Soon we could see what made the sound. It was a helicopter, flying between the valley walls below where we stood. The sound was loud and seemed quite unreal in that quiet place. Soon it was gone, and we surmised that it was a mining company helicopter, carrying members of an exploration crew. The point is that that single sound shattered for us the tranquility of that moment. That we will soon forget, but no one will be able to forget the roar of the bulldozers and the irremedial scars and gashes left by them and the giant scoopshovels that will soon traverse the Bear-tooth Mountains unless the Congress acts soon to enact a rational mining law.

Senator Moss. Thank you, Representative Scott, for your fine presentation. It was a very pointed presentation of your visit to that high country. I, too, appreciate the beauties of it as I had a chance to do yesterday. It is superb, indeed, and I honor your desire to keep it beautiful.

Senator Metcalf?

Senator METCALF. Thank you for the fine statement, Representative Scott. Thank you for mentioning S. 1843. Many of our attempts, on a local level—and you know, being a member of the legislature—are fought, by an industry, a company, a corporation saying that, “You can’t put this tax on in Montana. If you do, we won’t be able to compete with the people of Idaho or Minnesota or some other place.”

Now, S. 1843 is a national severance tax of 5 percent on natural resources. You, as a member of the State legislature, know how desperate the States are for funds. S. 1843 provides that if the State will pass such a severance tax, it will get the benefit of all the national tax. So, I think that we in Congress are trying to work with you in the State legislatures to try to get you the benefit—or the States—of your natural resources. I am glad you brought that up.

Senator Moss. Thank you very much.

We are now about halfway. I have done a little arithmetic here of the witnesses we have heard, and those we still have to hear. We have used 4 hours and have 2 hours left; so, we have to go twice as fast.

Again, may I appeal to those who are testifying, to put their statement in the record, summarize it as much as you can to try to get before us the things you want to emphasize. The whole statement will be in the record.

Mr. Arnold Anderson, of the Beartooth Ecological Council, Inc., will be next. He will be followed by Professor Russos, of the Montana Fish and Game Association.

We are glad to have you, Mr. Anderson.

STATEMENT OF ARNOLD K. ANDERSON, BEARTOOTH ECOLOGICAL COUNCIL, INC.

Mr. ANDERSON. Thank you, Senator Moss and Senator Metcalf. Since my statement is quite short, I will read only the highlights, because some of this has been covered prior to this time.

I am Arnold Anderson, president of the Beartooth Ecological Council, which was incorporated as a nonprofit educational organization in the State of Montana, and was formed in the spring of 1971 by persons concerned with the preservation of the environment of the Beartooth Mountains.

Our council was not established to oppose or to seek to end mining in the Upper Stillwater. Our main concern is in preserving and perpetuating those industries and activities which now make use of the natural resources of the area.

Since the mountains in question provide habitat for untold numbers and species of game birds and animals, we wish to see these natural wonders preserved for the enjoyment of present and future generations.

Heavy winter snows give ample water storage that later flow to lowlands through fishing streams that are known throughout the Nation and provide irrigation water for countless acres of farm and ranch lands. It is in this area of watershed management that we are primarily concerned.

Anaconda Copper Co. has purchased several ranches along the Stillwater River as the site for a settling basin to use in processing of ore in future mining development. If this settling basin is allowed to be built on the proposed site, the entire downstream drainage is in danger of becoming polluted.

If I might diverge again from my prepared testimony, I would like to make one comment, that it seems to be the foregone conclusion here today, that we are on the right track, that mining is inevitable, which it is. Are we on the right track without doubt, or is it a matter of mining now, with the only question of where, how much and what kind? Are we to revalue our sense of values in an effort to take into consideration the needs of future generations? Are we going to borrow from future generations now and enjoy the standard of living that is possibly imposed upon us; not by our desires, but by Madison Avenue financiers and Wall Street promoters?

This committee can take a tremendous step forward in looking at this aspect rather than just considering the fact that we are going to mine, we are going to extract these minerals at a cost unknown to us, and this could possibly be our only other consideration.

Thank you.

(The complete statement of Arnold Anderson follows:)

STATEMENT OF ARNOLD K. ANDERSON, BEARTOOTH ECOLOGICAL COUNCIL, INC.

The Beartooth Ecological Council is incorporated as a non-profit educational organization in the State of Montana, and was formed in 1971 by persons concerned with the preservation of the environment in the Beartooth Mountains.

The purpose of this organization shall be to promote, protect and preserve the environment and natural resources and fish and wildlife in Montana, with special emphasis on mining activity in the Stillwater and adjacent drainages of the Beartooth Mountains. And, to accomplish the above by observation of any activities that are adverse to these objectives and to attempt to correct or improve such by means of persuasion, publicity with attendant information to the public concerning the alleged degradation, and if necessary, remedial legislation at the local, state or Federal levels.

To assist all groups and companies interested in safeguarding and preserving the natural habitat and environment of the State of Montana through reasonable, safe and practical methods so as to preserve ecological balance so far as possible and practical in these, exploration and extraction of natural resources.

The Beartooth Ecological Council was not established to oppose or seek an end to mining in the upper Stillwater. Our main concern is in preserving and perpetuating those industries and activities which now make use of the natural resources of the area. Since the mountains in question provide habitat for untold numbers and species of game birds and animals we wish to see these natural wonders preserved for the enjoyment of present and future generations.

Heavy winter snows give ample water storage that later flow to lowlands through fishing streams that are known throughout the nation, and provide irrigation water for countless acres of farm and ranch lands. It is in this area of watershed management that we are primarily concerned.

Anaconda Copper Company has purchased several ranches along the Stillwater River as the site for a settling basin to use in processing of ore in future mining development. If this settling basin is allowed to be built on the proposed site, the entire downstream drainage is in danger of becoming polluted.

The lake site is walled from the Stillwater River by a glacial moraine, a ridge of gravel deposited by a glacier. Additional glacial deposits over a geological fault provide a natural siphon into underground reservoirs which flow distances presently unknown to man. Billings Geologist Bill Ballard of Balcron Oil Company concurs with this assertion. Also, a well drilled in the basin to a depth in excess of 300 feet will only flow when a huge irrigation ditch is feeding water to the surrounding area.

We, therefore, urge this committee to secure the necessary funds that will allow proper state and/or federal agencies to conduct an underground water study on the headwaters of the Stillwater River.

It has been contended by Anaconda officials that glacial deposits can be sealed, and the fault forms a natural barrier which will prevent percolation of waste material into surface water. No mention has been made concerning underground water pollution or the possibility of an earthquake—not uncommon to the area—rendering useless any precautionary installations set forth beforehand.

In conjunction with the above request we will seek to have a socio-economic study conducted in an effort to answer many other questions:

1. How large is the ore vein?
2. How much water will remain for agriculture and wildlife?
3. How can we ever hope to provide for the water needs of downstream states let alone supply our own water needs if our mountain ranges are stripped?
4. Will wildlife be forced down into the valley or out of the area entirely?
5. What effect will ensuing dust storms have on agriculture, wildlife, and recreation in the area?
6. In what way will the local economy be affected?
 - (a) Can we be assured that existing enterprises will continue unabated or will we be 'Robbing Peter to pay Paul'?
 - (b) Will a new road and railroad be needed from Columbus to the mine area?
 - (c) What mineral rights have surface property owners?
 - (d) Will county residents be required to fund a new sewage system as well as additional schools?
 - (e) What other year-round recreational areas will be available to local residents of Yellowstone, Stillwater and Carbon Counties?
 - (f) How much influence will this mining operation have on out-of-state tourism?
7. Does mining contribute to a continuing economic growth? Is it not true that mining communities usually deteriorate into hard-core poverty areas?

While some of the questions for which we seek answers are unique to our own area, their answers can establish precedent and guidelines for future studies in other localities.

Senator Moss. Thank you, Mr. Anderson, for your statement representing the ecological council. Of course, you have put your finger on what this committee has to wrestle with in the first place, and that is what the standards will be for mining to continue if we get a revision of the Mining Act of 1872. It seems pretty generally agreed that it must be investigated and amended, and the big question is, how do we amend it? That is why we are making this record to find out when we do change it, to what do we change it. Your presentation has helped give us some material with which to work as we try to make that decision.

Senator METCALF. Thank you, Mr. Anderson.

Senator Moss. Professor Rusoff was with us in Great Falls, and we are glad to have you with us today to testify, to be followed by Mr. Fitzgerald, of Frontier Films.

STATEMENT OF PROF. LESTER RUSOFF, UNIVERSITY OF MONTANA LAW SCHOOL

Professor RUSOFF. Senator Moss, Senator Metcalf, I am here, in part, as a representative of the Western Montana Fish and Game Association to present a statement from the president of that association, Dr. Gary E. Eudaily. In his letter, he makes several points. One is that public mineral-bearing lands should be under lease in order to assure more proper control of the reclamation.

He urges, also, that there be severance taxes to state a more realistic cost of the production of new minerals. He urges that, unless there can be proper reclamation in a given area, that no mining should be allowed.

That summarizes his letter.

(The complete letter of Dr. Gary E. Eudaily follows:)

WESTERN MONTANA FISH AND GAME ASSOCIATION,
Missoula, Mont., August 13, 1971.

SEN. METCALF,
Federal Building,
Billings, Mont.

DEAR SIR: This letter is to introduce Professor Lester Rusoff of the University of Montana Law School. He is the appointed representative of this Association to the hearing on mining reclamation in Billings.

It is the feeling of this Association that whenever minerals are removed from public lands they should be removed under a lease-type program. We feel that this would insure more proper control of reclamation. We also feel that severance taxes should be assessed to bring the price of producing new materials into proper perspective. It simply doesn't make any sense to be digging up the earth to bury old metals and at the same time digging it up in another spot to remove more raw materials to produce the same metals.

Most importantly, this Association feels that unless proper reclamation can be accomplished in a given area under consideration *no* mining should be allowed.

Sincerely yours,

DR. GARY E. EUDAILY, *President.*

Professor Rusoff. I would also like to briefly make a point for myself in development.

Brock Evans referred to some of our myths. You might say the same thing, perhaps a little differently, when we say we are making some easy assumptions. We must do this; we have to do that; we must consider the needs for minerals and energy; we must develop mineral deposits. I wanted to emphasize the point that perhaps we are not developing anything. We are using up and destroying something. I am concerned that what may look like the lifeblood of the Nation today may turn out to be the embalming fluid of some of the future generations. We have talked about the needs of the year 2000. I think people are going to have to have minerals in 2001, also. I think we ought to seriously consider whether we have a moral right to live a life style, as we have it, at the possible cost of the absence of certain materials for future generations. This is one of the assumptions that we have been making, and I think it is an assumption that we should take a close look at.

Thank you.

Senator Moss. Thank you. Professor Rusoff, I suppose you subscribe to the suggestion made earlier that if new metals had to bear more of the actual cost of production and severance tax, and so on, that it might stimulate the recycling use of metals and other materials greatly. This is something we have done only minimally up to now because of the economic factor. The economic factor would shift considerably if this were so, is that right?

Professor Rusoff. That is one of the points in Dr. Eudaily's letter, yes.

Senator Moss. Thank you very much.

Mr. FitzGerald, to be followed by Jean Anderson.

STATEMENT OF M. B. FITZGERALD, PRESIDENT, FRONTIER FILMS

Mr. FITZGERALD. My name is Brooks FitzGerald and I earn a living as a salesman. I have traveled extensively throughout the Beartooths, both for pleasure and to film and produce movies about the region. From my first movie "The Land of the Pink Snow" to my latest, "A Legal Crime," I have documented the destruction of the Beartooths.

About 25 years ago a friend and I were fishing in Lake Abundance in the Beartooths on a hot and sultry afternoon. After climbing out of the valley and on to Daisy Pass we couldn't wait to reach and drink from a sparkling cold stream trickling down the mountainside.

To our amazement the water tasted like acid and I managed to spit it out. My friend, who drank from a cup, was unable to stop in time and swallowed the water. He turned ashen and began to perspire so profusely that it ran off his chin. He heaved and tried to throw up the water and finally was able to get rid of some of it. Notwithstanding, he was extremely ill. This little stream had run through McLaren's mined area near Daisy Pass.

During those days the old McLaren gold mine and ball mill in Cooke were in operation. They poured all their waste, acid, and water from the ball mill operation into a pond which in turn ran into Soda Butte Creek and the Lamar River in Yellowstone National Park.

For years Soda Butte Creek ran through the Gallatin National Forest and Yellowstone Park, milky white with pollution. It was of no value except as an open sewer for McLaren's. Tourists in the park could neither drink nor fish in it. There wasn't then and isn't today one unambiguous strict Federal law to prevent this outrage. The U.S. Forest Service has stated time and again that it does not have the authority to protect water quality in the national forests.

McLaren's operations were infinitesimal compared to that which is now taking place and what is coming. The public has little protection for its streams other than the mining companies' assurances. History, particularly around Butte, tells us what this is worth. And even though intentions may be the best, accidents to tailings ponds are inevitable.

Someone must speak for the wildlife, the fish, and our grandchildren who have no public relations firms and lobbyists to speak for their interests. When are we going to realize that our greatest national resource is not minerals but pure water?

Senator MOSS. Is this creek still polluted, the one about which you talked, do you know?

Mr. FITZGERALD. No, sir.

Senator MOSS. You don't know or it is?

Mr. FITZGERALD. It is not polluted now.

Senator MOSS. It is not polluted now. It was when McLaren worked it, is that right?

Mr. FITZGERALD. Yes.

Senator METCALF. Thank you very much.

Senator MOSS. That is a very strong point to make, and we are glad to have that in the record.

We will now hear from Mrs. Anderson, to be followed by C. R. Fischer.

We are glad to welcome you, Mrs. Anderson, representing the Montana League of Women Voters.

STATEMENT OF JEAN ANDERSON, PRESIDENT, LEAGUE OF
WOMEN VOTERS OF MONTANA

Mrs. ANDERSON. Senator Moss, Senator Metcalf, I am Jean Anderson, Mrs. Bruce Anderson, and I represent the League of Women Voters of Montana. We do appreciate the opportunity to be here before you, and our concern lies with the effect of mineral exploration and mining on water and air quality.

Much of what I would have said, even though it was brief, has been said; so, I will skip some of my prepared text.

Senator Moss. Your full statement will be a part of the record.

Mrs. ANDERSON. Yes.

The mining law of 1872 was written at a time, as has been stated, when the values of this country were somewhat different than we see them now when we still had free lands and, apparently, limitless treasury of industrial resources. We now know these resources are limited and that even the renewable resources cannot survive indefinite abuse.

It is time to strive to balance the interests and the rights of miners, who were thoroughly enthroned in the 1872 law, which must be balanced by the need of the public for clean water and air.

The changes in the law have been mentioned, and I will skip that.

I am awfully glad to have it reaffirmed by the mining companies that they can mine on Stillwater without hurting the water. I had understood it was possible. I am sure it is expensive. The League of Women Voters believe pollution control should be the cost of doing business, and that air and water must not be used as dumps.

We realize, as citizens, as taxpayers, and as consumers, we will have a part of these costs passed on to us. We feel that the law should require companies to do their business with as little damage to the air and water as possible, thus not penalizing, in a competitive economy, those willing to voluntarily work with these handicaps.

We also feel that the regulatory agency should be adequately staffed and financed to see that the rules and regulations are uniformly observed.

We are not against mining or industrial development, and we do applaud the voluntary restrictions that the mining companies in the Stillwater area are presently observing and their apparent concern for environmental protection. However, the evidence of the past and previous practices did pollute the water and the air and long after the profitable work was done.

We believe that acid runoffs and siltation of streams are no longer acceptable byproducts of mineral exploration, access, or extraction and must be prohibited by law.

On August 8, in an article in the Billings Gazette, a speech by John G. Hall, vice chairman of the board of the Anaconda Co., was summarized. He spoke of the increase in the world's appetite for metals and of the ability of the mining industry to prevent starvation for metals—"at least within the lifetime of those in this room." That was apparently a quote.

I hope that we can worry about the lifetime of future generations, as well, and their appetites, their unavoidable appetites for drinkable water and clean air.

Thank you.

(The complete statement of Jean Anderson follows:)

STATEMENT OF JEAN ANDERSON, PRESIDENT, LEAGUE OF WOMEN VOTERS OF MONTANA

The League of Women Voters of Montana appreciates this opportunity to express our concern for the possible effects of mineral exploration and mining on water and air quality.

A century ago the "first frontier of the last west was the miner's frontier". The 1872 Mining Law was drawn at that time when the main goals of the Nation were to fill up the vacant spaces on the continent and to encourage industrial expansion. We still had free lands and an apparently limitless treasury of industrial resources free for the taking. We now know that the resources are limited, and that even those which are renewable cannot be abused indefinitely.

It is time to strive for a balance of interests. The rights of miners, so thoroughly enthroned in the 1872 law, must be balanced by the public need for clean water and clean air. Not all changes will make the finding or extracting of minerals more difficult. Those portions of the 1872 law which no longer suit present day mechanized technology (after all, bulldozers were not widely used 100 years ago) should be deleted. Sections which require excessive surface disturbance to establish and maintain claims should be adjusted to the realities of the present. It is technically possible, but expensive, to extract minerals using self-contained systems which recycle water. The League of Women Voters believes that pollution control should be a cost of doing business, and that air and water should not be used as free dumps. We realize that citizens as consumers and taxpayers must expect to have some of the costs passed on to them. We feel that laws should require all companies to do their business with as little degradation to the air and water as possible, thus not penalizing in this competitive economy those most willing to work with these often difficult handicaps. We also feel that regulatory agencies should be adequately financed to see that rules and regulations are uniformly observed.

Today, close-by, in the Stillwater and Beartooth Complex large scale exploration is underway. Doubtless massive mining will follow. The League of Women Voters is not against mining or industrial development, but we can see that previous processes did pollute water and even the air, often long after the profitable work was finished. We believe that acid run-offs and siltation of streams are no longer acceptable by-products of mineral exploration, access, or extraction.

On August 8, 1971, in an article in the Billings Gazette, a speech by John G. Hall, Vice Chairman of the Board of the Anaconda Co., was summarized. He spoke of the increase in the world's appetite for metals, and of the ability of the mining industry to prevent starvation for metals—"at least within the lifetime of those in this room". The League of Women Voters recognizes the fact that we live in a time of ever increasing use of these supplies. But let us also consider the lifetime of our children, and even grandchildren, and their unavoidable appetites—for drinkable water, for clean air.

Senator Moss. Thank you very much for that fine statement and the concern of the League of Women Voters. I find that you ladies do a great job of doing your homework on various matters that concern us legislatively. We are always glad to have a representative of the League of Women Voters.

Senator METCALF. Thank you.

Senator Moss. Mr. Fischer, of the Montana Chamber of Commerce, to be followed by Mr. Fredlund, of the Archaeological Survey.

STATEMENT OF C. R. FISCHER, DIRECTOR, PUBLIC RELATIONS/
SPECIAL AFFAIRS, MONTANA CHAMBER OF COMMERCE

Mr. FISCHER. In any discussion of environment, it is most important that we separate terms. Ecology is a branch of science detailing the interrelationship of organisms and their environment. It is, according to the dictionary, the "totality or pattern of organisms and their environment."

What we are discussing today is environment, and the dictionary defines environment as the "aggregate of social and cultural conditions that influence the life of an individual or community," environment and economics are inseparable and any discussion of the one necessitates consideration of the other.

Modern man has decided, through trial and error over the ages, that his environment is improved through the daily use of electrical power, engines, metals, lumber and paper, and facilities for his recreational pursuits. The demand for these products creates wages for man, who in turn returns his wages to satisfy his life's demands.

The fact that a tiny subculture in this country has taken a back-to-nature cause and fashioned a life style around it should not overshadow the vast majority of our citizens who want and need to find gainful employment in order to satisfy their social and cultural life style.

Mineral exploration, extraction, and consumption are integral cogs in the machinery which produce the environment most men desire in their personal vision of a satisfactory environment.

Modern technology and existing legislation have created a condition where reclamation is considered a natural phase in the process of mineral exploration, extraction, and consumption. The Montana Chamber of Commerce supports this position and encourages industry to utilize the latest technological advances in reclamation procedures.

It is most important that we remember our terminology in discussing mineral exploration before this committee. Such exploration could disrupt the ecology. The existing pattern of organisms in an area could be disrupted. That same exploration, however, could develop into a definite improvement in the area's environment, improving the social and cultural conditions that influence the life of individuals or communities.

The Montana Chamber of Commerce supports mineral exploration which includes adequate reclamation programs.

Senator Moss. Thank you very much for your statement, Mr. Fischer, on behalf of the Montana Chamber of Commerce, and your position is very clear. We are very pleased to have it stated in the record.

Senator Metcalf?

Senator METCALF. Thank you very much for a conclusive statement.

Senator Moss. Is Mr. Fredlund here? Mr. Fredlund, you will be followed by William J. Van Matre, Montana College of Mineral Science.

STATEMENT OF DALE E. FREDLUND, ARCHEOLOGICAL SURVEY

Mr. FREDLUND. Senator Moss, Senator Metcalf, ladies and gentlemen, I would like to draw attention to a resource that has not been mentioned yet today and that is the archeological resources, particularly within the Beartooth region. We are discussing the relative merits of developing one natural resource as opposed to another natural resource. Too often, one resource is developed at the expense of another, and this is a rather risky and dubious course of action. Since antiquities are historic and prehistoric heritage and are a natural re-

source, they are unrenovable. In the areas which contain these antiquities, they are being destroyed by various forms of progress. To build a road or railroad, innumerable sites of archeological value are destroyed. To develop a mine, archeological sites will be destroyed. To improve a modern campground, campgrounds several thousands of years old will be destroyed, as they have been, for example, in Bowman Lake, Kintla Lake, and numerous other regions in Glacier Park.

It is happening every day in the State of Montana, as well as in the rest of the country. The Beartooth, and other high alpine regions, and other relatively inaccessible places controlled by the Federal Government, remain among the few areas containing undisturbed archeologic data. This is primarily because early development has occurred and relatively small numbers of people have been there so far.

We were there a week ago, for a week, and in the Beartooth Mining Zone, specifically, we found a total of eight archaeological sites. This does not sound like a large number, but it is rather incredible when you consider we spent most of our time in our incredible Volkswagen bouncing over steep roads and a minimum of 8 or 9 hours of actual survey work.

Because the Montana State University system is financially incapable of conducting extensive research, archaeologists, like those in other academic disciplines, are turning to the Federal Government and to industry for support. Response by Federal agencies, such as the Bureau of Land Management and the Forest Service, have been, at times, gratifying but, at other times, frustrating.

Generally, these frustrations originate at the Washington level since the local district and regional offices fully realize the potential and rationale for multiple use approach on their lands. They have gone out of their way to do the best job they possibly can and to insure this ideal. Yet, despite the efforts of the State districts and regional offices of the BLM, the Department of Interior has done little in producing protective measures concerning antiquities at the Federal level. As a result, the BLM mining lease clause concerning antiquities does not effectively protect the endangered site. Similarly, the Forest Service's concept of multiple use is still mostly concept in the eyes of Congress and in the Department of Agriculture, and it will remain a platonic ideal until Washington provides the funds needed to implement a multiple use approach. As a result of this, be it negligence or misunderstanding, the Forest Service will remain primarily a timber producing agency primarily catering to the whims of Washington. The requests of Region One of the Forest Service seem to be completely ignored and funds remain primarily available for timber production. Thus, adequate funding for research in an area remains part of a dream, part of the multiple use ideal, while the Forest Service, locally and regionally, remains stuck with the dilemma of doing a multitude of different services but not spending any money to do it.

Because of Washington's neglect, the Forest Service and the BLM continues, inadvertently, to destroy archaeological sites. There is a Federal antiquities law which states that anyone who destroys an archaeological site will be punished, but we can't help but wonder to whom this law applies. It was written by some forward-looking individual in 1906, which seems modern, compared to 1872, but it is woefully inadequate for today.

Industry, in some cases, is sharing a major responsibility in the preservation and salvage of antiquities on their lands. The coal mining industry, especially Peabody Coal, Western Energy (a subsidiary of Montana Power Co.), Decker Coal, Ayshire Coal and Consolidation Coal have all voluntarily established a precedent by supporting survey and excavation on lands they are mining or intend to mine in Montana and Wyoming. Unfortunately, the hard rock mining industry, specifically the Anaconda Co., continues to refuse any responsibility toward archaeological values present on the lands they explore and develop. Operating under an 1872 mining law—and we can almost consider this an antiquity, although we really don't want to preserve it. [Laughter.]

Mr. FREDLUND. They remain relatively immune to Federal or State controls which leaves only company morality to guide them.

Nonetheless, when an organization—be it Federal, State, or industry—controls great areas of land, the responsibility for the land and the people involved should also be great, and, as a consequence, consideration for all interests and all resources should be realized. If Congress and the executive branch of the Federal Government does not take protective action or provide adequate funding, the mining industry will either directly or indirectly cause the destruction of the archaeology that does reside thereon.

Senator MOSS. Thank you, Mr. Fredlund. I am happy that you have discussed the archaeological aspect, because this has been an interest of mine. As you know, for some time, we have had a requirement in the reclamation law which provides that if any reservoirs are to be created under Federal funding, there must be an archaeological survey and salvage to the extent necessary. I introduced a bill to extend this to any project that has Federal funding in it. This has now been reported to the Senate, and I think that is going to become law. Yours is even wider, of course, because it talks about private companies being required to preserve archaeological sites, or, at least permit salvage before they go ahead with any development that would destroy the site. I think that is a very farsighted thing, and I am glad you mentioned it, because we are going to tackle that 1872 law. This is something we ought to consider, in so doing.

Senator METCALF?

Senator METCALF. I am glad, of course, that Mr. Fredlund brought up another point in the course of his discussion which was very important. I'm wondering if you and the industry people who are here today can't get together and have a discussion as to whether these could be preserved.

Mr. FREDLUND. I would be delighted.

Senator MOSS. Thank you very much, Mr. Fredlund, for your very fine statement.

We will now hear from Mr. William J. Van Matre.

STATEMENT OF WILLIAM J. VAN MATRE, HEAD, MINING ENGINEERING DEPARTMENT, MONTANA COLLEGE OF MINERAL SCIENCE

Mr. VAN MATRE. Thank you, Chairman Moss, Senator Metcalf, I am the head of the Mining Engineering Department at Montana College of Mineral Science and Technology. I will reduce the material I am going to give you from my original statement.

Senator Moss. Thank you; the complete statement will be made a part of the record.

Mr. VAN MATRE. Most of the valuable metal deposits in the earth's crust will be mined in the 300- to 400-year period that began about 150 years ago. Metals to be used after this period will be obtained as a result of recycling processes. It is doubtful that one-thousandth of the earth's land area will be disturbed as a result of metal mining during this period; however, mined lands must be reclaimed and industrial water must be cleaned before it is released.

The operations necessary to produce metals are prospecting or searching for mineral deposits that may be economic; exploration or economic evaluation of the deposits; development of economic deposits for mining; mining of the ore body; mineral processing to concentrate the valuable minerals; smelting to melt and further concentrate the metallic elements, and refining to sufficiently purify the metals.

Much of the initial exploration must be done with a bulldozer. Excavation must be performed to permit the driving of underground openings. Access roads must be built. Drill sites must be excavated. Solid rock must be exposed occasionally to determine the attitude of the deposit.

Federal legislation should not prohibit mining and mine exploration. However, future economic evaluations should include the cost of water treatment and land reclamation.

We believe the earth was formed about 4½ billion years ago. Many changes have taken place in the earth's crust during that period of time. Many changes will occur in the earth's crust in the future. Man has inhabited the earth for thousands of years; however, most of our present-day culture has been developed in the past 2,000 years. Almost all of the metals that have been fabricated into useful and productive machinery and equipment have been mined and refined during the past 150 years. During this 150-year period, almost all of our developments in science and engineering have been based on the availability of metals and other materials that were mined from the earth's crust. Most of the metal that has been mined is available for use today; however, it may be necessary to pass legislation to assure that these metals are recycled rather than being disposed of in dumps with volumes of nonvaluable materials. During the years ahead, metal mining will continue to expand. Then, as more and more metals are recycled, metal mining will decline to a trickle. Perhaps this will occur in the next 200 years. It is doubtful that one-thousandth of the earth's land area will be disturbed as a result of metal mining during this 300- to 400-year period.

In the past little has been done to reclaim these mined areas and only in the last 20 years has significant progress been made in cleaning water discharged from industrial processes. However, in the future, mined lands will be reclaimed, and industrial water will be cleaned before it is released.

In order that metals may be produced, the following operations must be conducted: One must search for potentially valuable mineral deposits. Many mineral deposits are not economically minable, so each mineral deposit must be investigated to determine if enough valuable elements are present to permit a profitable mining operation.

Next, a deposit that is believed to be economic must be prepared for mining. The mining of overburden that does not contain valuable metals usually is necessary in the development of a surface mine. The driving of underground workings is done in developing both underground and surface mines. Once a mine is developed, ore mining may continue for many tens of years before a deposit is exhausted.

Metallic ores are usually processed in a manner that concentrates the percentage of valuable mineral by a considerable amount. The concentrate is smelted and then refined to produce valuable metals.

To summarize, the operations necessary to produce metals are, then, prospecting or searching for mineral deposits that may be economic; exploration or economic evaluation of the deposits, development of economic deposits for mining; mining of the ore body, mineral processing to concentrate the valuable minerals; smelting to melt and further concentrate the metallic elements, and refining to sufficiently purify the metals.

Metallic ore bodies may generally be classed into deposits that are very large, called massive or disseminated ore bodies, and ore bodies that are tabular, such as veins, sedimentary beds, or magmatic segregations. Tabular ore bodies have two dimensions that are very large in relation to the thickness of the deposit. The Stillwater copper-nickel deposit, which is southwest of Billings, is a copper-nickel deposit that has a tabular shape. It has been exposed over a length of more than 30 miles, it has an unknown depth that probably exceeds several miles, but it has a width of only a few hundred feet. In general the Stillwater deposit is vertically oriented; therefore, its width may be measured horizontally.

The earth's crust is formed of rock. It is usually hard. Most of the land areas on the earth's crust are covered with loose dirt and disintegrated rock materials; therefore, it is difficult to determine the actual content of the crustal material. In the past, prospectors found valuable metal deposits by panning the dirt overlying deposits for its precious metal content. In some cases valuable crustal material was exposed. This is known as an outcrop.

Today, the relative location of a valuable metal deposit may be determined by a sensitive chemical analysis of surface dirt in which the valuable metal may be measured in parts per million or in some cases parts per billion. This technique is known as "geochemical prospecting."

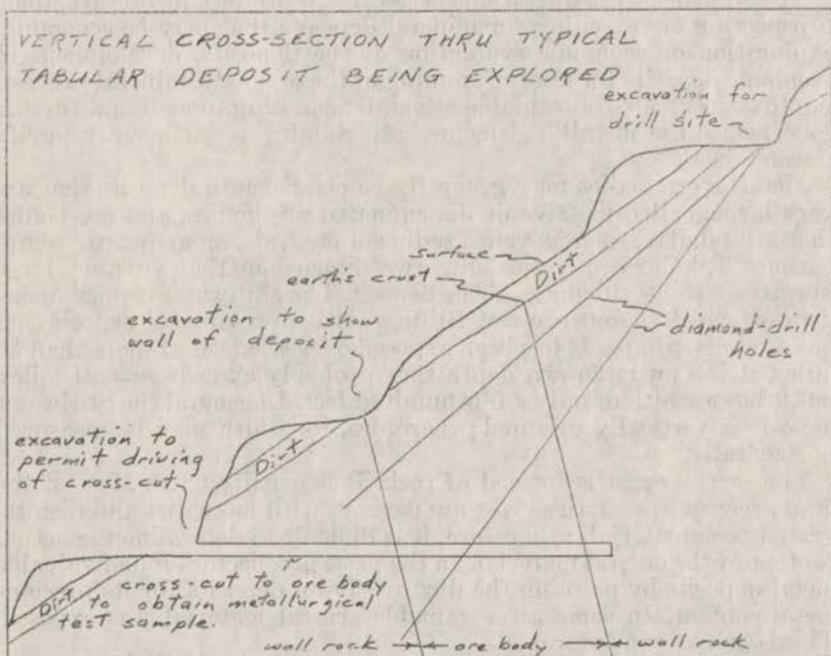
Additional information regarding the size and shape of a deposit may be obtained by making physical measurements in the area of the deposit, such as electrical potential, electrical resistivity, the travel rate of sound waves, radioactivity, and the relative magnetic and gravimetric forces that exist near the body. This technique is known as "geophysical prospecting."

There is little surface disturbance from modern prospecting techniques.

Once a potentially valuable metal deposit is found, it must be explored to determine if it can be mined economically. Much of the initial exploration must be done with a bulldozer. Access roads must be built. Drill sites must be excavated. Where necessary, the solid rock must be exposed to show the exact position and attitude of the deposit. Excava-

tion must be performed to permit the driving of underground openings. These openings are necessary to explore the deposit at depth and to furnish valuable mineral for metallurgical testing. The Stillwater deposit is now in the exploration stage.

In steep areas of deep overburden, there can be significant surface disturbance from exploration activity. In many areas a program of land reclamation to repair surface disturbance should follow exploration activity that does not show a commercial orebody.



If exploration activity defines a commercial orebody, then a surface plant must be constructed and the orebody must be developed for mining. A processing plant must be built to concentrate the valuable minerals. Mill tailings and dirty, polluted water can be the rejected products of the processing plant. However, tailings areas should be reclaimed and process water should be satisfactorily treated if it is to be released to the streams. Process water from metal-mining plants is being treated successfully before being released to streams.

The valuable product of ore processing plants are concentrates. They are usually shipped to existing reduction plants for smelting and refining.

Large amounts of metals are available for mining from the earth's crust. There are many reasons why these metals should be produced. For instance, most of the people in the world are undernourished. These people contribute little toward their own livelihood as they have few tools to work with and they are starving. If these starving people are to be fed, then metals must be produced to provide agricultural machinery and equipment.

I hope that new Federal legislation does not prohibit mining and exploration. However, all future economic evaluations should include the cost of water treatment and land reclamation.

I have a few comments in regard to the 1872 mining law, if you would like to hear those.

Senator Moss. Go right ahead.

Mr. VAN MATRE. You asked some questions this morning and got a few answers; so, I developed this, also, during the noon hour.

In regard to Senator Stewart's mining law of 1872, this law, contrary to what was expressed here, has been amended many times. It has been a good law because it provided the stimulation necessary to develop a strong mineral industry in the United States. This strong mineral industry is an important factor in our great economic development and high standards of living. A unique provision of this mining law is that it permits the motivated individual an opportunity for great achievement if his prospecting is successful. Most prospecting is unsuccessful.

Economic mineral deposits occupy a very small portion of our land area. I would recommend that you try to maintain the motivation of the individual to try to find and develop mineral deposits. This is in addition to any additions or changes which I know are eminent in the law.

I believe a leasing act for metals would tend to curtail or eliminate this individual's motivation. Many who prospect are poorly qualified to do so, because they have no understanding of mineral deposits. The great, indiscriminate disturbances of land areas are caused mostly by unqualified persons. I would recommend that only qualified persons be permitted to prospect. Also, I would like to recommend that more assessment work be required to maintain a claim. It was \$100 in 1872, and that was a lot more work than \$100 worth of work is today.

I would also like to recommend that the requirement that a valid discovery be necessary before a claim may be staked be maintained in the law. Here, perhaps, some provisions would be desirable to guarantee that disturbed areas would be reclaimed if they were disturbed.

I hope that you gentlemen will try to retain the good provisions of our existing mining law.

Thank you for permitting me to make this statement.

Senator Moss. Well, thank you, Mr. Van Matre, for that very good statement as head of the department of the Montana College of Mineral Science; and in that capacity, you, of course, have a very intimate knowledge of mining and of mining processes, and this is helpful to us to have you come and testify for our record.

I was struck by your statement that only one-thousandths of the area would be disturbed.

Mr. VAN MATRE. Less than that, sir.

Senator Moss. Less than that amount would be disturbed in the next century; therefore, we are not talking about vast areas of country. However, some of them are very special areas, as you well know, and that is what is bringing on this discussion right now.

Mr. VAN MATRE. In that regard, I would like to state that the map that was behind you this morning showed areas where minerals could be staked and not areas that will be completely mined.

Senator Moss. Oh, yes.

Senator Metcalf?

Senator METCALF. I have no questions.

Senator Moss. Mrs. Gerhart, to be followed by Bernard Shanks.

STATEMENT OF MRS. ZOE GERHART, BILLINGS, MONT.

Mrs. GERHART. Senator Moss and Senator Metcalf, I truly do thank you for the interest your committee has shown regarding the impact of mining in the United States. I am testifying today simply as a homemaker and mother. I am a former high school teacher, and I am a member of various clubs in the community; but I think my testimony is basically because I have questions about the value system of our country.

I want to be definitely on record as advocating the changing of the archaic 1872 mining law. I think many citizens of this Nation do not approve of legislation which allows vast areas of unsurmountable beauty and variety; areas which sustain the lives of vast amounts of elk, deer, bighorn sheep; areas which sustain the lives of lesser creatures; areas of living trees, forests, headwaters of pure mountain streams, to be scarred by the mining interests. Certainly we do not approve of these areas of living systems being replaced by sterile overburden. Certainly we do not approve when the nickel and copper obtained are a minute 0.75 percent of the ore body of the entire complex.

We have recently become aware of the destruction we have inflicted on Mother Earth. We have learned that there are limits to her capacity to sustain abuse; we have learned that our health and well-being are dependent on her health. Because most men believe in life and diversity and beauty, we are alarmed when we see unwarranted destruction. Our spirits cannot soar, we cannot think lofty thoughts, in areas of blight and despoilment.

The U.S. Congress, individual States, and the average citizen are all engaged in a search for ways to obtain a life of fullness and purpose, a life worthy of human endeavor. Most of us want purposeful existence without destroying our environment to achieve it.

My two preschoolers may someday ask me why we, as a nation, didn't have the foresight to find alternatives to tough problems, to "put on ice" unresolvable questions until a thorough look at alternatives and consequences could be made. What can I tell them? That most people give things and activities—the art of being "busy"—a higher priority than they give living creatures?

No, we are not T. S. Eliot's "Straw Men." No shadow will fall between the knowledge of what must be done and the doing. There are always alternatives, and many are yet unborn in the minds of men.

I have faith in the people of America, and I think if they are made cognizant of the environmental consequences, they would willingly abrogate this bill which is conspicuous by its obsolescence. We must, and I think we will, reorient our prior observations.

There is one alternative I would like to suggest which falls in with the recycling philosophy. I would like to suggest that we eliminate "disincentives" to recycling as perpetrated by some Government policies. Ironically, it is cheaper to mine new metals than recycle the old. The current Internal Revenue Code allows a 15-percent depletion

allowance as a tax deduction. The Interstate Commerce Commission gives new metal a \$2-per-ton freight preference. No doubt there are other "disincentives" of which this committee is cognizant.

Our country is great and rich and strong because of our resources, and our resources include not only our farmlands, public lands, metals, oils, and minerals, but our people. These things cannot be enjoyed by our people unless there is food, clothing and shelter for all. We must retain sufficient resources to have true democracy, and we can no longer increasingly encroach on nature. As we have learned today, and as you gentlemen have known before, the pioneer, frontier philosophy, based on the fact that we have endless land and endless independence which held man to be unique and independent of all other living things is now archaic. The inexhaustible land is no more, and what was once considered the independence is now considered anarchy.

We have learned the earth is vital, and I think that we should recognize that our greatness depends on our unused resources, also.

This is an aside, but those nations that are now as highly industrialized as ours, such as Russia and China, may someday usurp our leadership simply because they have not yet depleted their resources. I feel that ecology will become the ultimate economics.

Well, as a mother—and I am sure you all are parents, too—we try to raise quality children, children of vitality and alertness, open to the miracles of life. I am testifying today asking that we ascertain that future generations will also be able to enjoy an environment fit for life and fit for living. What greater gift can we give to the future than an environment capable of producing quality citizens?

Thank you.

Senator Moss. Thank you, Mrs. Gerhart, for that eloquent statement delivered as a homemaker and a mother, speaking of the next generation. Certainly, that has to be foremost in our minds as we wrestle with this problem that we have before us.

Senator Metcalf?

Senator METCALF. Mrs. Gerhart, I must compliment you on quoting T. S. Eliot. He was a prophet ahead of his time. He also said, "This is the way the world ends; not with a bang but with a whimper."

Many of those people out there with their tongues hanging out have eroded our soil and denuded our forest and poisoned our streams.

Mrs. GERHART. I am glad, Senator, that you are familiar with this truism and that you also do not want the shadow of nonactivity to blight what human potential can be.

Thank you.

Senator METCALF. Thank you very much.

Senator Moss. Mr. and Mrs. Fred Johnson have agreed to submit their written statement for the record, and that will be received. They were to be next.

Following Mr. Shanks will be Don C. Cowles.

STATEMENT OF BERNARD D. SHANKS, DEPARTMENT OF RESOURCE DEVELOPMENT, MICHIGAN STATE UNIVERSITY

Mr. SHANKS. Senator Moss, it is my belief that our subject today is not just the classic conservation dilemma of protection versus development. Today our concern is not just nature versus economic man. Our

concern is and should be the total relationship between man and the land—"land" being the earth and its resources. Ideally a national minerals policy should be concerned with this relationship and not limited to this generation. Such a policy should be concerned with the welfare and environment of the Nation as a whole, not just the economic growth of a handful of mining companies.

In Montana, we are especially sensitive to mining and mineral policy. We have the bitter experience of a single powerful mining corporation that has dominated the State's political and economic life in the past. This company has resisted and still resists the great changes in this Nation and this State. This company has actively opposed virtually every conservation and environmental policy ever suggested. It has even opposed legislation for the protection of its employees' health and the health of Montanans. Today, the Anaconda Co. still argues and defends their practices by exaggerated claims and veiled threats. Anaconda Co. started its operations by stealing millions of board feet of timber from the public lands for use in its mines. Today it is legally claiming public recreation lands and renewable resources. All this is done with no consideration given to interested private citizens or organizations. Even the land managing agencies can do little to control this type of development. Such a policy not only offends a democratic people and their sense of justice but such a policy is economically wasteful and inefficient.

A new policy for mineral development is needed; its time has come. Environmental problems are now so widespread and young people's awareness so high that it is not wise to resist these winds of change. A new mineral policy must protect the welfare and interest of all segments of the Nation. It must avoid the present day degradation of other valuable renewable resources such as water, timber and soil. A new policy must protect the people from the near-sighted short range goals of one company or corporation. Such a new policy must avoid resource decisions based entirely on growth and development ethics now rapidly becoming out-dated. Mineral development decisions while they must be firmly based on scientific judgment must include non-quantitative social values as well. A national policy must be enacted that declares that environmental considerations can and do outweigh economic considerations.

A mineral leasing program could meet the above criteria for a modern mineral policy. One thing is clear—the present mineral policy is so hopelessly outdated that those who claim that it is archaic grace it with more status than it deserves. Those few who defend it are sociologically best termed relics, relics of a past era—an era of looting the public resources. Those days are gone. New values are here and new uses for the public lands. It is time to recognize and formalized those values into the public land laws.

Senator Moss. Thank you for your statement, Mr. Shanks. It is very straightforward and hard hitting, as was your statement in Great Falls when you testified before us there. We are glad to have your testimony.

I should point out that the 1872 law permits the use of timbers on the areas where the claim is, and that may have been included somewhat in your statement about utilizing the timbers in the mines. I don't know. I am just pointing out that is included in there.

Senator Metcalf?

Senator METCALF. I think Mr. Shanks is quoting.

Mr. SHANKS. I am quoting from (Kay Ross?) history of the Anaconda Co.

Senator Moss. Well, as I say, I am not fully familiar with how broad that was.

Thank you very much, Mr. Shanks.

Well, Mrs. Johnson is here, after all. She is present; so, we will hear from her now, and then we will hear from Mr. Don Cowles of Livingston, Mont.

STATEMENT OF MRS. FRED JOHNSON, ROUNDUP, MONT.

Mrs. JOHNSON. Mr. Moss and Mr. Metcalf, I appreciate the time you have taken away from your vacation to visit us today. I live between here and Roundup, Mont. It is about 36 miles from Billings. It is about 36 miles from Billings, between Billings and Roundup, and I live on a ranch.

I have a statement here I would like to read. I am very concerned about Montana. As a private and public landowner in this great State of Montana, I feel that what I have to say will be pertinent to this hearing.

Two of the greatest assets in Montana are her unspoiled beauty and mineral content. She is rightly known as the "Treasure State" and the "Big Sky Country." Should we let these large companies come in and exploit the one and at the same time destroy the other? When the minerals are gone, our God-created beauty is gone forever. Oh, you say it will be reclaimed. Our natural God-created beauty cannot be replaced by man.

Swarming in from Kentucky, Virginia, and Ohio are the experts with their drawing boards, statistics and projections. They spend hours drawing up elaborate reclamation plans filled with words and figures, but when you remove the overburden, to borrow a word from strip mining lingo, you find projected lakes on top of ridges, experiments to grow something useful in straight sandstone and shale, and a plan to plant Russian thistle (a weed that needs no planting). This is actually what they are going to do to Bull Mountain at Roundup. These are actually the things they are going to do, Senator Moss and Senator Metcalf. They are going to plant something in straight sandstone and shale spoil beds and call it reclamation. I am afraid this is what they are going to try to do in Beartooth, also.

These experts need to listen to the native people who live in each area. They were educated not out of books but from years of experience. I feel these out of State experts should consult with these local farmers and ranchers to find out the regional problems before drawing up their reclamation plans. When they cannot reclaim to the original productivity in that area, strip mining must be prohibited. I am asking to revise the Mine Safety Act that was put into law last year so that small, local coal companies can still remain open. Some of this law was blanketed all over the United States, and part of it does not apply to the Bull Mountain area and is forcing these coal companies to close up or strip mine. We do not have the gas problems they have back east, but they are forced to put in expensive machinery

they don't need and have to close down. This is going to affect the people in that area and around this area, also. I also ask to revise the Mineral Act of 1872, and I am sure you will do this. I feel it is to the public's advantage to have it changed, because, so far, the mining companies have had all the advantages.

I would like to submit this little pamphlet called "The Battle of the Bulls" in evidence. I know you are going to have a hearing in Washington, D.C. on coal. I would like, if possible, to save these petitions, to which I have referred in my written statement, and take them to Washington, D.C., if that is all right.

THE BATTLE OF THE BULLS

The Bull Mountains, which lie 30 miles north of Billings, Montana, are threatened by the prospect of strip mining for coal.

The Bulls form the divide between the Yellowstone and Musselshell river valleys, rising to around 4,000 feet. They are heavily forested with a species of Ponderosa pine and cedar, intermixed with grassy meadows in valleys between sandstone buttes.

The Bulls are dryland mountains: the few streams are usually intermittent. Ranchers who live in the sparsely settled area depend on springs and groundwater as their primary water sources. There is abundant game in the lonely highland pastures, including deer, elk, and wild turkey. At present the landscape is natural, unspoiled, and it forms a refuge not only for wildlife but for men who seek the high western country for their homes.

The Bulls are underlaid with sub-bituminous coal, some of which have been traditionally mined by underground methods. At one time Roundup, north of the Bulls, was an important coal producing region, but with the advent of diesel locomotives the market for Bull mountain coal declined. Mineral rights to much of the coal in the Bulls is held by the Federal Government. Much of the rest is held by the Burlington Northern Railroad, which inherited the Northern Pacific's checkerboard ownership of sections of land in the Bulls.

The ecology of the area is fragile. The rainfall is limited and water is always scarce. During long, dry summer periods groundwater is the only supply available to ranchers. In previous periods mining had a negative effect on water tables and springs; only in recent decades, after the cessation of intensive mining in the Bulls, have the water tables risen and the springs begun to flow once again.

At present, there is a renewed interest in Montana's low-sulfur coal such as underlies the Bulls. Major coal companies are leasing coal lands and surveying mining prospects. The main one of these is Consolidation Coal Co., of Pittsburgh, Pa., a subsidiary of Continental Oil Company.

Strip mining of the lovely and fragile Bull Mountain area would have a devastating effect on the natural beauty and livestock economy of the area, for these reasons:

The stripped land could not be properly reclaimed because of the poor soil, the destroyed forest cover, and the sandstone outcrop terrain.

Strip mining, even with some safeguards, would probably lower the water table in these dryland mountains, dry up springs, and deprive the surrounding forests of necessary water. Water tables could easily be contaminated from exposure to the strip mining.

Erosion, always a menace in the Bulls, could become a calamitous factor and turn the Bulls into a wasteland of scarred and eroded hillsides not fit for any use and incapable of returning to a vegetated state.

The mining would have a calamitous effect on the wild life, including the recently-introduced elk herds, and deer. Watering spots would decline, and development of the area would limit the free movement of wildlife.

Strip mining would devastate the small ranches that now function naturally in the Bull Mountains. Ranching is the natural and proper use of the Bulls. It can be conducted without damage to the environment, and without destroying the scenery, remoteness and graceful beauty of these colorful Montana mountains. Strip mining would simply wipe out many of the ranches. It seems senseless to gouge and tear the heart of the Bull Mountains until the whole area is reduced to another Appalachia; another useless, denuded range of hills.

We, the Bull Mountain Land Owners Association, urge that strip mining be prohibited throughout the Bull Mountain region for the above reasons. In particular, we request that the Federal Government, which holds coal rights under much of the land, prohibit the strip mining of coal it controls by denying leases to potential strip miners. We ask that the Burlington Northern abandon its coal leasing projects in the Bull Mountains. We urge that both the government and business determine the relative values and merits of strip mining on the one hand, and irreplaceable scenery and wilderness on the other, and decide which shall be more important to future generations. Heretofore reclamation laws have been loose or nonexistent, and strip mining of coal therefore an inexpensive process. Requirement of reclamation of the land could encourage research on less pollutant forms of energy.

We urge that letters be sent to: The Honorable Mike Mansfield and the Honorable Lee Metcalf, Senate office Building, Washington, D.C., 20510, and any other U.S. Senators, asking support of two bills now before that U.S. Senate: S. 921, which pertains to all federal minerals on private or federal lands, requiring reclamation of the latter; and S. 1240 pertaining to restrictions of prospecting for minerals on public lands by bulldozers, etc.

We urge that letters be sent to Governor Forrest Anderson, State Capitol Building, Helena Montana, and to Ted Schwinden, State Land Commissioner, State Capitol Building, Helena Montana, asking for strict hardnosed administration of Senate bill 70. This law provides for reclamation of strip mined land, and that reclamation possibilities be demonstrated *first*, before more land is desecrated by strip mining.

We urge that letters be sent to the Honorable Henry Jackson, Chairman, Interior Committee, Senate Office Building, Washington, D.C., 20510, supporting S. 632 National land Use Policy Act of 1971.

We urge that the above mentioned points be emphasized as well in letters to:

1. Honorable Rogers Morton, Secretary of the Interior, Washington, D.C. 20510.
2. Honorable John Melcher, House Office Building, Washington, D.C., 20510.

Senator Moss. Yes, I think that would be the proper place. As I announced in the beginning, we expect to have hearings this fall on strip mining bills that are before us. The things about which you have been testifying will be a very proper subject then during the discussions of strip mining.

Mrs. JOHNSON. I have a small ranch. It is only about 10 sections. I have a husband and two children, and we are very concerned with this, because we do own the surface. Burlington Northern owns part of the mineral rights, and that is why we are concerned. I know, as I say, it isn't a vast area that will be strip mined in Montana in the future, but my home is going to be one of them. This is why I am really concerned.

I thank you, and I would like to enter this picture. I will just show this to you so you will know what kind of country it is. It is beautiful.

Senator Moss. I can see it is beautiful just from the way you are holding it there—trees and grass.

(Laughter.)

Senator Moss. Thank you, Mrs. Johnson. I can't see any coal at all.

(Laughter.)

Senator Moss. We are pleased to have heard from you, and we will look forward to hearing from you when we get into the strip mining bills which we will be doing later on this year.

(The complete statement of Mrs. Fred Johnson follows:)

STATEMENT OF MRS. FRED JOHNSON, ROUNDUP, MONT.

Gentlemen, as a private and public landowner in this great State of Montana, I feel that what I have to say will be pertinent to this hearing.

Two of the greatest assets in Montana are her unspiled beauty and mineral content. She is rightly known as the Treasure State and the Big Sky Country.

Should we let these large companies come in and exploit the one and at the same time destroy the other? When the minerals are gone our God-created beauty is gone forever. Oh, you say it will be reclaimed? Our natural God-created beauty cannot be replaced by man.

Swarming in from Kentucky, Virginia, and Ohio are the experts with their drawing boards, statistics and projections. They spend hours drawing up elaborate reclamation plans filled with words and figures, but when you remove the overburden, to borrow a word from strip-mining lingo, you find projected "lakes on top of ridges" experiments to grow something useful in straight sandstone and shale, and intentions to plant Russian Thistle (a weed that needs no planting). These experts need to listen to the native people who live in each area. They were educated not out of books but from years of experience. I feel these out of state experts should consult with these local farmers and ranchers to find out the regional problems before drawing up their reclamation plans. When they cannot reclaim to the original productivity in that area, strip mining must be prohibited. At this time I would like to submit in evidence at this hearing 4,000 signatures from people in this area that feel the same way. I quote from the petition: "I am opposed to strip mining of coal until it can be proved that the land can be restored to its original productivity." According to these people anything less is unthinkable, and detrimental to the people in the area and to the State of Montana. This land has been productive for thousands of years and will continue to be so unless man destroys it. Do we have so much earth, beautiful or not that we can afford to destroy forever any part of it?

In all fairness to ourselves and our progeny there must be a limited test spot for reclamation and a period of time elapse before mining can go into full production. A time which is in accordance with the growth cycle of that specific area.

Because I am a private land owner with some Federal minerals under my private land and lease public land in adjacent to my own, I feel that I should have the right to know if the Federal government plans to lease their land and minerals in the Bull Mt. area to coal strip miners. If it does then I am demanding for myself and the public a full geological study of that area. And if the study says that it cannot be reclaimed to its existing productivity, as the people in that area so state (some have been ranching there for over 50 years) then that land should be saved and set aside, asking the state to do the same. Our state law only requires the "best" reclamation plan possible, whether or not it can actually be restored to its original productivity.

As Congressman Ken Heckler said in Newsweek Magazine, June 28, 1971, I quote: "Strip mining is like taking seven or eight stiff drinks. You are riding high as long as the coal lasts, but the hangover comes when the coal is gone, the land is gone, the jobs are gone, and the bitter truth of the morning after leaves a barren landscape and a mouth full of ashes".

We are all concerned because no place is an island. All strip mining areas will affect directly and indirectly areas hundreds or thousands of miles away. Should we let our beautiful state of Montana be ruined in order to decrease the air pollution in the east? Tell these miners to go underground and leave the surface for the intention God created it for.

You Senators are in the public trust and you hold the future of this land in your hands. We expect you to do your duty to our God loving Country and not let it be destroyed to benefit a few for a short time.

Senator Moss. Is Mr. Don C. Cowles, from Livingston, here? Does he have a written statement? Apparently he did not wish to testify then.

Mr. Morris E. Welchlin, of Billings. Does he have a written statement? He has a statement submitted for the record. It will be printed in the record at this point.

(The complete statement of Morris E. Welchlin follows:)

SUBMITTED STATEMENT OF MORRIS E. WELCHLIN, BILLINGS, MONT.

Gentlemen, as a geologist I have been employed by Lamont Geological Observatory, the Wyoming Highway Department, Amerada Petroleum Corp. and last summer by the Montana Bureau of Mines and Geology. I am now teaching geology at Billings West High School.

I would like to go on record opposing open pit and strip mining on public lands or on lands adjacent to public lands.

Due to the fact that some of the public lands are held by patented claims as in the Stillwater Complex or are presently leased such as the coal areas in the Bull Mountains, it does seem likely that open pit or strip mining will take place.

A large scale open pit or strip mine is an ugly scar on the earth. The water which issues from these depressions is usually acidic and contains a high percentage of dissolved solids. Roads in the region of the open pit mine produce large scale erosion especially during the spring run off. The ground water supply in the region may be permanently damaged by intersecting aquifers and allowing acidic waters to enter usable aquifers. In other words, people who are not living near the open pit or strip mine may be affected in such a way that their land and water could be useless.

I would be in favor of strong Federal legislation controlling all open pit or strip mines on, or adjacent to public lands.

This legislation should contain provisions for a detailed geologic study conducted by the USGS to determine if surface or subsurface waters could be damaged by either mining, blasting or drilling.

A test pit of limited size should be mined and then an attempt to reclaim it should be made. If after a number of years this reclamation is successful, then mining should be allowed to proceed. If, however, the reclamation attempt is not successful then mining should not be permitted.

This legislation should require that after mining has ceased for a period of time the mining company fill the open pit or strip mine to the original contour of the land. Top soil should be replaced and the area replanted with native vegetation.

Montana's open pit or strip mine reclamation law is one that favors only the mine operators.

As was pointed out in recent public hearings at Roundup, Montana, reclamation of the Bull Mountain coal area is next to impossible. Yet the State Land Board is allowing strip mining in this region without safeguards for the residents of the area or the public lands in the area.

The people of the United States own the public lands. The Federal Government should insure us that these lands will be usable by us if they are ever mined.

Senator Moss. Mr. Pete Burkett, cochairman, Students for a Clean Environment, to be followed by Mrs. Parker N. Davies, of the American Association of University Women.

STATEMENT OF PETE BURKETT, COCHAIRMAN OF "STUDENTS FOR A CLEAN ENVIRONMENT"

My name is Pete Burkett and I am here to represent a youth-oriented environmental group known as "Students for a Clean Environment." Our organization is composed mainly of active campers and hikers. The number of places we can go and feel close to Nature has been drastically reduced in the past few years. We see the mining in the Stillwater area eating up public camping spots. Where once campers were welcome "No Trespassing" signs have been erected. As hikers we are losing extremely beautiful places to go and feel close to nature. These places are now just barren, useless holes in the ground. The overall effects of mining on the water table in the Stillwater area have yet to be determined. We believe that any further mining in the Stillwater area will have devastating effects on the ecological balance not only in the Stillwater area, but all over its watershed.

Senator Moss. Thank you, Mr. Burkett. Are you a student now in school?

Mr. BURKETT. Yes, sir.

Senator Moss. Where do you go to school?

Mr. BURKETT. I will be attending West High School next year.

Senator Moss. Here in Billings?

Mr. BURKETT. Yes.

Senator Moss. You are going to be attending high school next year?

Mr. BURKETT. Yes.

Senator Moss. I wanted to compliment such a fine, young man for coming here to testify before us, and I think it is most commendable that you have done this and expressed the point of view of some of your companions and contemporaries who utilize these great outdoor areas that we are talking about in this Stillwater complex. I congratulate you for coming and giving us your statement.

Mr. BURKETT. It is one of the things we would like to see changed in the United States instead of waiting until it is too late to do something about it and we want to see something done before the problem is too great. We feel strip mining up in the mountains is going to ruin one of Montana's best areas that we have. No other area in the United States is going to have anything like it left and very few do right now. We think it is one thing that should be saved. It could be great. I am sure the Government would enjoy the income from the tourists this would attract as one of the last wild places left in the United States.

Thank you very much.

Senator METCALF. Thank you very much for a splendid statement.

Senator Moss. Mrs. Davies, we are pleased to have you with us today.

STATEMENT OF MRS. PARKER N. DAVIES, PRESIDENT, AMERICAN ASSOCIATION OF UNIVERSITY WOMEN

Mrs. DAVIES. Senator Moss, Senator Metcalf, ladies and gentlemen, I am Doris Davies, president of the Montana Division of American Association of University Women.

During the past biennium the American Association of University Women, numbering some 170,000 members throughout the 50 United States, has had as one of its major topics of study "This Beleaguered Earth; Can Man Survive?" The pertinency of the topic is such that it is being continued for another 2 years, with intelligent action as its goal. In Montana some 1,200 women who are members of branches in 15 communities throughout the States have been involved.

As a result of our study, the Montana division adopted, in May 1970, a legislative program which included a statement of concern for our environment. As these gentlemen here who have testified before you could verify, by special resolution, one of these bills was "Surface Reclamation of Mined Lands." During the 1971 session of the State legislature, we did actively support specific bills on air pollution, water pollution, control of pesticides, preservation of the cougar, as an endangered species, city and county zoning, and, by special resolution, surface reclamation of mined lands.

There have been two points of view you have heard today. Our study resulted further in our awareness of those two points of view. On the one hand, we became acutely conscious of the urgency for recognition by man of the delicate ecological balance which exists today, but, even more to the point, of the urgency for action to preserve this balance. On the other hand, we recognized that demands of our present technological society requires use of many of our minerals, fuels, and ma-

terials resources. We believe that a meeting point between these two points of view must be found, and quickly, if irredeemable damage to the environment, such as that which is occurring through minerals exploration in the Stillwater area, is to be stopped. The questions then arise: Does, in fact, the need for use of the primary natural resource truly exist? Can this need be met by some other means; for example, recycling of minerals already extracted from the earth, now in such forms as metal scrap or glass? Must it always be a primary resource which goes to Detroit? Why not a secondary resource? We are confident solutions can be reached.

Costs have been mentioned today, costs to the companies. We are fully aware, moreover, that costs incurred by companies in improved methods of exploration for, and extraction of, minerals—whether from primary or secondary sources—will cost money and that such costs will be borne ultimately by the consumer.

We live today in an era of change, of challenge of time-honored values, of reassessment of laws of the past century. We join with others in encouraging this committee to examine carefully the U.S. Mining Laws of 1872 in their application to this point in time; we urge that you consider it at this place in time in this place. We ask that you weight your decisions with concern for the future.

Thank you.

Senator Moss. Thank you, Mrs. Davies, for your fine statement on behalf of American Association of University Women, and, indeed, we will try to weigh our decisions with concern for the future, because that is obviously what is bothering us now. We find we have committed great insults upon our environment. Our concern now is that we do not go so far as to become unable to support ourselves in the near future, and, not only us, but our children and those closely behind. We are in agreement with your admonition.

Mrs. DAVIES. I should like to ask, Senator Moss, for the number of the bill concerning archaeology which was mentioned.

Senator Moss. We will supply it to you. I can't keep the numbers in my mind. I will be glad to send it to you, and we will also send a copy of the statement I made when I introduced it. You will appreciate reading it.

Mrs. DAVIES. I should also like to commend the fairness of this committee here.

Senator Moss. Thank you very much.

We will now hear from the Honorable Dorothy Bradley, representative, Montana State House of Representatives, from District 15, Gallatin County. She will be followed by W. J. Walker.

Mrs. Bradley, we are very pleased to have you with us today. You may proceed.

**STATEMENT OF HON. DOROTHY BRADLEY, REPRESENTATIVE,
MONTANA STATE HOUSE OF REPRESENTATIVES, DISTRICT 15,
GALLATIN COUNTY**

The 42d Montana Legislative Assembly passed several bills relating to mining. Included in these bills are procedures for the application of exploration and mining permits, reclamation standards, and procedures for appeals.

Perhaps the most impressive fact about these bills, other than their passage, was the joint effort the issue aroused, involving all segments of the State. The original bills were written with the help of industry and of interested, well-informed citizens who gratuitously offered their time and effort to the State to assure adequacy of the presented bills. A whole spectrum of groups appeared at committee hearings to testify in favor of the proposed legislation. After passage, the Department of State Lands and Investments outlined thorough, and workable regulations for implementation of the new laws. Before acceptance, these regulations were presented for comment at a public hearing at which little opposition was voiced.

It seems to me that the new State mining laws have the support of the whole State, and the necessary strength and flexibility to regulate mining in Montana, with a few exceptions. The exceptions, as I see them, are as follows:

1. Despite their good intent and potential for beneficial application, no State laws can be fully effective unless the 1872 Federal mining laws are repealed and replaced by national legislation appropriate to this day and age. Such legislation should make locatable minerals leasable and the related surface resources subject to control.

2. Our State mining laws establish no system whereby mining permits can be refused for reasons other than inadequate assurance of proper reclamation.

As a Montana legislator, I am struck by the fact that our State has no systematic land use planning procedures including extraction of nonrenewable resources. We spend all our time and energy fighting repetitious brushfires because of our piecemeal approach to resource development.

Perhaps a "Committee on the Future" is needed as a forum for evaluation of all future policies, including proposed mining operations. Why do we need mining? Because, we are told, the world needs minerals, the State needs industry, and the companies need income. But are these valid needs in all cases, or only desires generated by an economy based on unlimited consumption and waste? And does the State need more of an industry whose existence is finite and whose expansion may destroy the enduring assets necessary for stability? And how long should an industry be permitted to ignore social and ecological externalities emanating from their single-minded approach to resource extraction?

A "Committee on the Future" or some combination of objective minds, somehow, must start defining the cases when mining is not only physically destructive to a viable and productive land, not only spiritually destructive to those who love the land, but also, in the long run, economically destructive to Montana and the Nation.

In conclusion, I wish to emphasize the need for the repeal of the 1872 Federal mining laws, and for congressional action establishing updated statutory controls.

Senator Moss. Thank you very much for that very fine statement, Miss Bradley. You understand this problem very well, and you have given us your point of view on it, which is a fine one. I congratulate the citizens of Gallitan County for electing such an intelligent, as well as pretty, representative.

Senator METCALF. Senator Moss, Representative Bradley had a great deal to do in the last session of the legislature with the enactment of the mining laws to which we have reference today. She is a champion leader in the field of environmental protection.

Senator Moss. Thank you. We are pleased you could be with us today.

We will now hear from Mr. Walker, and he will be followed by John M. Heyneman.

STATEMENT OF W. J. WALKER, PHELPS DODGE CORP.,
DOUGLAS, ARIZ.

MR. WALKER. Senator Moss, Senator Metcalf, I am W. J. Walker. My home is in Douglas, Ariz. I am senior staff geologist for the western exploration office of Phelps Dodge Corp., and a major part of my responsibility includes the explanation of the exploration programs. It has been my privilege, in the last 35 years, to have worked in Alaska, Idaho, Montana, Colorado, Utah, Nevada, New Mexico, California, and Arizona.

I am not going to read my complete statement, but I do want to make a couple of points I haven't heard here yet. The first concerns the element of time in regard to any proposed regulations and rules. It is imperative that any regulations include a stated period of time for consideration of application of access roads, or for expiration, in general. This is necessary because of the planning required for mobilization of men and materials, time limits imposed by the seasons and the present time limitations imposed by both State and Federal assessment requirements.

The second item concerns the actual ownership or control of land to be explored. We have heard a great deal about leasing, and I know that Senator Metcalf has a bill proposing leasing. I had a chance to discuss this very briefly with him yesterday in his office. Under the present law, fee title is required for valid mining claims. In some cases, mining claims originally located, developed, and patented for gold or silver are now in the heart of ground being mined for copper or molybdenum.

In some cases, valid claims have been down for long periods of time where large volume, low-grade mine could be opened economically.

A case in point is my company's Tyrone, N. Mex., operation where claims were acquired early in the 1900's. An unsuccessful effort was made to mine then by bulk methods during World War I. The deposit was brought into successful economic operation within the past 5 years. The point is that exploration work may, and frequently does, indicate the presence of a submarginal ore body. Time and improvement in methods, both mining and metallurgical, make these deposits economical. It seems only fair that the people who have spent their money for exploration should be able to benefit by the results of their discoveries even if the economic maturity of the deposits is some time in the future.

The third point is that I have heard no testimony showing the part of the State of Montana being used for mining. I can give you the figures for Arizona. In Arizona, the mines used 0.13 percent of the area

of the State, and we have some very large open pit mines. The industry directly contributes 7 percent of the income of the State. This does not include the income from the boys or those people related to supporting the employees, such as schoolteachers, and so on.

One other point is that the mining industry competes in the world market. Rules, regulations, royalties, and the like, that increase the costs in this country will inevitably cause greater reliance on lower costs in foreign services.

Thank you, sir.

(The complete statement of W. J. Walker follows:)

STATEMENT OF W. J. WALKER, PHELPS DODGE CORP., DOUGLAS, ARIZ.

Members of the Committee, my name is Woodville J. Walker. My home is in Douglas, Arizona. I am Senior Staff Geologist for the Western Exploration office of Phelps Dodge Corporation. I have been employed by the Corporation since 1963. Prior to that time I was engaged in exploration work either as an individual, as the executive officer of a corporation, or as a member of a consulting firm for 27 years. My professional career has been spent almost entirely in the western United States. I have been personally and directly engaged in exploration work for nonferrous ore bodies for practically all of this total time of 35 years, much of it on land controlled by the U.S. Forest Service or the U.S. Bureau of Land Management. It has been my privilege to work in Alaska, Idaho, Montana, Colorado, Utah, Nevada, New Mexico, California, and Arizona.

I understand that the subject of this hearing is to receive the views of the interested public concerning mineral activities and access for such activities on public lands. Undoubtedly, the primary cause for these hearings, and for them to be held here in Billings, has been the controversy which has arisen concerning the mining activities in the Stillwater area. It is because this circumstance has given rise to a special Senate hearing, presumably contemplating some Congressional action, that I wish to emphasize one point. Too often the publicity and emotion which arise from isolated problems such as this are held out to show that the laws and regulations controlling mining activities should be changed to provide the same restrictions and requirements over all public lands as are said to be needed here. The character of the lands owned by the United States ranges from the arid, flat deserts of the Southwest to the heavily timbered Rockies and Sierras, to the tundra of Alaska. It is because these conditions vary widely that the controls and conditions for activities on them must be designed to achieve desirable results in each case. It would make no more sense to apply the most restrictive controls to all public lands than it would to apply the least restrictive controls in the same manner.

We in the industry would be blind not to recognize that the public is demanding tighter controls and that these will come. But, in the interest of the United States (which cannot be isolated from the interest of the resource-using industries), these controls cannot amount to prohibitions even in the Stillwater area, the White Clouds area of Idaho, or in the Wilderness Areas. This was recognized by the realistic and objective report of the Public Land Law Review Commission:

"By its very nature, mineral activity alters the natural environment to some degree, and if no such impact were to be tolerated, it would be necessary to prohibit the activity. Mineral exploration, development, and production are essential to our national economic and strategic well being, however, and such activities cannot be barred completely."

"Accordingly, our emphasis must be on minimizing these impacts." (Page 122).

If the United States is going to continue relying upon the free enterprise system to develop the natural resources of this country, there are certain imperative features which must be retained in any system controlling that development; otherwise (and this is not an imagined danger) it will be necessary for other entities to perform this task. When I was considering these features, it occurred to me that they are perfectly obvious—everyone knows they are necessary. But, with the commencement and acceleration of the environmental revolution in the past decade, I believe that these matters, which should be obvious, are being overlooked.

AVAILABILITY

What could be more self-evident than, if resources necessary for our way of life, and even to the survival of the nation, are to be produced, the lands containing the largest amounts of them must continue to be available? This imperative includes another obvious fact of life—which is often overlooked—that is, minerals are unique among the other resources of the public lands. They are unique because they occur in a concealed, random, and sparse manner. Nobody is aware of this more than those of us in the exploration business who have conducted thousands of exploration programs which have resulted in only a few discoveries of commercial ore bodies. But, notwithstanding the obviousness of the need for public lands continuing to be available, millions of acres are being closed without meaningful consideration being given to whether such actions are removing from the possibility of development, both now and for the future, resources which are in all respects more valuable than the limited purpose of the closure.

INCENTIVE

This has been considered as the foundation of our free enterprise system. The offer of reward for effort created by the needs and requirements of our country and its people is what directs the energies and resources of individuals and companies toward or away from the various activities they could pursue. This was recognized by Congress almost 100 years ago when it provided incentives for mineral exploration and development in the Mining Law of 1872, and this was recognized by the Public Land Law Review Commission as still being necessary that "individuals be encouraged—not merely permitted—to look for minerals on the public lands." If the terms and conditions of the statutes and regulations which will be adopted to govern mineral activities on public lands are so restrictive that to find and develop mineral deposits will no longer be profitable, or that the risks and costs are so high that the chance of profit is remote, the capital and human energies will be directed elsewhere, and the materials supplies of our nation will suffer or, in some cases, be eliminated. The Phelps Dodge annual report indicates that this Company spent over \$6 million on exploration in 1970, over half of which was in the United States. Thus, we do pay our "dues" in salaries, wages, goods, and services purchased for this purpose. No one deposit, presently economic, has been found in the United States by this effort over the past several years. The proportion of this money spent outside of the United States will certainly increase as restrictions are imposed on this activity within the United States. Mr. Chairman, there are well known individuals and organizations in this country now who openly acknowledge that their goal is to eliminate this incentive by causing the establishment of laws and regulations so stringent as to accomplish this result.

Illustrating the emphasis which is being given to reducing or eliminating the incentive for public land mineral development, at the beginning of this summer, there were pending before the subcommittees of the Senate Interior and Insular Affairs Committee more than 46 bills which would restrict, prohibit, or eventually prohibit mining activities on some or all of the public lands. At the same time, there was only one bill which might encourage such activities. According to the President's Sixth Annual Report on the National Wilderness Preservation System (August 5, 1970), there had been established, as of December 31, 1969, 62 wilderness areas encompassing 10,227,351 acres. According to our count, there are, in addition, 218 separate areas in the West encompassing a total of more than 45,000,000 acres which will be considered to be established as wilderness areas. This totals more than 55,000,000 acres which, in 1984 or immediately, if S. 1783 should be passed, would be closed permanently for mineral activities. In addition to the already existing restrictions, it is the direction and magnitude of these actions which provide very good reason for alarm as to the future of our mineral resource supplies.

CERTAINTY

Unless we have the assurance that any particular area will continue to be available for possible mineral development, and the assurance of the terms which will be applied, we cannot even justify the investment to explore any area of lands whether they be Federal, state, or private. Many of the proposals being

presented to resolve some of the public land mineral development problems are to the effect that the Federal administrators should keep a hand on the conduct of the development and operations, and make changes where they believe it is desirable to prevent any deterioration of the environment. We in the industry have often been asked why we are opposed to a permit and leasing system when the terms of such a system could be made reasonable and would be administered fairly by the Federal agencies. In most instances, these presumptions may be valid. However, events even within this year have established that anything less than complete ownership of a mineral deposit can be very precarious. On July 7, 1971 the Secretary of the Interior ordered the suspension of operations on 162 oil and gas leases covering more than 250,000 acres within the Ocala National Forest. Environmental groups have succeeded in enjoining, through the application of the National Environmental Policy Act, the construction of the Gillham Dam in Arkansas even after it had been two-thirds completed. A suit for the injunction of filling Lake Powell in Arizona and Utah has been brought which, if successful, would have unpredictable effects on the property, investments, and livelihood of millions of people in the Southwest. Multiple suits have been brought to stop construction and production under federally administered Indian coal leases and power plant operations in Arizona, New Mexico, and Utah, after enormous investments have been made in these projects. It is the prospect of such actions as these, not even considering the problems involved in attempting to renew or renegotiate a Federal lease or franchise in the midst of developing or producing a mineral deposit, which causes us to be convinced that in this age nothing less than complete control, at least for the productive life of the mineral deposit, will provide sufficient certainty to justify the investment and the risks in finding and developing the resources in public lands.

Even with the increased controls on mining activities which will be created by the anticipated Forest Service and Bureau of Land Management regulations, if the modifications recommended by the American Mining Congress are adopted, I believe these minimum needs of the mining industry can be provided if the basic concepts of the Mining Law are retained. These controls should satisfy the reasonable demands of the conservationist groups, short of complete abolition of mining. If, however, we allow extreme positions to stampede us into extreme solutions, the damage to the country will also be extreme. It is a heavy responsibility held by each member of Congress to become informed through such hearings as this, to consider such information objectively, and to provide reasonable solutions.

Thank you for the privilege of appearing at this hearing.

Senator Moss. Thank you, Mr. Walker, for coming and giving us that point of view. As you do, you spend your time working with one of the largest companies, and you have done work in all these western States; so, you are familiar with the problem. We are glad to have you present that point of view, and it helps us to see all sides of the picture that we must know before we begin to amend the mining laws or do anything further; yet, we know we are under great pressure to do something right away. We can see the threats that are coming from various places.

Senator METCALF. Do you have any questions?

Thank you for coming up from Arizona to help us, Mr. Walker.

Senator Moss. We will now hear from Mr. Heyneman, and he will be followed by Mr. Garland.

Mr. Heyneman is a member of the Wilderness Society and is from Fishtail, Mont. You will have to tell me where that is.

Mr. HEYNEMAN. It is in the heart of the heart of what we are talking about.

Senator Moss. The heart of the heart of the area about which we are talking. All right, Mr. Heyneman, you tell us about it.

(The prepared statement follows:)

PREPARED STATEMENT OF JOHN M. HEYNEMAN, FISHTAIL, MONT.

Mr. HEYNEMAN. Senator Moss, Senator Metcalf, thank you for allowing me to speak.

I am John Heyneman. I am a commercial cow calf rancher on a family size ranch located 40 miles west and 30 miles south of Billings in the foothills of the Beartooth Mountains, an area immediately affected by any discussion of mining of the Stillwater Complex. Also I serve on the Executive Committee of the Northern Rockies Chapter of the Sierra Club.

The question of mining in the Beartooth Mountains, or anywhere for that matter seems to me a matter of priorities. What is the real need?

In regard to the Stillwater area, the Forest Service in their extensive study of the Beartooth-Absaroka Primitive Area "Present indications are that the mineral of the Stillwater Complex occur in low grade deposits of borderline economic importance." The risk of destruction of one acre, or a thousands acres, or one mile or many miles of pure stream for something of borderline economic or borderline necessity is terribly shortsighted. What I am saying is this: to risk destroying any more of our natural environment or wilderness resource to produce material that will to some degree have to be sold or a demand created for is nonsense. The easiest example of this is the selling of power through air conditioners, etc., and then saying we must build dams to supply the power for the air conditioners just sold.

The laws and ethics of land use are changing. We still have a long way to go. I feel confident that both will change. We must have both a land ethic and laws to control those that would exploit. Along with this we need much more knowledge concerning land use, in this instance river pollution and surface reclamation. We're gaining, but let's not risk to the chance of spoiling an irreplaceable natural resource because of greed or ignorance.

The phrase—not blind opposition to progress but opposition to blind progress—is the spirit I'd most like to leave with this committee.

Thank you very much.

Senator Moss. Thank you very much, Mr. Heyneman. You do come from the heart of the country, and you feel a great affinity for land, as you should, and we are glad to have you come and tell us just how you feel about it and what you think we ought to be doing.

Senator METCALF. Thank you very much.

Senator Moss. Mr. Cecil Garland will be followed by Bob Anderson. Mr. Garland is the president of the Montana Wilderness Society.

STATEMENT OF CECIL GARLAND, PRESIDENT, MONTANA WILDERNESS SOCIETY

Mr. GARLAND. Senator Moss and Senator Metcalf, I had intended to exercise an art with which I am totally unfamiliar, and that is one of brevity. I am afraid it is one I will never acquire completely, but I will try.

I want to shoot down a couple of things that have been said throughout this whole hearing. No. 1 is that we have to have minerals. Yes, we do—about \$2 worth—and at the inflated prices of today, about \$4 worth. That comes through what we eat, and the rest of it is superfluous to the needs of the survival of the human species. I like to deal with geologists, because they understand time; but, for about 2½ million years, I am told that the species of man survived without anything but raw wood and raw stones. Now, in about 7,000 years, we have gotten to the point where we think we have got to have these things. Compare 2½ million years with 7,000 years.

Now, there is one other thing that I think should be shot down, and that is that technology is the cure for everything. I carry a little thing around in my billfold, and I pull it out once in a while and I read it. This is being repeated by some of the world's greatest scientists today, and it says, "This technology we enjoy today is little else but a widespread suicidal pollution. It is a blight affecting not only the air we breathe and the water we drink, but also, the land that we till and the outer space that we hardly know." Oceanographer Dr. Jacques Piccard says that he doubts that man will survive the 21st century.

Now, before somebody says that I came here in an automobile, you bet I did, but I could have gotten here on a shoeless old pony, too, if I would have had to. I could have walked here, but I didn't have time.

I am Cecil Garland of Lincoln, Mont., and president of the Montana Wilderness Association, and I have been asked by the National Wilderness Society to represent them in a joint statement.

(The complete statement of Cecil Garland follows:)

STATEMENT OF CECIL GARLAND, PRESIDENT, MONTANA WILDERNESS SOCIETY

I am Cecil Garland of Lincoln, Montana, and President of the Montana Wilderness Association. I have also been asked by the National Wilderness Society to represent them in a joint statement.

The Montana Wilderness Association and the National Wilderness Society represents many Montanans and a great many Americans who pay dues to our organizations. Further, in view of the fact that we have achieved some measure of success in effecting environmental changes we believe we are also very much in the mainstream of this nation's conservation thoughts.

Therefore, in our belief that we represent a considerable consensus I would presume to ask a series of questions and also take the liberty of offering answers to them.

First off, Who owns the public lands of America? I believe the public does. Not the timber or mining companies or the bureaucracies to whom they are entrusted unto, for management. If the public owns the public lands do they have the right to voice an opinion as to how their lands should be used and managed? That we are here before this hearing committee establishes the fact that our system demands that we be heard. Then if we are heard should we be heeded? Obviously, if this government is to remain a democracy the government itself must respond and obey a majority consensus whenever one is expressed.

Is it not further possible that in the developing process of a nation that it's people may give a great power to an industry or an agency of the government, yet at a later time take that power away. We believe that the people may do this.

Is it also conceivable that the owning public may possess a piece of land that has great beauty and social value and by coincidence that that land may have surface and subsurface values, and the people may prefer to forego the wealth of those values in favor of not disturbing that land because they love more its beauty?

Both wilderness organizations that I represent believe that the people may do this. We believe that the people do have the wisdom and the power to make these great value judgments as to how the public lands may be used and that they are really the only ones who should do so.

Is it not further possible that a mining operation may be near perfection in design and not pollute or otherwise disturb the environment, but that because of reason of employment of great numbers of people in that industry and as a consequence of the numbers of people employed, they themselves, because of their effluence and because there may be no practical or economical way to take care of their wastes that these people may constitute a hazard to the environment and to themselves and as a result the owning public may have the right to reject mining on public lands?

Also, if in fact the public may recognize that land because of its fragile nature may be extensively damaged and that after examination of all reclamation plans

decide that no true reclamation is possible, may the people decide that no mining shall indeed take place? We believe that that is a reasonable and just prohibition.

Still, yet if the owning public may in careful determination and after deliberate consideration decide that a piece of public lands may have such great beauty and have scientific value to its descendants for their study, and that there may exist there a complete community of wildlife and great flora beauty and may have the kind of splendid terrain and possess such exquisite natural water works that the owning public may want to recreate therein for the rejuvenation of its own well being, may the owning public decide regardless of the other values either surface or subsurface to set aside these areas as a part of a National Wilderness Preservation System? We believe that that is a true, undeniable right of the people who own the lands.

The Montana Wilderness Association and National Wilderness Society believe that there exists at the head of the Stillwater and Boulder Rivers a land known as the Beartooth Absarokee Mountains that is just such a country. We further believe that it is so fragile by nature that no proper reclamation may be devised for it and that therefore mining by open pit should be prohibited, or mining of any kind may be otherwise excluded.

Therefore, if it appears that it is the will and the desire of the people who own most of the lands and must share the consequences of whatever is done there that the owning public may decide that this land should not be mined and further that the land should be set aside for protection and preservations, then the Wilderness Associations will fight for the right of the people to make that determination.

It will not matter how many mining companies express an opinion that it is their right by law to mine the public lands, for the land belongs to the people and if there exists such a law that allows the mining industry such a right, and the mining law of 1872 obviously does just that, then the Montana Wilderness Association and the National Wilderness Society will join with the people to repeal such a law.

Finally, we believe that the 1872 mining law is obsolete, antiquated, and detrimental to the ultimate survival of mankind. That too much power is vested in the mining companies themselves who wrote the law in the first place. We urge that the 1872 mining law be repealed and that suitable laws be enacted by the Congress to protect both the people and their lands.

The combined wilderness organizations respectfully thank Senator Moss and Senator Metcalf for these hearings.

Senator Moss. Thank you, Mr. Garland; we are pleased to have you appear before this committee. You also came to Great Falls and we appreciate that testimony there. Your questions are dramatic, and, of course, they must be answered. I agree that people do have the right to make decisions of the kind about which you asked, and the only problem we have is to decide how far we are going in getting those answers.

You have suggested how far you think we ought to go. We have to weigh that and see whether or not we can answer your questions.

Senator METCALF. Thank you very much.

Senator Moss. We will now call on Mr. Bob Anderson, representing the Absaroka Beartooth Task Force. He will be followed by Ellen Louise Pfister.

STATEMENT OF BOB ANDERSON, ABSAROKA BEARTOOTH TASK FORCE

Mr. ANDERSON. Senator Moss and Senator Metcalf, the Absaroka Beartooth Task Force is a conservation group which concerns itself with mining, mineland reclamation, environmental quality and wilderness problems in the Absaroka Beartooth area of south central Montana. I speak as a representative of this group, as a private citizen, and as a civil engineer.

Our society demands minerals. Since these minerals are scarce, they are economic goods. In order to obtain economic goods, other economic goods or resources must be exchanged for them. The Stillwater complex is stark evidence of one of the prices which is being paid for these minerals.

The exigency in the Stillwater complex has justifiably received considerable notoriety. One result of this notoriety is this hearing. Another is the obscuration of other mining problems in the Absaroka Beartooth. Two of these problem areas are Goose Lake and Horseshoe Mountain.

Goose Lake, virtually the source of the Stillwater River lies at an elevation of 10,000 feet, 11 miles by poor jeep road north of Cooke City, Mont. Prospecting dating back to the 1880's revealed ore containing copper, lead, gold, silver and platinum. When the Beartooth Primitive Area was formed during the 1930's, Goose Lake was excluded by a deep indentation.

Goose Lake is a major spawning ground for the Stillwater strain of the cutthroat trout and mining is destroying this valuable fishery. The question which I ask is, Will whatever minerals, if any, to be extracted from this area justify this and subsequent environmental degradation? I think not.

Only 2 percent of the Nation remains in wild lands. Only a sixth of this has protection by wilderness designation. How much wilderness is needed by this and future generations? Which lands should be protected is beyond the scope of this hearing. The question which is relevant here, though, is, who should make these decisions? Who should determine how much wilderness we need or where it should be? I think the Congress should make those decisions, which gave itself that authority and responsibility in the 1964 Wilderness Act. Tragically, some of these decisions are being made by miners. For instance, at Horseshoe Mountain, which was also described by Mr. Dunkle, neither the Congress nor the Forest Service, nor the State of Montana, had any voice in whether the area should be preserved as wilderness. The area was precluded from consideration as wilderness by miners who opted to explore there. I urge that another such usurpation of authority be prevented by the withdrawal of all wild lands from development until Congress can make the necessary decisions.

What happened at the Stillwater Complex and Goose Lake and on Horseshoe Mountain was the fact that mining laws existed at the time. The recent Montana Legislature enacted a law which regulates exploration and requires reclamation. The Forest Service has recently promulgated rules which regulate exploration in Stillwater. It will undoubtedly be difficult to enforce these rules without the proper staff and money.

Apparently, Senator Metcalf, it was at your request that there was an increase in the Forest Service's mineral management appropriation from \$2.3 million to \$3.5 million.

One area which hasn't been mentioned today is that of research in mining and reclamation. The ore deposits which remain in this country are generally of low grade and deeply buried, as mentioned by miners previously.

Mr. Van Matre mentioned some of the sophisticated geochemical and geophysical techniques which have been used to help locate them.

I urge that the Federal Government support research which will further sophisticate these techniques so that in the future massive surface alteration will not be required for exploration.

Montana law now requires that surface disturbances from exploration and mining be reclaimed. But no one has ever reclaimed surface damage in the alpine and rock outcrop ecosystems such as have been destroyed in the Beartooth. No one has demonstrated that these fragile ecosystems can be reclaimed. In fact, nature itself has failed to repair damage to Goose Lake after 85 years. With society's demand for minerals, it becomes the responsibility of society to reclaim what they damage. It is urgent that the Federal Government direct the research needed to insure that reclamation programs will be successful.

(The complete statement of Bob Anderson follows).

STATEMENT OF BOB ANDERSON, ABSAROKA BEARTOOTH TASK FORCE

Senator Moss, Distinguished Senators, Ladies and Gentlemen: The Absaroka Beartooth Task Force is a conservation group which concerns itself with mining, mine land reclamation, environmental quality, and wilderness problems in the Absaroka Beartooth area of south central Montana. I speak as a representative of this group, as a private citizen, and as a civil engineer.

Our society demands minerals. Since these minerals are scarce, they are economic goods. In order to obtain economic goods, other economic goods or resources must be exchanged for them. The Stillwater Complex is stark evidence of one of the prices which is being paid for these minerals.

The exigency in the Stillwater Complex has justifiably received considerable notoriety. One result of this notoriety is this hearing. Another is the obscuration of other mining problems in the Absaroka Beartooth. Two of these problem areas are Goose Lake and Horseshoe Mountain.

Goose Lake, virtually the source of the Stillwater River, lies at an elevation of 10,000 feet, eleven miles by poor jeep road north of Cooke City, Montana. Prospecting dating back to the 1880's revealed ore containing copper, lead, gold, silver, and platinum. When the Beartooth Primitive Area was formed during the 1930's, Goose Lake was excluded by a deep indentation.

Goose Lake is a major spawning ground for the Stillwater strain of the cut-throat trout which depend on the lake's clean water and gravel. Little or no ore has ever been produced from the Goose Lake District but prospecting activity has been recently renewed. This prospecting and any subsequent development threaten this valuable fishery. The investment of resources and environmental damage at Goose Lake have yet, after 85 years, to make a return. The question which must be answered is: Will whatever minerals, if any, to be extracted from this area justify this and subsequent environmental degradation? I think not.

Horseshoe Mountain is 3 miles west of the Beartooth Primitive Area and about 11 air miles northwest of Cooke City in what was until recently de facto wilderness. Inaccessible by road, the area has been scarred by bulldozers. The Forest Service considers that the area no longer meets the criteria for wilderness. The cost of this exploration? Perhaps the preclusion of unifying the two primitive areas, together one of the nation's finest wildernesses. The return? No one knows.

What happened in the Stillwater Complex, at Goose Lake, and at Horseshoe Mountain was in compliance with mining laws that existed at the time. The recent Montana legislature enacted a law which regulates exploration and mining and requires reclamation. The Forest Service has recently promulgated rules which regulate exploration. There will undoubtedly be difficulty in enforcing these rules with current levels of money and staff. It is imperative that Senator Metcalf's request for increasing the Forest Service mineral management appropriation from \$2.3 million to 53.5 million be approved.

The ore deposits which remain in this country are generally of low grade and are deeply buried. The state-of-the-art of mineral discovery is such that these deposits are not easily located without the extensive surface alteration evidenced

in the Stillwater Complex. Electronic and magnetic techniques have not yet been developed which will allow deposits to be located and assessed remotely. But these techniques show promise. The Federal government must fund the research needed to develop them so that, in the future, massive surface alteration will not be required for exploration.

Montana law now requires that surface disturbances from exploration and mining be reclaimed. But no one has every reclaimed surface damage in the alpine and rock outcrop ecosystems such as have been destroyed in the Bear-tooth. No one has demonstrated that these fragile ecosystems can be reclaimed. Nature has failed to repair damage at Goose Lake after 85 years. Society has demanded minerals. With this demand comes the responsibility for reclamation. It is urgent that the Federal government direct the research needed to ensure that reclamation programs will be successful.

The aesthetic qualities which were destroyed in the Stillwater Complex, at Goose Lake, and at Horseshoe Mountain are often said to have no economic value. This view misinterprets the meaning of economic value. If a good or a resource is scarce and it satisfies a want, then it has economic value. Wilderness is such a resource; so are minerals. But a mineral also has a market value. That is, there are rates of exchange among it and some other goods or resources in the market place. Because of its intangible qualities, the market value of wilderness cannot be determined. Since economic techniques, as we know them, are bound to market values, usually expressed in dollars, they cannot be applied to problems involving aesthetic resources such as wilderness. Techniques involving benefit/cost ratios, substitution goods, and recreational equipment expenses all fail to evaluate the true worth of these aesthetic resources. Social and economic research is badly needed so that new techniques may be developed which enable aesthetic and material resources to be compared. Perhaps another Goose Lake or Horseshoe Mountain can be avoided.

One of the reasons for the Stillwater Complex problem is that miners are operating under laws a century old. To its credit, Montana has revised its laws on the state level. But a massive overhaul on the Federal level is needed for resource conservation. I support Senate Bill 1240 wholeheartedly. Senate Bill 921, as I interpret it, is not necessarily binding on National Forest land. I urge enactment of a similar bill with that shortcoming corrected.

Only 2 percent of the Nation remains in wild lands. Only a sixth of this has protection by wilderness designation. How much wilderness is needed by this and future generations? Which areas should be protected? That discussion is beyond the scope of this hearing. Perhaps what wilderness we have is enough. Perhaps all remaining wild land should be reserved. A question that is relevant here is: Who should make those decisions? I think the decisions should be made by Congress which gave itself that authority and responsibility in the 1964 Wilderness Act. Tragically, some of these decisions are being made by miners. For example, at Horseshoe Mountain, neither the Congress nor the Forest Service nor the State of Montana had any voice in whether the area should be preserved as wilderness. The area was precluded from consideration as wilderness by miners who opted to explore there. I urge that another such usurpation of authority be prevented by the withdrawal of all wild lands from development until the Congress can make the necessary decisions.

But are we really getting to the root of the problem? My comments to this point have been directed at conducting exploration and mining in an environmentally acceptable fashion and reordering resource priorities in consideration of esthetic qualities. Even if all of the measures I have urged are adopted, will a resource crisis be averted? I think not. Mineral resources are nonrenewable and the United States is self sufficient in only two—coal and molybdenum. The utilization and harvest of renewable resources is dependent on basic physical and biological laws beyond our control. The earth is a finite mass with a constant supply of energy which can support a finite number of people at a certain standard of living.

Two things must be done immediately if a resource crisis is to be averted. Firstly, the population growth of the world and especially the United States, since we are the planet's most voracious resource consumers, must be curbed. Some argue that the world has already exceeded its carrying capacity. Secondly, we must stop being a disposable society. We are replacing our wildernesses with garbage dumps, because of an insistence on throwing resources away.

Let us stop rushing like lemmings into bottomless open pits.

Senator Moss. Thank you, Mr. Anderson. We appreciate your statement, it is very well put together, and it certainly makes the point that you feel that we must curb our exploration in some of our wilderness areas. You would like to see this area about which we are talking created as a wilderness and not be available for any mineral exploration.

Mr. ANDERSON. I think Beartooth, which constitutes one of the finest wilderness areas in this country, and it is surrounded by de facto wilderness.

Senator METCALF. Thank you very much.

Senator Moss. We will now hear from Ellen Louise Pfister, of the Bull Mountain Landowners Association. We are pleased to have you with us today. Is it Mrs. Pfister?

Miss PFISTER. It is Miss Pfister.

Senator Moss. Very well, you may proceed.

STATEMENT OF ELLEN LOUISE PFISTER, BULL MOUNTAIN LANDOWNERS ASSOCIATION

Miss PFISTER. Senator Moss and Senator Metcalf, I am a landowner in Bull Mountain, and I am also representing the Bull Mountain Landowners Association.

You may wonder why a localized group, such as we are, by our name, admittedly, would testify at these meetings. We are interested in reclamation and preservation of our State of Montana. Alpine areas, such as the Beartooth, have had little research as to what to do to fix them if we break them, so to speak, with mining. The same is true of all other areas in eastern Montana. Our research has been largely toward sanitation with the irrigated district, in which case, you have an adequate and dependable water supply, but dry land areas, or areas such as the Beartooth where it consists mostly of one moisture supply, we know very little about the relationship of individual plants that grow in those areas and their moisture requirements.

This summer, I took some friends from out of State up to Cooke City, and, in their opinion, the best part of the trip to Yellowstone Park was the area prior to reaching Cooke City, in other words, the Beartooth Mountains. I think that if most people in this country realized that an area like that was subject to mineral exploitation and could see the bulldozer scars, such as we are seeing today, they would be horrified that such a thing could exist. The mining companies are apparently the only interests in the United States that can come onto public land and claim it for their own private land. I don't think this is right. I think there should be a leasing system, and I think it should be a short-term leasing system and subject to reevaluation. I know that the State of Montana has granted mineral leases on nonmetallic minerals for a period of 20 years, with a 20-year option to renew. This is, apparently, without any development. I think the State of Montana has made an error on this point, and I would not like to see the U.S. Government make the same error.

One thing that I think we are going to run into in the mining in the State of Montana, most of the areas that will be mined will have relatively low rainfall, which gives you a relatively limited number of

plants. There is going to be a shortage of seed, in all probability, for the various things that will grow. I would like to see a portion of the price per ton of the minerals extracted set aside and designated for research on reclamation and for a system of nurseries, possibly partially private, partially public—or possibly wholly publicly-supported. This would tend to supply some of the plants that are necessary for the wildlife diet, and this sort of thing. At the present time, most of these plants are in limited supply and are only growing wild, and it would take quite a bit of research to even determine how we could raise them in sufficient quantities to plant in these reclaimed areas.

I would like to say that, although this is confined primarily to Federal lands, that mining on private lands can also effect Federal lands when it is in close proximity. At the present time, there is no adequate regulation at the State or Federal level to protect these lands. I would also like to say something about the Federal patenting system. When those lands become private, they are then subject to State control, and, while the State has passed reclamation laws this last year, to my mind, they are only a step in the direction in which the reclamation laws need to go. At this point in time, the State of Montana's reclamation system, as administered by the State Land Commissioner's Office, is direly short of funds. The State could hardly fund itself, let alone adequately fund any new program, such as reclamation inspection, research, or anything that is required under these laws. I think that the Federal Government is going to have to step in and provide adequate inspection of reclamation projects and research and new ideas along these lines.

Thank you.

(The complete statement of Ellen Louise Pfister follows:)

STATEMENT OF ELLEN LOUISE PFISTER, BULL MOUNTAIN LANDOWNERS ASSOCIATION

Gentlemen: I submit this statement as a member of the general public and request that it be made a part of the record of the hearings to be held by the above subcommittee on August 18, 1971.

It appears that the Federal mining laws should be entirely revamped. To allow vast mining corporations to enter upon Federal lands and by the process of staking a claim obtain a patent to publicly owned land, thus diminishing the amount of public domain available for public use is a violation of the public trust and confidence in the preservation of public lands by such arrangements as the National Forest System and the wilderness areas, and the practice further puts the mining interests in a position favored over all other Americans, because to my knowledge, miners and mining companies are the only Americans who can obtain patents to public lands. It is not fair to the American public at large to permit favored treatment to one segment on industry in the obtaining public lands to private control.

The lands claimed by mining interests subject to patenting are the objects of intensive scarring in order to comply with dirt moving requirements under Federal law. The land in the State of Montana is fragile and delicate beyond the comprehension of most outsiders from higher rainfall areas. Even in the lower elevation bulldozers scars last for years. To permit mining of a nearly forty mile stretch of beautiful country as on the Stillwater River is virtually criminal.

From reading about the early days in Montana, it seems that once upon a time before Anaconda, the valley where Butte is situated was as beautiful as any in Montana. Today Butte is a synonym in most minds of all that is ugly and undesirable in a land. To permit the destruction of the Stillwater and other lovely areas in similar fashion is untenable. The miners are the only interests in the whole country who can come into control of public land by right of patent and

then proceed to exploit some of the most beautiful areas in the United States for private gain.

Upon the issuance of the patent, the patented land becoming private, becomes subject to state regulated reclamation. The State of Montana is far from being able to enforce its reclamation laws against such giants as Anaconda, Kennecott, American Metal Climax, Peabody, Johns-Mansville, Consolidation, and a host of other giants of industry. At present the State of Montana employs only one person to approve and research reclamation plans for hard rock mining and other kinds of surface mining. Even that much funding by the State of Montana to implement its new reclamation laws was in grave doubt this spring. There are no funds and no plans to employ full-time state inspectors of mining operations and mining reclamation.

Surface mining in the Stillwater area and other areas which have heavy snow covers and snow melts will promote erosion and permanent scarring of these areas, destruction of important watershed areas, probably promote flooding due to lack of ground cover and destruction of timber, and increase siltation in formerly clear, snow water mountain streams.

The fact that mining is being permitted on privately patented lands in the area is not a good reason to permit the devastation of government lands. It is doubtful if at this time it is really necessary to open these lands for extensive mining for the benefit of any parties save those who stand to make a profit from the land's destruction.

At the very least Federal lands subject to being opened to mining should be leased for a relatively short term of years without option to renew. It may be possible that at the termination of the lease it may be necessary and desirable to renegotiate the terms of the lease. The retention of the remainder interest by the government should tend to ensure a continuing interest and control by the public concerning the final and complete reclamation of mined lands. Permitting a partial reclamation of mined lands is too high a price to pay for the "progress" that the mining companies attempt to sell to the public. It may be that until adequate research is done to ensure the complete reclamation of areas such as the Stillwater and the Beartooths that mining claims should be denied.

Research on reclamation procedures on high mountain and open prairie country is still in an infantile stage. Procedures successful in Eastern areas do not always succeed here. The plant life here is uniquely adapted to this environment. As a part of the terms of the mineral leases, it could be stipulated that until reclamation procedures are arrived at which are efficient, cooperative with nature, non-polluting, capable of self-sustenance, aesthetically harmonious with the surrounding environment, a designation of a percentage of the proceeds of the sale of extracted minerals on a per ton basis should be used by the company mining the minerals to set up a research program to research the best reclamation for the area being mined. At this point a percentage of the governmental royalties should be set aside for reclamation research also for a check upon industry's approach. It might even be necessary to establish plant nurseries to supply an adequate number of the wild plants necessary to re-establish the native vegetation. The mining companies in the Eastern part of the state are all ready saying that they cannot get native prairie plants to re-vegetate areas where they are supposed to be doing reclamation. It may be practicable to establish a series of nurseries to raise native plants in all areas where mining is to be carried out, inclusive of both mountain and prairie areas.

If mining companies were required to do the things necessary for a complete reclamation job, they might come up with ways to extract minerals that are not so destructive. It is not just, right or equitable to permit a group to make its profits at the expense of killing the land, and at this point in time mining is death for the Stillwater.

Federal lands can also be affected by mining on private lands when the Federal and private lands are on a relatively small checkerboard pattern, as in section by section lay out. Private lands have been leased for mineral exploration and exploitation in areas where the property lines are very vague. There is some question whether the mining exploration teams do know where the property lines are on the ground. Mining on adjacent properties can also affect water table levels on Federal lands. It would also seem that such mining might also affect the multiple land use concept under which some Federal lands are presently being administered.

Senator Moss. Thank you very much for your fine statement, Miss Pfister. I think that it is most commendable that you came in representing the landowners in your area to express your opinions about the mining and other exploitation of the areas and to give us the point of view of the people that you represent so that we may have that in the record of these hearings. We are very appreciative of your appearance here. Thank you. That completes my witness list.

Senator METCALF. Mr. Chairman, I would like to have the record show that I have also received a letter from the Beaumont Landowners Association.

I am not going to ask that this be put in the record, because if they appear, or if we hold hearings on Congressman Heckler's bill, it is more appropriate to put this in the record at that time. So, I will hold it in abeyance, but I would like to have it recognized that they did submit this.

Senator Moss. Thank you. That will be noted in the record. It pertains to strip mining in the Roundup area and would be more appropriate there.

Let me say that this has certainly been a most profitable and fruitful hearing. My arithmetic says we have heard 37 witnesses. Certainly we have had all points of view across the spectrum, and that is exactly why we hold public hearings. We hold them so we can get the opinions of all different people on all sides of the question. I think we have accomplished that very well. I appreciate that. We have had an excellent attendance, and I want to commend this audience for its patience and interest in staying here. You have given marvelous attention and I am very grateful for it. I think this indicates how interested you are.

I should point out that this record will be reduced to a transcript, and at some period, it will be printed and will be available to anyone who wants to have a copy.

I also want to point out that the record will remain open for at least 30 days, and perhaps longer, for any who have not had a chance to testify or who would now, having heard the testimony, like to submit a statement having to do with some point that they think ought to be amplified or they want to contradict or add additional information, anything that adds to our knowledge on this particular subject.

You can send that written statement to me, to the committee or to Senator Metcalf, and we will see that it is inserted in the record.

There are a number of written statements of people who have testified that are available here. If any of you want to have a copy of any particular statement, you may come up to the table and pick it up when the hearing is over.

I see a gentleman in the audience who has a question.

Mr. HUENNEKENS. Mr. Chairman, I represent the Billings Rod and Gun Club. We had intended to submit a statement here. Circumstances, in the form of a rather extensive fire, took up my time during the past 7 days. I was required to be there. We had some duplicating facilities, but I was unable to prepare copies. We arrived in town yesterday evening at 7 o'clock in the evening.

If it would be possible, I would like to make a very brief résumé, because I think we touch one point that has not been touched today and would like to amplify that.

Senator Moss. Well, I think we could hear you for a brief résumé. You certainly have permission to submit a written statement, as I men-

tioned before, if you want to have a more complete statement in the record.

We will hear you briefly now, sir. Give us your name and whom you represent.

**STATEMENT OF HERBERT HUENNEKENS, LEGISLATIVE
CHAIRMAN, BILLINGS ROD AND GUN CLUB**

Mr. HUENNEKENS. I am Herb Huennekens, legislative chairman, Billings Rod and Gun Club.

We are in basic agreement with most of the opinions presented by the environmentalists. There are two things we would like to bring out concerning the application of the 1872 mining law. We are vitally concerned with access, access to lands which are used not only by hunters, fishermen, rock hounds, but motorists, as well. Over the past decade, we have watched something develop. I have been in Montana 31 years. We have seen an increase in the encroachment of private lands. The growth every year is inevitable. We must face the fact that some of the outdoor, recreational public are thoughtless. They cause a problem. We don't think this problem will be solved by the so-called educational program. We think it is going to grow. There is going to be a need for more and more land for outdoor recreation, as the population grows, as the workweek shortens, as early retirement produces more leisure time. We don't believe that public land should be allowed to pass into private ownership, as it does under the patent system, because there is going to be more and more need for the public. It is going to have to carry the burden. It is really going to be the only land in the future.

The other aspect, which I will cover very briefly—if I may, I will introduce my one copy. That is all I was able to prepare.

Senator Moss. It will be received.

Mr. HUENNEKENS. There is the matter of access to Federal lands, public lands. This, also, is a growing problem. A large proportion of Federal lands are not accessible. They are surrounded or sequestered by private lands, and there is no mechanism, at the present time, to get access. I don't know what the exact figure is of the public lands that are not accessible to the public, which are owned by the public, and they should be entitled to use them. I would estimate that it is a majority of all public lands.

Now, in the Beartooth Primitive Area that we have been talking about today, there are a dozen or more trails which give access to the various back country areas which we have discussed, and which, we the public, think we ought to be able to use.

If the mining companies are allowed, under the 1872 law, to take title to these lands, they will have, under present law, the right to close all trails and roads. There is an approach, prescriptive right of use. The history of acquisition or right-of-way in Montana, through the prescriptive right process, is very poor. There have been only several effective cases.

In addition to the lack of legal background or precedent, there is a question of expense, because each issue would have to be fought in a civil suit, as a separate issue. Really, this approach is impossible. It is impossible for the public to acquire these various rights-of-way to existing trails if these lands should pass into private ownership.

Our position is that we are in complete accord with the statements made today that the 1872 mining law must be changed to a lease system, that there must be no further passage of public lands into private ownership.

That is all I have to say.

Thank you very much.

Senator Moss. Well, thank you very much, sir. You have touched a very interesting point that I am glad you brought up.

Senator Mansfield made the request of our committee, some time ago, to study this question of access to public lands, and our Interior Committee staff is, at the present time, making a study to report to the committee to decide what, if any, legislation might be desirable in this area. What you say is absolutely true. Access is very limited in some areas and could be choked off entirely if we don't move to make it available for people to get into the public land areas, particularly the back country and the scenic areas that we want to visit for recreational purposes. So, your point is very well made.

That statement that you have should be submitted to the reporter, and it will be printed, in full. You have the same privilege that others have of making any additional comments you may want to make by submitting a memorandum or a letter addressed to me, to Senator Metcalf, or to the committee. This has been an informational type of hearing. We are not addressing ourselves to a specific bill at this time. We are talking about a problem. We are trying to decide what we need to do, and we haven't even drafted the bill yet. Usually, you have a pretty good idea what you want to do when you draft a bill, and we are just getting around to that.

Before we close—

Mr. HUENNEKENS. Might I, sir—

Senator Moss. Of course.

Mr. HUENNEKENS. Senator Mansfield is acting directly in our behalf. He is fulfilling a promise he made to us, personally. Senator Metcalf, I would like you to please convey to Mike our extreme appreciation for the activity that is going on.

Senator Moss. He is fulfilling his promise, all right, because our committee is working on it, and these hearings today are at the instigation, largely, of Senator Mansfield, who was anxious that we not wait longer to utilize some of the recess time to hear from the local people here in Montana on this Stillwater complex and some of the other areas about which we have been talking today. He is very interested in this. He regrets very much, as Senator Metcalf reported this morning, that Mike Mansfield could not be here. I am sure he will follow it very closely and read the record, and he will certainly have his imprint on what we do. He is a very respected Member of the Senate, and because he is majority leader, things really move around when he talks. [Laughter.]

(The complete statement of Herbert Huennekens follows:)

STATEMENT OF HERBERT HUENNEKENS, LEGISLATIVE CHAIRMAN, BILLINGS ROD AND GUN CLUB

The Billings Rod and Gun Club is affiliated, as are most sportsmen's clubs in Montana, with the National Wildlife Federation. As members of the NWF, one of the oldest and most active conservation organizations, we are in strong basic agreement with the other groups whose spokesmen here today are expressing

their strong concern over the environmental and ecological aspects of mineral extraction in the Beartooths.

We would like to express our particular concern over another aspect of mineral exploration and development. The continued and constantly accelerating growth of public enthusiasm for outdoor recreation has resulted in growing tension and bad feeling between private land owners and the outdoors public: hunters, fishermen, back-packers, horse pack trippers, rock hounds, snowmobilers, motorcycle trail riders, campers, etc. The result has been a steady increase in the amount of private land posted against trespassing, hunting or fishing. Educational Farmer-Outdoorsman programs may help some but the brutal fact of the matter is that the segment of the outdoor public that causes most of the trouble is just plain ineducable or typically responds only to the power of the law—and the average farmer or rancher just plain does not have the time nor the inclination to act as law officer.

With the growth of outdoor recreational activities obviously destined to continue because of an ever increasing population, a more general higher standard of living, and more leisure time because of shorter work weeks and earlier retirement, it is obvious that the Federal public lands in the West are going to have to carry the major burden of providing space for outdoor recreation in the future.

The relationship of mineral development to recreational use of public lands is twofold. One phase of this is the actual loss of public land thru passage from public to private ownership thru the process of proving up on mineral claims. Surely it must be obvious to anyone who has recently visited National Parks or Forest Service campgrounds that any further loss of private lands is a crime, a theft from future generations of the right to enjoy outdoor recreation in what many of us consider an American tradition, moving across and exploring broad and unfenced expanses of our own land, subject only to just and necessary regulations and not the arbitrary and capricious whim of a private land owner.

The second aspect of the relationship lies in problem of access to public lands. This already is a major problem. Some large proportion, perhaps a major percentage, of public lands is directly or almost completely inaccessible to the outdoor recreationist because of intervening or surrounding private land that separates the public land from the nearest area that is accessible to the public, with the private land being posted against passage or trespass.

In the Beartooth area that has been filed on by the various mining interests, there are a dozen or more trails, some of the foot or horse variety, others used by four wheel drive or standard passenger vehicles. If the title to the lands across which these trails pass is allowed to pass into private ownership, we will be faced with the probability that the recreational public will lose access to the public lands beyond. Under present law, the establishment of an easement would rest solely within the discretion of the company that has secured patent to the former public land. The only recourse the public would have would be individual lawsuits based on the principle of prescriptive right. The history of such suits in Montana and the cost of such actions make this solution unlikely if not impossible.

The Board of Directors of the Billings Rod and Gun Club, acting as representative for a segment of the recreational public, therefore urge the Senate Subcommittee to make such recommendations and take such action as within its power, to effect changes in federal mining law that will eliminate the further passage of public land into private ownership, and that in place of the present system based on the law of '72 and subsequent revisions there be substituted a leasing arrangement with adequate statutory control of reclamation and environmental protection.

Senator Moss. Before we conclude the hearing, I want to express my appreciation to the audience, as I did before, for your attendance and your obvious interest in the matters we have been discussing. I also want to express my appreciation to the Eastern Montana State College and its president for the use of this very fine facility. I don't know that we have had a better hearing room anyplace, Lee, than we have had here today. It is well-adapted for this kind of a hearing. I am sure that those who have attended have been able to hear and see very well in this very fine place, and we are glad to have it.

Again, I express appreciation to the Forest Service, who organized the trip that we had yesterday to inspect the area, and the Army National Guard and the Governor for conveying us out there and back safely. We did clip a tree. [Laughter.]

Senator Moss. All of this has worked out very well. It has been really a thrilling 2 days to be here in Billings and up in the high mountains here in this beautiful land.

Last, but not least, I would like to thank my colleague, Lee, who has been here and sat in on the whole matter and has been the guiding spirit. He and his colleague, Mansfield, certainly look after the interests of Montana, I can assure you.

Lee wants the last word. [Laughter.]

Senator METCALF. Mr. Chairman, I completely concur with you and your commendation of the audience, the Forest Service, the logistics that have been accorded us.

Again, I want to expressly commend you, Mr. Chairman, for your fairness, for your good humor, and the way that you have conducted the hearing today and the way that you have come out here and assisted us in working on this problem. If you people in the audience agree with me, I will temporarily suspend the rule against applause. [Applause.]

Senator Moss. At the very last minute, I lost control.

This meeting is now adjourned.

(Whereupon, at 5:10 p.m., the hearing was adjourned.)

APPENDIX

(Under authority previously granted, the following statements and communications were ordered printed:)

OFFICE OF THE MAYOR,
Billings, Mont., August 18, 1971.

Subject: Statement of Willard E. Fraser at the hearing on Beartooth mining operations.

Senator FRANK MOSS,
Chairman, Senate Interior Subcommittee,
Washington, D.C.

I am the Mayor of Billings, Montana—a growing city that presently in its total community numbers upward of 80,000, people and our water supply is provided by the Yellowstone River.

Herbert Hoover in 1947 stated that Montana had more metal resources than that of the U.S.S.R.; so, it comes as no surprise that mining companies are finding the Beartooth Mountain area west of Billings as a vast richness to be developed—and I say this not to slow down development. I am making this statement to urge the U.S. Congress to take every measure known to science in this age to see to it that this area is developed, but not 'exploited' by the exploiters solely interested in personal gain, with no consideration of the effect that exploitation might have on our environment and particularly as to the City of Billings today and tomorrow.

Therefore I feel strongly that the Congress must prevent mining operations that scar the surface of the earth and might do irreparable damage to our environment and particularly to our water and air supplies, and take strong action requiring responsible development of our mining riches.

Sincerely,

WILLARD E. FRASER, Mayor.

STATEMENT OF H. O. (BUCK) COMPTON, IMMEDIATE PAST PRESIDENT AND MEMBER,
MINING RECLAMATION COMMITTEE, MONTANA CHAPTER OF THE WILDLIFE
SOCIETY

Chairman Moss, members of the subcommittee. I would like to present testimony on behalf of the Montana Chapter of The National Wildlife Society. The Montana Chapter is a group of professionally trained and employed wildlife biologists. The members are employed by state and federal agencies, city and county government, colleges, and private enterprise. The group comprises a cross section of professional conservation workers in Montana. We are dedicated to sound, well-researched, well-documented, but diversified resource management in the State of Montana. Our ecological background does not permit us to be single-minded in our approach to a difficult resource question; however, our ethics force us to become very adamant when a resource practice is decidedly single purpose—without complete multipurpose or public benefit considerations. We feel this is the case with the archaic mining practices in the Beartooth Mountains in Montana.

We recognize the importance of minerals to the United States of America. If the minerals in the Beartooth Mountains are the most critical consideration in that area to the well-being of our nation and no other substitute is foreseeable, then we humbly urge that mining continue; however, we question the importance of these minerals compared to the "other" public benefit attributes of the region. We also question whether the "other" attributes have been recognized, evaluated and balanced on the same public-benefit weighing platform with mining.

What are the "other" attributes in the Beartooths which greatly concern a group of professional wildlife biologists? Let's look at these and discuss the effects on them when an ecological breakdown occurs. Keep in mind the discussion that much of the Beartooth region is alpine and subalpine habitat. Snow-free periods and vegetative-growing seasons are short. Temperatures are cool and soils are thin. Plant life is very specific in that only a limited number of species will grow here and each occupies a limited ecological niche for which another is not suited. Changes in moisture, sunlight or exposure sets up a new microclimate, alien to a former plant occupant. Changes may occur rapidly and disturbance is long lasting. Animal life, along with and largely because of the limited and specific plant life, is also limited in numbers of species and environmental tolerance. Small habitat disturbances in these critical zones may trigger a chain of floral-faunal changes. The original aspect may or may not be restored over a period of time; however, large disturbances such as soil disruption totally unbalances the plant-animal relationships. A return to its former association may take decades, centuries and, in many cases, infinity.

Occurring throughout the Beartooth Mountain region are fine populations of big game animals: elk, moose, mountain sheep, mountain goats, black bear and deer. Mountain grouse occur up the main drainages and several species of endangered animals like the grizzly bear inhabit the area. Pika, marmot and other small animals also make up the faunal picture. These animals provide a great amount of pleasure to thousands of people each year who hunt, photograph and just plain look at them. What happens to these animals during and after the gross disturbances caused by mining? The outlook is not encouraging.

Mountain goats, as well as Bighorn sheep, are very specific in their habitat requirements. Almost all of a goat's time and a portion of that of the sheep is spent in the highest, rockiest, most remote portions of the mountains. They require isolation to breed, raise their young, find food not taken by domestic animals and just plain hide. This is alpine and subalpine country, where the effects of disturbance quickly climb the ecological ladder. Goats and sheep are at the top of that ladder, where effects have boomeranged. For instance, a series of mining discovery pits may have directly or indirectly reduced the amount of a key sheep forage plant. Ingrained home range instincts and herd tradition or lack of a substitute area may dictate that the herd continue using the spare remaining forage. This further reduces its potential for revegetation. Physiological effects begin appearing in the herd. Animal conditions begin to diminish. Parasites and disease take their toll. Lamb crops begin to get smaller. The noise and appearance of mining machines and humans in the area may further add to the stress factor. The end result could be at best an extremely unhealthy, unproductive herd of big game animals.

Farther on down the mountain, another mining operation is occurring in an important elk calving area, and even farther on, a series of pits are being built across a south slope—burned over in the past but providing important browse for elk in winter. Timber is being cut and the grass aspect changed in the calving area. Seclusion and cover, as well as food, are important during this critical period in an elk's season. Again, noise and people is an unknown factor. Winter comes and the snow deepens in the high country. The elk move down onto their favorite wind-swept browse slope. Browse and grass have been diminished by pits and roads. Escape timber has been cut back up the mountain, too far from feeding sites for safety. Little or no elk use may occur there this winter. The ecological degradation has begun and will get worse next year. Calving difficulties have been compounded by winter stress.

Other examples could be presented. Small mammals, endangered species, and fisheries all have a story. Many aspects of ecological imbalance and its effects on animals and fish have not been investigated; however, enough is known and enough cases are documented to speculate with reasonable accuracy at what can happen to the plants and animals in the Beartooth with mining operations as they are now.

For the above-stated reasons and with a great concern, the Montana Chapter of the Wildlife Society recommends the following action to the subcommittee:

1. That they work towards imposing a congressional moratorium on all mining in the Beartooth Mountains until the total effects of mining upon the flora and fauna have been determined and the importance of these attributes has been balanced against mining as a public benefit.

2. That they work toward changing the federal mining laws from a philosophy of single use on our public lands to one that allows realistic consideration of all beneficial use by the public.

3. That they work toward the installation of an intensive research program to fill in and supplement available information on disturbance in alpine and sub-alpine zones and its effect upon the area's ecology.

POWELL, WYO., August 25, 1971.

Senator FRANK MOSS,
Chairman, Senate Interior Subcommittee on the Environmental Effects of
Mineral Exploitation, Washington, D.C.

DEAR SENATOR MOSS: My name is Ken Bovee, and I am a former teacher of ecology in Montana public schools. As a student at Eastern Montana College, I was active in numerous environmental workshops, and I became acquainted with the mining problems in the Stillwater. I wish to have my statement entered as part of the record for your subcommittee.

As you are well aware, many of the complaints given at the hearings in Billings on August 18, dealt with the aesthetic insult done the land by mining. The mining industry spokesmen countered with figures about the demand for mineral resources, and figures extolling the huge sums of money that the industry has poured into pollution control. What the miners neglected to mention was that the demand for metals is largely fabricated and pushed by Madison Avenue promoters, and that the large amounts of money they have spent on pollution control are insignificant when compared to their advertising bills from trying to persuade people that they are not polluters.

My major field of study in college centered around chemistry and geology. Since that time my interest has shifted to the science of ecology, and I feel that my past education will justify my speaking out on this issue.

Mr. Dunkle gave an ecologically sound testimony as any given in the hearing. I urge you to pay close attention to his statement. I wish only to add somewhat to his testimony. It should be well established by now, that any mining activity in the Stillwater is going to release substantial amounts of acid into the local watershed. The acid itself (usually sulfuric) is toxic to the salmonoid fishes of this region if it is sufficiently concentrated. It is also toxic to livestock, and humans, and cannot be removed from the water with any of the water treatment processes now in use in Montana. Since, the Stillwater drainage is a major tributary to the Yellowstone, I think you can see that mining this area could become a health hazard to downstream residents.

In addition, any addition of acid to the watershed can alter the pH, the acid-base, qualities of downstream areas. A change in pH of the water can produce serious changes in requirements of the fishes in that water, without directly killing them. Addition of acid to these waters will raise the requirements for dissolved oxygen, which is actually decreased during warm weather, and by action of other pollutants such as fertilizers and sewage. The result of this combination of events is a lot of dead trout, and the subsequent replacement thereof, by carp and suckers. Acid wastes can also act synergistically to increase the toxicity of other poisons (i.e. pesticides, phenols, mercuric compounds, oil, ammonia, etc., all of which can be found in the Yellowstone).

Having visited numerous mine sites, I can tell you that acid is only one of the unwanted by products of mining. You will notice that in one of the pictures given you by Mr. Dunkle, the water is a very pretty blue-green. The chemical causing that color is copper sulfate, a compound which has been, and still is, used as an insecticide. Copper sulfate is readily soluble in water, the same water that will be later used downstream to water crops and livestock. It too, is extremely toxic to all vertebrate life, even in small quantities.

In conclusion then, I would go on record as standing against the mining of the Stillwater, not only as it affects the wildlife, and the aesthetics of a beautiful region, but also because it will disrupt water use further downstream. Other testimony has already pointed out the water holding capabilities of Anaconda's proposed settling pond.

I would suggest that any means at your disposal should be used to make recycling competitive with mineral extraction, including stiff severance taxes on raw minerals, reduced freight rates for scrap metal, and establishment of local

recycling centers. The Anachronism of 1872 must be revised to bring the mining industry into the twentieth century with the rest of us. As concerns those deposits found in Wilderness Areas, I would suggest that these deposits be classified as a National Mineral Resource Area, not to be mined unless in case of extreme need (as opposed to fabricated demand), and only mined on the executive order of the President of the United States. This would include mining in cases of national emergency. Let us face the facts, gentlemen. Mining is a problem. Junk is a problem. As long as scrap metal is piled up to rust, as long as beer cans and auto bodies line our roadsides, and as long as heavy metals such as lead and mercury threaten our existence, all the propaganda fed out by the mining industry about this nebulous demand of theirs makes little sense on this planet.

I hope that my statement will be of value to you. Your decision will be no small one, and it will determine the future well-being of untold numbers of unborn Americans. Thank you for allowing me to express myself on this issue.

Sincerely yours,

KEN D. BOVEL.

[From the Denver Post, Aug. 18, 1971]

NEW HENDERSON MINE—MINING, ENVIRONMENT MIX

(By Dick Prouty, Staff Writer)

EMPIRE.—Can a herculean mining operation costing \$250 million and taking eight years just to begin production be compatible with the Rocky Mountain environment?

For the Henderson Project of Climax Molybdenum Company the answer seems to be "yes."

The Henderson Project is a plan to mine molybdenum ore under 12,315 foot Red Mountain 8 miles west of here, about 50 miles west of Denver.

The ore body, with about 4½ to 5 pounds of molybdenum being extracted per ton of ore, is large enough to last 30 or more years, Climax officials say.

50 MILLION POUNDS

Annual production is to be 50 million pounds of molybdenum.

The second of three Henderson shafts now is being put down 3,100 feet into the same mountain from which Climax' Urad Mine is extracting ore. Later a third shaft will be sunk.

To get the ore to the mill, 14.6 miles away, a 10-mile-long tunnel is being bored between the mine, under the Continental Divide to the upper reaches of the Williams Fork River.

Harold Wright, Henderson mine manager, said that when full production gets under way—target date is 1975—six completely automated electric trains with 30 cars each will be shuttling back and forth between mine and mill.

"They're completely automated, there's no one in them at all," Wright said of the trains, which are a low-profile narrow-gauge type.

Each train will have four, 50-ton rated locomotives of the Swedish ASEA manufacture, he said.

At the mill, where a mountain is being leveled for the site of a crusher and mill, two tailings ponds and a water reservoir also are under construction.

According to Bill Reno, Climax construction engineer, the tailings ponds will require about 130 acres of the 18,000 acres of land Climax has bought in the Williams Fork drainage.

The project isn't just Climax. It's also the product of the Thorne Ecological Foundation, Boulder, the Denver-based Rocky Mountain Center on Environment (ROMCOE), the U.S. Forest Service, Colorado Water Pollution Control Commission, the Colorado Open Space Council and others.

PAYING THE BILL

But it is Climax, a subsidiary of American Metals Climax, New York City, that's paying the bill. The environmental safeguards were undertaken with "a great deal of apprehension on both sides on how it would work out," said Jim Gilliland, a Colorado native who is director of environmental controls for climax.

How much the environmental considerations will cost hasn't been calculated. But it's plenty, a company official said.

The first environmental controls were extensions of conservation measures worked out between the U.S. Forest Service and Climax in the early 1960s when the Urad mine was reopened.

The Colorado Water Pollution Control Commission didn't even exist then, but the Climax representative, the late Ernie Jones, pioneered the ecological outlook with Neil Edstrom, former Idaho Springs forest ranger.

LODE DISCOVERED

The Henderson lode was discovered in the mid 1960's. The scope of mining more than 300 million tons of ore, of having water for milling, tailing ponds for nearly 1,900 pounds of mill waste per ton, power lines, roads, housing for workers and other impacts on the environment generated studies on the ecological significance of the development.

Stan Dempsey, Climax attorney, was active in conservation work and as plans for Henderson were outlined he sought a broader input on environmental aspects from the fledgling Colorado Open Space Council.

Climax officials including Dempsey, Don Stephens and Bill Distler, then Henderson Project director and now in charge of mining operations for it. Urad and the Climax, Colo., mines, met with Roger Hansen, now executive director of ROMCOE; Bob Weiner, of COSC; Dr. Beatrice Willard, of the Thorne Ecological Foundation, and with others worked out what is known as "An Experiment in Ecology."

FROM BEGINNING

"The important thing," Distler said, "is that environmental considerations were a part of Henderson from the beginning."

The cooperative attitude of conservationists surprised some company officials and vice versa. But there were environmentalists who weren't—and aren't—happy about another development invading the mountains.

"It can't be hidden," Hansen acknowledged, "the landscape is considerably disturbed. But the impact is definitely minimized. There's no question about it."

"With all the construction, you can't tell now what it's ultimately going to look like," Hansen said.

"But the way it's going, the way it has gone and is intended to go, Henderson will be an ecological model for industrial development. I don't know of anyone in the country who has done the things Climax has done," he said.

WORK WITH PEOPLE

"We've been accused of doing a 'sell-out,' of being a turncoat to the environment and all sorts of things," Hansen, a lawyer and planner, said, "but environmentalists have to accept responsibility and to work with people in good faith."

The results of that faith are just beginning to show. For example:

—Ute Creek, the Williams Fork River, West Fork of Clear Creek and other streams are flowing clear and sparkling despite the enormity of the earthmoving and other work being done near them.

—Clumps of trees at the mine, near the railroads and power line rights of way were left standing instead of being cut down. In one case a spruce-fir stand with trees more than 300 years old still stands—a powerline route was changed instead of cutting the trees.

850 TREES MOVED

More than \$20,000 was spent to dig up 850 trees—aspens, fir, spruce, pine—from 4 to 40 feet high and transplant them to provide a 100-yard-long test screen to a huge tailing pond. The test plot, that is watered almost daily, will show what kind of trees can best survive the transplant shock. Eventually more trees will be moved to form a screen more than a third of a mile long.

While more than 300 acres of timber were harvested, much of the waste was chipped for mulch instead of being burned.

Topsoil is stockpiled until final earth moving and construction is complete and then it will be distributed, seeded and planted with grasses, shrubs and trees.

The 10,000 gallons of water needed each minute in the milling process is to be recycled, a process that saves water and avoids pollution.

WATER COOLED

The 5,000 gallons a minute of warm water encountered in sinking shafts to the working mine level is being aerated to cool and oxygenate it before it goes into clear Creek via settling ponds.

New concepts in power line rights of way and screening were pioneered by Climax and Public Service Company of Colorado. No more wide, straight swathes through the mountains. The wires and towers are treated to blend instead of contrast with their surroundings.

Acres of grass now green disturbed slopes that would have been ignored before. A tertiary sewage treatment plant, almost a high-altitude experiment at 10,320 feet, is planned for the mine and offices.

In the next century, when mining is over, plans for using the reservoirs and tailings ponds already have been outlined.

Fundamental to all this are the ecological inventories made and continuing under the direction of Dr. John Marr, noted University of Colorado ecologist, and Dr. Richard Beidleman, of Colorado College, and others involved in the Colorado environment movement.

"This way we know what the situation was, what it is, and if it changes how it's changed so we know what to do about it," Gilliland said.

"We'll have the actual data. Instead of guessing and theorizing, we'll know," he said. He was referring to plant, wildlife, water life and other continuing studies.

One of the really tough problems is tailings reclamation. Work at the old Climax, Colo., mine has proven the challenge. Dr. William Berg of Colorado State University, is seeking reclamation answers under a Climax grant.

PROVIDE ACCESS

Not all the environmental improvements have worked. One that failed was Climax plans to open up thousands of acres of its own land in the Williams Fork Valley, and provide access to the Arapaho National Forest, for hunters and campers.

But the guests drove their vehicles across meadows, mountainsides and in other ways tore up the land. The area is now barred to vehicular access, Don Stephens, Climax, public relations representative, said.

"It's still open," he said, "you just have to walk or ride a horse."

He said Climax is considering running a twice-a-day truck route in the area this fall. Then hunters can haul their deer or elk to the access roads, and it will be brought out in the company truck to the county road.

The impact of the enormous project and anticipated satellite development on the Williams Fork is a major concern of Colorado Game, Fish and Parks officials.

"It's going to change deer and elk migration routes, population concentrations and other factors," Paul Gilbert, area supervisor at Hot Sulphur Springs, said. To the west, across the Williams Fork Mountains, development in the Blue River Valley is affecting deer, elk upland game birds as well as stream life.

He estimated there are 500 elk and about 500 deer in the area now.

WATER COMPETITION

Competition for water by various interests, including Climax, Denver and other developers is also worrying trout enthusiasts, he said.

"They're making every effort they can to keep the stream clean, but it's the combination of effects including adequate stream flows that concern me," Gilbert said.

The opening of once closed ranches and foot access to the national forest is working out "surprisingly well," he said.

Distler said the company spent weeks searching for a mill and tailing site that would minimize the environmental impact. Of 36 sites, only two were environmentally satisfactory.

The result is a small scenic valley just west of the Williams Fork River, north of Ute Pass.

A portion of the two-track, narrow-gauge railroad between the tunnel portal and the mill will be visible from the county road that follows the river back up the valley from the Colorado River.

The tunnel will be more than 52,000 feet long. The Dravo Corporation has bored more than 3,000 feet underground from the Williams Fork side.

The tunnel and train are expected to cost \$50 million.

SUPPLEMENTARY STATEMENT OF SOUTHWESTERN MONTANA MINING ASSOCIATION

Senator Moses, staff members, ladies and gentlemen. The Southwestern Montana Mining Association representing "grass roots" mining and numbering some 300 strong find it indeed a privilege and a pleasure to address this most important committee.

I am Bill Hand, manager of a family mining operation West of Dillon, which lies in the southwestern corner of our Great State of Montana. We mine and sell a crude gold, silver and lead ore to the American Smelting and Refining Company in East Helena, Montana. Because our ores occur close to the surface they are void of sulfur dioxide forming materials. We have been in business as a small operation continuously for the past thirty years. I am a product of our University system, a registered professional engineer, a member of the various professional organizations as well as the one represented here today. It is my privilege and I am sure I share this with many of you to be a councilman of my city, a member of the Dillon Rotary Club and its president and other various fraternal and community obligations.

Admittedly, we represent mining at the grass roots. We are those who gladly assume the major risk in the production of our most valuable asset—our mineral resources.

We are probably the yesteryear's counterpart of today's Hippy, in that we are sufficiently strong willed to defy the conventional in our beliefs to pursue a showing that captures our faith and imagination to expend time and money in the hopes of developing a profitable mine.

This Association began as a parent county organization loosely bound together by the ardent belief that we are the benefactors of rich mineral endowments that await search, development and exploitation. And that, by resourceful vigilance in the protection of these certain requirements, we and generations to come can share and enjoy the production from these vast mineral riches.

Like the grizzly bear, we in mining are being forced and squeezed from our natural and limited habitat. Withdrawals and primitive areas limit and discourage mineral pursuit, legislation saddles us with untimely requirements further dampening the enthusiasm of the "pick and shovel" prospector. From Washington comes the rumble to appeal the Mining Law of 1872 and replace it with a leasing act or a hodge-podge of other unworkable and disconcerting programs.

We are sure that those of you who are professional people, would not diligently pursue an investigation without prior assured compensation, if our government were to auction your efforts off to the highest bidder, you being among the bidders. Nor would an inventor be motivated if the fruits of his efforts were similarly auctioned. A leasing arrangement and repeal of the Mining Laws of 1872 would virtually eliminate the prospector.

Again, like the grizzly bear, we too must fight but in the form of greatly increased numbers and participation. As the pressure mounts, so does the determination and efforts of our sympathizers. Our strength and numbers are rising weekly.

We seek and support a resourceful and orderly explanation and utilization of this Nation's mineral resources. Like the shepherds of old, we represent a fine and dedicated flock but occasionally a lamb will stray and through critical eyes of hind-sight, many times magnified, in the eyes of the public, an injudicious prospecting move is made.

But, by and large, like the elusive Indian, more and more, the prospector is brushing his tracks away behind him. He is turning less and less to the bulldozer and more and more to his sample pick, the gold pan, his knowledge, geochemistry, geophysics and his plain old "hunch".

As Ponce de Leon sought a means of reaching the "Fountain of Youth", so to, must the prospector be granted peaceful passage to his "hunting grounds". While technology has lent assistance to the search of minerals from both the ground, the air and additionally space, they occur on the crust of the earth and that spot must be reached. The mining industry must share with agriculture, timber and recreation the privilege of access to the Public Domain as well as the responsibility of its conservation.

That this Great American Society can arrange its resources and men to successfully traverse the space from earth to moon is a source of astonishment and pride. It may seem to follow that with these achievements the prospector is a dream of the past. True, perhaps the prospector with the burro, gold pan, pick and shovel may be a color from the past but his modern counterpart adds to the stores of knowledge of his esteemed predecessor and more importantly as-

sumes the extremely high risk, the cost of which, no company nor probably our own government could bear. The prospector from the "pick and shovel" on up are a necessary link in the chain of mineral and metal production. He is the mouse on which the fox must feed to sustain life.

Impossible, yes impossible, to go to the moon, sit in this building, draw a glass of water, travel except by walking or riding an animal and virtually all other things without the products of the mineral industry—the most basic of raw materials.

Gentlemen of this committee, the minerals industry can not produce sufficient gold to remove the pressure from our dollar. No country or group of countries can. Nor should we if we could. We can not claim the competency of the Roman "superman" who cleaned the stables by coursing a river through them. (Man! Wouldn't Washington hear about that). But we can promote and encourage competitive domestic production of metals and other products thereby creating a more favorable trade position. This is the only real medicine that can be administered; a basic responsibility to the future security of our beloved land.

This Association reiterates its appreciation to this distinguished committee and concludes that ways can and are being implemented to explore for minerals without undue ecologic or environmental damage.

[From Mining Engineering, August 1971.]

PEOPLE, MINERALS, ECOLOGY AND THE MINING LAW OF 1872

(The following is a condensed version of an open letter addressed to Bill Gilbert of *Sports Illustrated*.)

Your article, "When a Law Fights a Law, *Sports Illustrated*, April 26, 1971, betrays considerable unfamiliarity with the subjects of ecology, social science, mining law and history. In a magazine as widely circulated as *Sports Illustrated*, an article of such a slanted nature misleads the general public.

It is incredible that so many people can be so naive about a law as fundamentally beneficial to society as the Mining Law of 1872. Rarely will a nation come upon a principle of governing quite so socially rewarding as this law, which has helped this country become the greatest in the world. Few other laws have contributed nearly as much toward providing real food and fiber for the people. Of course, the past success of a law does not obviate the need for revisions as the needs of society change, but much care should be taken in making such revisions. In this instance, especially, we should not be premature in eliminating the primary feature of the law, because it encourages the search for—and best assures the finding and development of—our vital mineral reserves. This primary feature is the principle of discovery.

It is difficult for those outside the mining industry to understand the complex manner in which nature hides and holds the ore deposits on which we depend, but it is the responsibility of influential people to understand the causes they espouse. As a lifetime prospector and geologist and sometimes successful finder of ore, I can testify to the extreme difficulty and uncertainty of mining exploration. This is precisely why the elements of discovery and claims in the Law are so important. Only these incentives will generate the persistence and imagination necessary to find the minerals essential to modern society. No other approach will so automatically adjust to the unpredictable changes in social needs. Neither organized companies nor Government can discover minerals so well alone as they can with the help of the individual. If lands are solely leased, as has been proposed, governmental controls will improve, but only at the expense of a dangerous reduction in our discovery rate and reserves.

It should be easy to see the historical results of the Mining Law of 1872. The industrial revolution did not come about with just good top soil and scenery. There is no doubt that the subsurface mineral contribution was critical—and it still is. The major difference between then and now is that our minerals originally provided greatness, while today they are simply essential for survival—not just for affluence.

Our very existence today not only dictates that we continue to find mines that are more and more difficult to find, but also that we find bigger and better ones faster. In this country, we have such ready abundance that most of us never even

wonder how this abundance is provided and what really makes it possible and feasible to feed so many so easily and so well.

You mention license to take over huge tracts of public lands at no cost and with no taxes paid. Last year, the U.S. mineral industry spent an estimated \$26 billion and paid an estimated \$2.5 billion in taxes. You say the Mining Law of 1872 was created for the mining industry. Actually, this law was created by and for the people, and it was the needs and wants of the people that created the mining industry. Who uses minerals if the people don't?

Someone recently commented adversely on what the mines have done to Bisbee, Ariz. Apparently it never occurred to him that without a mine Bisbee would never have existed.

Even more important than its past contributions is the new wealth the mineral industry provides for a growing society. Last year, this amounted to almost \$30 billion. This was not wealth stolen from the people, it was wealth produced for the people. Only one other basic national industry creates new wealth as fundamental as that created by the mineral industries, and that is agriculture. Yet today agriculture could not stay in the race without minerals of all kinds.

Your so-called "free land subsidy" allowed by the Mining Law is provided only after a discovery potentially beneficial to society has actually been made. Until then, there is nothing but hunch and hope. Meanwhile, the land involved in every aspect of the mineral industry is less than 1% of the nation's total, a minute percentage in proportion to the contribution the industry makes to society. We already have most of the laws we need to administer mineral production and settle conflicts between the mining and other sectors. Exceptions do exist, but these are being resolved.

We have absolutely no choice about the sites of our mines as we do about those of our forests, farms, factories, cities and parks, so the question is, which of all these resources is most precious to society? Without doubt, one of the highest land uses of modern society lies not only in present and producible mineral reserves, but also in those yet to be found. Too few even remotely appreciate how precarious the position of our mining industry is. With environmentalists looking for social scapegoats and Government officials who think the state can do everything better than the people or private industry, mining is most vulnerable to attack.

Those outside the industry think mineral production can be turned off and on simply at will. This is most definitely not the case. A significant mine takes 5-10 years and roughly \$100 million to get into production without the unpredictable prospecting factor. Average figures for the latter might be an additional 10 years and \$10 million.

How can we hope to provide enough minerals for a rapidly increasing population if we do not all do our best and cooperate in the effort? And certainly our best will not be to let the Government do it all alone—or the big corporations either. The best recent proof of this was the success of the Atomic Energy Commission's uranium program in the 1950's. When our society suddenly decided we needed uranium, the AEC set up incentives over and above those in the Mining Law for all groups and individuals. Since then, there have been many discoveries—not directly by the Government or large companies, but rather by individuals with Government and company assistance.

The success of the AEC program insured our nuclear preeminence, but few fully understood how this came about. It is true that we live in a democracy where majority vote prevails, but it is up to our Government and industry to educate people so that enlightened majority decisions can be made.

As always, our elected officials are torn between facts and statesmanship on the one hand and emotion and majority politics on the other. Congressman Udall, I am sure, feels that his proposed new mining bill is what a majority of his constituents want. Only if he were convinced of the overriding importance of it would he try to persuade the voters of his district to go along with a particular idea against the majority wishes. Perhaps he would consider such statesmanship if he really understood the dire possibilities of abandoning the discovery and location principle in favor of leasing.

Now, if you and *Sports Illustrated* will help tell the whole truth to provincial people who never heard of the public lands of the West, let alone the Mining Law of 1872, we can all claim a very worthwhile service to society. Instead of fighting petty skirmishes over highly desirable but secondarily important esthetics, we must start solving poverty problems and stop losing ground in the battle for survival.

AUGUST 13, 1971.

SENATOR METCALF,
Billings, Mont.

DEAR SIR: News Media—Stillwater Complex will be strip mined. What will this area be like a few years from now—another Butte????

We must have stricter mining laws.

We must have tests made to prevent pollution of our river and streams by foreign materials seeping into the underground water.

Sincerely yours,

ROSE and ANSIL PENSIS.

BILLINGS, MONT., August 18, 1971.

SENATOR METCALF,
Billings, Mont.

DEAR SENATOR METCALF: We are hoping we might have an opportunity to meet with you on the occasion of the August 18th hearing in Billings because we feel that we are very much a part of this whole picture of industry versus ecology which is currently being brought into focus by the ever increasing expression of interest and concern by the people. Small groups such as ours are in communication with other concerned and affected groups and organizations all over the country, but in particular with the western states and we are being drawn together for some sort of concerted action. We understand that this same Subcommittee on Minerals, Materials and Fuels will be holding a public hearing in Washington, D.C. in September in connection with the Ken Hechler bill. We would like to be informed as to the details and whether a group such as ours could testify orally.

When the Bull Mountain Landowners organized in February of this year, it was not our intention to unqualifiedly oppose all strip mining on a national level. We feel that we are being irrevocably forced into taking such a position because of the lack of assurance that either the mining companies or the various levels of government involved have any intentions of controlling strip mining or enforcing reclamation.

The first reclamation plan to be submitted under Montana's 1971 Reclamation Law is in our area and called the Steffan's Test Pit. The law has been heralded as the Best in the West and the public is led to believe there is no need to worry about reclamation now that we have this great law. We asked for and were granted a public hearing on this first plan to be submitted. It was held in Roundup, Montana July 17th. The State Land Commission, with a few minor changes brought about by the public ridicule of many of Consolidation Coal Co.'s proposals, approved their plan in the face of all opposition under the guise of its being a test of reclamation. This so called test does not provide for any time span and does not provide for holding up further strip mining until the results of the tests are known.

We are currently exploring the possibility of appealing to the District Court. We have copies of the various stages of the plan and all correspondence involved which we could make available to you, or would be available from State Land Commissioner Ted Schwinden's office. Also available is the transcript of the hearings which is very revealing in showing the sort of snow job a Coal Company does in advance on such a town as Roundup. The entire Consol field crew is currently helping fight a three section timber and grass fire in the Bulls (Consol has already bought out one rancher.) We failed to recognize a single local man in their crews. Subsequent to the Roundup hearings, Consol moved their offices and personnel to Billings.

The list of indignities heaped upon the ranchers and landowners is a long one, the chief one being perhaps the extreme credibility gap. This can be seen in their reclamation plan which is filled with high sounding gobble, but when sifted out, shows that the Montana law interprets restoration as being the seeding, but not necessarily the vegetating of soil banks with no practical enforcement and no provision for sparing any area regardless of its merits, from strip mining.

Two men from the Montana Bureau of Mines who were in charge of enforcing the Coal Companies voluntary reclamation plans before the 1971 law, said that there would have been no necessity for the state reclamation law if the Coal Companies had carried out their proposals or had any intention of doing what they said they would do. This is the crux of the situation and this is why groups

like ours are being forced to demand a complete anti-strip mining bill. Our position has been that no one has the right to destroy land until it is known what the results of that destruction will be and until it has been proved that it would be possible to reclaim that land. We have over 4,000 petitions to this effect obtained in two days during Earth Week.

Consolidation Coal was able to get into our country because the Burlington Northern owns land and minerals or the minerals on every alternate section and have leased to Consolidation Coal. (There is some question as to whether the Railroad in dealing in minerals is in violation of its charter and the laws and constitution of the State of Montana, as well as being in violation of the U.S. laws pertaining to land grants.) This gives them the opportunity to completely surround all private land and federal coal with strip mining. The Coal Companies take two approaches, that of buying the surface owner out sometimes at most generous prices, and that of surrounding and squeezing the surface owner out if like our group, he is foolish (?) enough to risk his way of life, his livelihood, the possible loss of unexpected wealth through sell outs and royalties, in order to try and save the land.

If you feel that certain land should be saved, and if government ecologists feel this way, as we are sure they do—for the BLM has a denial clause in their coal leasing procedures, this is what can be done to help us. The Bureau of Land Management by direction of the Department of the Interior, could take a position now, before any bids have been made on the federal coal in the Bull Mountains, that this coal was and would not be for lease, barring a national emergency. How could the national emergency exist now when there is still coal which can be mined by the conventional deep shaft methods? The Power Industries are trying to push the panic button of no coal-no power, while at the same time we are exporting millions of tons to Japan and are trying to arrange to sell coal to Europe through the Common Market. How far are we willing to go in exploiting our land and our resources in the name of sound economy? Are you willing to help at this grass roots level of the problem so troubling our nation?

Sincerely yours,

BOYD AND ANNE CHARTER.

GLENDIVE, MONT., August 30, 1971.

Hon. LEE METCALF,
Senator, Montana;
Hon. FRANK MOSS,
Senator, Utah.

DEAR SENATORS: The effects of mining in the Stillwater area and the hearings conducted to determine these effects on the environment are of great interest to me and many persons like myself.

I did not request to appear at the hearing in Billings nor at any held elsewhere in Montana because circumstances—including time, money, distance—precluded my attendance. A first hand experience at a hearing before a committee of the state legislature sent me home wiser and sadder with a feeling that I would have accomplished as much if I had stayed at home.

For many months aerial and other types of photos have been published in our newspapers showing what mining exploration has done to the Stillwater. It is inconceivable that anyone with a pair of eyes can honestly look at those pictures and claim that little or no damage has resulted. It doesn't matter when, or by whom: the damage is there. The important thing is to see that the damage does not continue, and that the area be protected by whatever legislation is necessary.

Judging from what I experienced in Helena, mining companies were represented en masse at the hearings you have been conducting. The crocodile tears fell thick and fast, and the companies are really sheep who've been draped in wolves' clothing. We are told how necessary all of this is to maintain our economy, employment, population, etc. Anyone who questions the wisdom of such policies of the never ending pursuit of minerals by bigger and better and more destructive machinery is, at best, hysterical, and possibly stupid or moronic, or both.

The pressures by those who have the money, the power, and the thick notebooks with a million statistics will make your decisions hard. Assurances to the contrary, there is very little evidence in Montana, Wyoming, North Dakota that land reclamation is successful, or even being carried out. I sincerely hope that another yardstick will be applied in addition to those mentioned.

Sincerely yours,

LOUIS CROSS.

STATEMENT OF DONALD W. ALLEN, REPRESENTING BEARTOOTH CHAPTER OF TROUT UNLIMITED

I am here today to represent Beartooth Chapter of Trout Unlimited. The goals of Trout Unlimited encompass the preservation of the trout fishery and Beartooth Chapter is concerned about the preservation of the trout fishery in this area.

A basic understanding of ecology and our environment indicates that degradation of our water resource has more at stake than a few trout or the recreation of a few fishermen.

Briefly stating ecological principles, we find that the environment is made up of ecosystems. An ecosystem is defined as a complex of living and non living components, each interacting with the other to function as an integrated system or unit. Ecosystems are composed of environment factors among other things. When an environmental factor such as water becomes limiting, species diversity is reduced and often the ecosystem becomes less stable and more vulnerable to damage by use. Disturbance within an ecosystem tends to reduce diversity, making the system less stable and more vulnerable to damage by further disturbance. Man is both dependent on the ecosystem and dominant over it.

The Beartooth Mountains of Montana, which includes the Stillwater Complex, are of great significance because of their being a recharge area which serves as an intake area that supplies a majority of the streamflow, approximately 63 percent of the water, flowing past Billings. The water quality of the streams flowing out of the area in general, is of excellent quality. It is worth noting that one exception to the high quality water is the streams draining the Fisher Mountain Area near Cooke City, Montana.

The area from Daisy Pass to Lulu Pass has a high concentration of sulfides, which has resulted in acid mine drainage. Although some of this acid drainage is natural, the condition has been aggravated by mining activities in the past, which have exposed greater quantities of the sulfides to leaching.

Since this mountain area produces many times the amount of water produced by the surrounding valleys and plains, it should be emphasized that this high quality water is extremely important for the dilution of the comparatively low quality water of the low lands. The water flowing from the mountains is cold, high in dissolved oxygen, and low in dissolved solids and suspended matter. This great quantity of high quality water aids in maintenance of water quality and reduces the effect of pollutants in the Yellowstone River as far as Billings and beyond.

As we have noted, the one exception to this high water quality is past mining activities in the Daisy Pass area. In addition, an excessive silt load has been noted on the Stillwater drainage in the area of the present mining activity in the Stillwater Complex. It is primarily due to the road building and other dirt moving activities in connection with mining. One needs only to view the past mining areas such as Daisy Pass to realize that the damage is close to permanent.

In the Beartooth Mountains, we have probable locatable minerals as a Resource. We also have clear pure water as a Resource. The Land Law Review Commission in their report to the President and the Congress state that "Mineral exploration and development should have a preference over some or all other uses on much of our public lands."

We of Beartooth Chapter of Trout Unlimited believe that mining activities should not be granted this preference over the Water Resource in the Beartooth Mountains, because of the fragile nature of the ecosystems involved and the importance of the water they supply to our state and country. We must realize that when the ore is mined and used, it is gone and assuredly the Water Resource will be badly damaged also. But if we protect the Water Resource, it will be with us for an eon. We think the Water Resource is more valuable to this state and country's future. There is more at stake than a few trout and the recreation of a few fishermen.

P.S. Statistics stated are from the Absaroka-Beartooth Primitive Areas Study of the U.S. Forest Service dated July, 1971.

BOZEMAN, MONT., August 19, 1971.

HON. LEE METCALF,
U.S. Senate,
Washington, D.C.

DEAR SENATOR METCALF: I regret that I was unable to attend the public hearing on mining which was conducted by the Senate Interior Subcommittee on Minerals, Materials, and Fuels in Billings on Wednesday, August 18, 1971. However, I wish to express my views to you on this matter, regardless of whether they are entered into the hearing record.

There is no doubt in most rational minds that existing mining laws, especially the notorious 1872 Act, are inadequate and untenable in light of present and anticipated economic and environmental circumstances. That extraction of minerals, fossil fuels, and other non-renewable resources from public lands should be subject to at least the same degree of public control as is, for example, the harvest of timber from National Forests, seems obvious. However, I believe the entire matter of non-renewable resource extraction must be considered as much in context with consumer demands and disposal habits and the needs of future generations as with current economic and environmental concerns.

We are told that mining in areas such as the Stillwater is inevitable simply because our society needs metals, and that without these metals our standard of living would decline drastically. I petition the Subcommittee to scrutinize this rationale. I ask that you and your colleagues determine if many of our society's "needs" are not merely "wants" created by advertising and waste. I ask further that you assess the option of recycling to meet our society's true needs. After all, the mining companies assure us that after all feasible deposits have been mined, future generations will merely turn to land fill dumps for their metals, and that the only reason we do not do likewise is because it is cheaper to mine new ore. Is this more pacifying propaganda, or are there reasons other than economic why we cannot presently meet our needs by recycling?

I ask the Subcommittee to analyze the entire non-renewable resource situation in light of present and future needs before attempting to formulate legislation to control mining and exploration. I suspect that our known reserves are adequate for only a few more generations if our present rate of growth of consumption continues. If so, it is time to concern ourselves more with finding ways to "make do" with what we have already extracted and processed than with finding ways to control future mining and exploration operations for, in reality, the net long-term effects of a carefully controlled mining operation are not significantly different from those of an uncontrolled operation. In either circumstance, the land is disturbed and the ore is irretrievably removed. It is only a matter of difference in time required for natural processes to renew the vegetative cover and cleanse the streams, but the metals and other non-renewable resources are, for all practical purposes, lost forever. Our own Virginia City, Montana, and its environs offer good evidence that this is true. The tragedy of all the "Virginia Cities" in our nation is not that they are no longer habitable or that natural processes have been unable to replenish the scarred lands and waterways for, in fact, these areas do heal. Rather, the tragedy is that these areas no longer provide any meaningful opportunities for subsistence other than the rather tenuous business of tourism.

In summary, I urge that you and your colleagues concern yourselves more with the opportunities of choice to future generations than with immediate aesthetic, environmental, and economic criteria in attempting to propose new mining legislation. If you do, I am confident that present difficulties will be automatically alleviated, albeit with some discomfort to certain segments of our society, but without lasting harm. It is my sincere desire that mining in the Stillwater Complex will not be permitted—not only to protect the intrinsic values of the area, but more as a test of our will and ability to provide a margin for the future.

With sincere kind personal regards, I remain,

Respectfully yours,

MICHAEL J. GONSIOR.

SOME EFFECTS OF AN OPEN MINE ON THE ENVIRONMENT OF THE EAST
BOULDER PLATEAU

BY DEE JAY NELSON, LECTURE STAFF OF THE NATIONAL AUDUBON SOCIETY, NEW YORK, N.Y., WILDLIFE VETERINARIAN FOR THE BILLINGS, MONT. HUMANE SOCIETY

It is acknowledged that additional sources of vital metals are needed but I take vehement exception to the restructive means often employed in the mining of these minerals.

It has been observed by Rollin Salisbury,* and other eminent physiographers, that strip and open pit mining in areas of virgin vegetation have a direct adverse effect upon neighbouring plant life which, in turn, effects the moisture-holding properties of the soil and contingently those animal species which depend upon certain plants for food and cover. The area effected is usually many times greater than the actual area of the mine itself. The cause for this damaging influence is better understood when one considers the norm. It is the physiological nature of green plants to absorb and hold solar energy for the purpose of converting soil components into food. When rock and soil have been robbed of their insulating layers of plant cover, as is done in strip and pit mining, solar energy is reflected from the bare surfaces back into the air and dispersed by convection over large areas of land. Mean temperatures in the environs of open mining are increased by a few degrees. This is termed the mirror effect.

In most regions the overall problem of the mirror effect is small but the Boulder Plateau supports a fragile biological community which will almost certainly be drastically damaged by large scale mining activities. The reason for this delicate situation is explained by the high elevation of the mining site, 8,000 to 9,000 feet. At this elevation the mirror effect is greatly magnified by the closeness of overlying reflective layers in the atmosphere. Rising heat, reinforced by descending solar ray heat, is trapped between earth and an upper atmospheric blanket. It must consequently disperse in a horizontal plane . . . much more rapidly and extensively than at lower elevations. Drastic mean temperature changes can be expected over a much wider area of land.

The temperature tolerances are most critical in high mountain plant species which normally depend upon brief intervals of summer warmth to reproduce themselves but which can not survive even slightly prolonged periods of increased temperature and the associated drop in atmospheric moisture. These plants live in zones of elevation where proper temperatures and moisture prevail. Often the life zone is sharply defined and can be seen contouring the mountains within specific margins of elevation. This narrow band represents the only area in which many specific plant species can survive. The Zone below and that above are hostile. Each mountain plant species has its life zone and the vertical breadth of that zone graphically testifies to the extent to the plant's adaptability. I have seen dozens of plants in the Boulder Plateau area with vertical zones so narrow that a matter of a few yards represents the total limits of their world. Interference in the hospitality of these zones by raising the mean temperature by even so much as a few degrees, and the tangential effects thereof, can effectively eliminate a plant species and its environmental dependents. This is almost invariably a chain reaction.

To illustrate that this is not an exaggerated premise I should like to remind you of the signs one often sees along highways in forested high elevation areas. These signs entreat motorists not to pick certain flowers because of their rarity and the possibility of their extinction if molested. Open mining on the Boulder Plateau would be a flower-picking operation on a wholesale basis. The critics will say, "Of what importance are a few silly flowers?" Their importance is perhaps small, a thing I will not entirely admit, however their loss is but a symptom of a much bigger environmental disease, the consequences of which can only be measured in the hindsight of future history. Our long range perspective of similar mining operations shows that the scarred surface of the earth does not quickly heal and that irreparable damage to nature has been done. A species sacrificed here and another there, in the name of industrial progress, may have seemed a small price to pay but little losses in nature compounded one upon another have spelled the doom of vast areas of our wildlife heritage.

**Physiography* by Rollin Salisbury.

BILLINGS, MONT., August 16, 1971.

Senator LEE METCALF,
Billings, Mont.

To Whom It May Concern:

I had hoped to be able to appear in person, but Government business necessitates my leaving the State. Therefore, I would appreciate these observations being entered into the record. I will try to be brief and to the point.

1. Discussion with the personnel of the U.S. Geological Service have disclosed that in the area of locatable minerals, the Federal Government has virtually no controls as far as restoration and repair of the land. I was shocked and dismayed that this significant fact was not brought to the attention of the general public. This, of course, means we must depend upon the good will of the mining companies for such restoration and, as much of the landscape of Montana already shows, this is not an adequate safeguard of the public interest.

In this regard, I would strongly urge the locatable minerals be subject to the same, or similar controls as those applying to oil and coal.

2. Further discussion demonstrated that due to the vast territory to be covered by the one local inspector, many locations are as much as three years behind with regard to inspection for restoration purposes. I am sure you will agree this is not fair to either the developer or the public interest.

I would recommend a statutory limitation on time between job completion and inspection for compliance with controls.

3. Another area in which we of the Government Agencies appear to be remiss is in the Inter-Agency cooperation on environmental problems. For example, the U.S. Forest Service has done an outstanding job of inventorying the areas under consideration here, and has come up with some excellent recommendations that seem equitable for all concerned. However, as they point out in their study, the Geological Service and Bureau of Mines have not completed their study and time is running out.

I recommend strong pressure be exerted on all existing Agencies having supervisory capacities with regard to the public lands, to immediately institute a concerted cooperative inventory of the resources in their domain with the objectives of insuring that public interest is always given preference over private development. In particular, I would like to see Montana established as a pilot project, leading to a *complete* resource inventory produced by all the Government Agencies in concert and under a rigid deadline. The public has every right to know what its land is capable of producing and how it can best be intelligently utilized.

4. A final point in regard to sub-surface minerals. The laws promulgated during the late 1800's are no longer providing protection to all parties on an adequate basis. That one party can own the mineral rights and force the owner of the surface rights to yield to the development of his interests is absurd. The ugly scars left by the gold mining interests in Western Montana and by the coal interests in Eastern Montana and the literally millions of small "development" holes all over the State are enough to make a thinking person sick.

Some control must be developed before Montana becomes another Appalachia.

The efforts of your Sub-Committee in behalf of the public interest are in keeping with the highest principles of responsive and responsible Government.

Thank you.

Respectfully yours,

HAROLD N. HAGEN.

COLUMBUS, MONT.

August 2, 1971.

Senator METCALF,
Federal Building, Billings, Mont.

DEAR SIR: During World War II, I worked at the Benbow and Monat Mines on the Stillwater River south of Nye. Prospecting has been going on near there recently. The country needs this metal. The counties involved can use the money it will receive from taxes, and the working people could use the jobs that will be developed there. It does mess up the scenery. The mountain soil is shallow, washes easy and takes considerable time to get grass growing again. The good points out-weigh the bad. It can be mined with certain rules to keep erosion at a minimum, build roads under Forest Service supervision, etc. The mining companies should be treated decent and given a chance to do as fair regulations require them to do.

I am a farmer interested in seeing that our resources be developed in such a way that our need for metal, timber, etc. is taken care of and our citizens have employment, and our local government have an opportunity to collect taxes from these companies. These so-called Ecologists should not be allowed to stop this progress.

Yours truly,

LEWIS E. EWAN.

NYE, MONT., August 15, 1971.

HON. SENATOR METCALF,
Federal Building,
Billings, Mont.

DEAR SENATOR METCALF: I wish to take the opportunity to acquaint you with my objections to mining in the Stillwater area.

Our present mining laws practically give our minerals, and on patented mining claims, the surface of our mountains to a few for their personal gain. Once mining companies have a patented claim it is the same as out of the jurisdiction of the agency into whose care this land was entrusted.

Mining would definitely be a severe blow to this area. It is one of the few areas that can still boast of the clean water, air and the beautiful scenery any mined areas lose.

There is no road into this area that could support a mining operation and as the area is served by a county-road it would be great burden on the taxpayers. A mining company wouldn't pay taxes enough to build and maintain a road saying nothing of all the other local government expenses the already overburdened taxpayer would be taxed for.

This area at present is a prime recreation area. With polluted water and silt spilling into the streams the fishing would be gone. With mining activity the game leaves. With the mountains torn up by roads, gouges and pits our scenery would be destroyed.

I just can't understand why our lawmakers and our government agencies have been so lax and let a few destroy so much. Our mining laws need a complete revamping with emphasis on our environment.

With our usable land area shrinking and our population gaining can our government stand idly by and allow any more permanent destruction? I hope not!

Sincerely,

WALT KEOGH.

HOPPER'S,

Billings, Mont., August 16, 1971.

SENATOR METCALF,
Billings Field Office, Federal Building,
Billings, Mont.

DEAR SIR: I am writing you in regards to the hearing to be held by the Senate Sub-Committee on Minerals, Materials and Fuels in Billings on Wednesday, August 18th.

In my opinion, the question is not one of allowing mining or stopping mining but rather one of government insisting that it be done in a manner that does not destroy the ecological values of any given area. Especially is this true in the Beartooth area. Like thousands of other people, this area has afforded my family and myself with recreational opportunities by the score, and it is not only necessary to tourism, but is of great benefit to the residents of eastern Montana. I know from my own experience that more people from the Billings area use these Beartooth outdoor recreation facilities than any other recreational opportunity available to them.

To allow this area to be devastated, and the streams adjacent thereto polluted, is not economically sound or ecologically desirable.

I believe that government should see that other uses are protected, as minerals are extracted, not only for the benefit of this generation but for those yet unborn. Indiscriminate bulldozing, open pit mining and irresponsible locations of settling ponds and slag fills can no longer be tolerated by the people. It is apparent that only government can prevent further desecration of the ecology by mining practices, that might be cheaper for extraction purposes, but at a much greater cost of irreparable damage to other uses of the general public.

Sincerely yours,

JOSEPH R. HOPPER.

THE BEARTOOTH ECOLOGICAL COUNCIL, INC.,
Nye, Mont., August 13, 1971.

Senator METCALF,
Billings, Mont.

DEAR SIR: News Media—Stillwater Complex will be mined

Will this area be another Butte

Help us keep our beautiful mountains and valleys for ranching, recreation, and those who wish to retire in a quite and peaceful surrounding.

We urge stricter Federal mining laws be passed.

Our greatest concern is the pollution of our rivers and streams in the area through damage to the underground water should any foreign materials seep into the ground. Think of the people who would be effected.

We urged that various tests be made to determine whether the terrain is such that this could happen.

Geologist, who have studied the area, say it is possible.

Sincerely yours,

AGNES DALLAS.

(This letter was signed by many interested citizens.)

ANACONDA, MONT., August 7, 1971.

Bureau of Land Management,
atten: CARL LIND,
Federal Building, Billings, Mont.

DEAR MR. LIND: I am writing concerning your Aug. 18 hearing on the effects of mining on the environment.

Those of us who have appreciation for the historical and aesthetic value of our unspoiled public lands (I am sure you are included in our number) would not do ourselves credit to turn stewardship of these lands over to those whose main motive is short term economic gain.

I am completely in support of any effort to include reclamation as a part of the cost of mining operations. If complete reclamation is not possible the careful zoning of mining operations to certain areas should be enforced.

Sincerely,

RALPH E. DUFRESNE.

STATEMENT OF RUSSELL H. W. CHADWICK ON BEHALF OF NORTHWEST MINING
ASSOCIATION

I am Russell Chadwick, consulting exploration geologist, of Spokane, Washington, and president of the Northwest Mining Association. Our seventy-six year old association consists of some 500 individuals and firms in Montana and the other northwestern states who are active in the mineral industry in this area. I graduated in geology from the Montana School of Mines thirty years ago and have had many years of experience in exploration geology in Montana.

Our association believes it is axiomatic that the public's land should be managed so that the maximum net public benefit will be realized from it. We also know that in our democratic system the finding and making available of the subsurface resources of those lands has always been the responsibility of those private individuals and groups willing and able to do the work. Very wisely, we think, our government has historically avoided any appearance of attempting to control the supplies of those metals and minerals which are at the base of all economic activity. We also consider it to be axiomatic that to the extent that the United States does not have adequate low-cost domestic sources of the mineral raw material component for its manufactures and energy supplies, the viability of its economic system decreases just as it does when the cost of the labor component or the capital component or the tax burden exceeds that of our country's competitors.

It has been very clear to us for many years that the problem of judging what constitutes the maximum net public benefit from the public's land is yearly becoming more complex with the increased call on the renewable surface resources and the desire of the affluent urban segment of the public for more recreational facilities. We believe very strongly that in the near future we must devise new

mechanisms which will be capable of making these complex judgments—new public land research, policy, and planning boards, with broadly-based representation of the many, varied, interested publics, and of the land management agencies. We believe that the current method for land-use decision through weighing the pressures from the adversary activities of propagandists and pressure groups is more akin to anarchy than to a rational management system.

Any responsible body attempting to judge the maximum net public benefit which is inherent in a particular block of land will inexorably have to take into account the subsurface values. It will also inevitably realize that the subsurface has several unique characteristics, that is:

1. It is not amenable to inventory and evaluation as is the visible surface.
2. Except in those few local areas where detailed physical work has thoroughly tested the entire available section of the crust, recently, any attempt to judge its hidden values is at best a reasoned guess.
3. It cannot be judged to have been adequately evaluated until its prospects for containing each of the three hundred mineral commodities currently in use have been considered.
4. The crust of the earth is a very complex storehouse of very varied elements, minerals, rocks, and fluids, of which the 300 now in use are a fraction. A few years ago there was no demand for the nickel, chromium, or molybdenum which are being actively sought in this area. We feel that it is a risky and unscientific procedure to attempt to evaluate the subsurface for all time, not only because of the obvious futility of predicting a) future demands, but also b) future economics as better-grade or more convenient sources are used up, c) future extractive or process technology, or d) future improvement in geological, geochemical, or geophysical exploration methods.

It is because of these and other unique features regarding the subsurface, and because of the continuing demands on our industry for more and varied mineral supplies that we are concerned with the matters of access to and continuing exploration of the public land.

From the standpoint of a professional in exploration geology, there are many varieties of, and stages in, exploration. In doing geologic, geochemical, or geophysical reconnaissance or mapping, or surveying on foot, or by helicopter, or by all-terrain vehicle, the explorationist is "a visitor who does not remain". It is only after he has established that "there is something there" which deserves more detailed study to determine "how much" and "how valuable", that he will contemplate any disturbance of the surface. At that point his need is for hard evidence of the length, width and depth of the body or rock which he conceives to be prospective and for continuous, valid samples of the grade. His procedure then is to use one of a series of tests of the remaining most critical feature of his concept until he has either disproven the area and his concept entirely or has clearly demonstrated an orebody. Here, then, is the crux of the matter. Of that segment of the public that takes any real interest in the public lands, there are those who view any surface disturbance by mining, no matter how trivial, as an ecological disaster; most of the others consider any activity involving public lands a matter which should be regulated to some degree. The question for the majority becomes—*what degree* of regulation will provide the maximum net public benefit for *all* of those who own the land including the silent absentees? In turn, from our standpoint, the question is: At what point does the regulation of the location and type and amount of surface work done become an improper interference with the obtaining of valid evidence adequate for evaluating the subsurface values in public land?

Most reasonable people agree that when a valuable orebody is discovered, and is being developed or mined, to the degree which is feasible under local conditions, the operations should be conducted so as to prevent adverse effects on the environment and to maximize reclamation. Volunteers from our association spent hundreds of man-days this winter working for Montana's Surface-Mined Land Reclamation Act. We also spent much time reviewing and commenting on both the Chief Forester's Proposed Rules and Regulations Governing Mining on the National Forests, and the Regional Forester's Proposed Guidelines for Region 1. In all these matters the same question regarding disturbances during the exploration period recurs. It constitutes a dilemma, in the absence of an impartial local board capable of decision on each case on the merits. The explorationist should not have cart blanche to do whatever he pleases unless he has more to go on than some geologic trivia, but by the same token he should not be frustrated on a valid prospect because of some ecological minutiae.

It would seem that until there is an adequate system under the law for impartially deciding controversies, the only rational course is for the citizen in a spirit of cooperation, to inform the administration of what he intends to do, to discuss with the administration *on the ground* any controversial matters, and to work out a mutually acceptable plan of work. We believe that it would be just as short-sighted and irresponsible of anyone in the mining industry to insist on absolute *laissez-faire* rights under the Mining Law as it would be for the government to seek complete authoritarian control over the mineral industry.

In summary, we urge that the committee consider means by which, as to the Public Lands, the functions of a) Research, Planning, and Policy Decision, and b) Judgment of Disputes and Controversies, are separated from the Administrative function, and are carried out by broadly-based, impartial groups of experienced people.

AUGUST 18, 1971.

Senator FRANK MOSS,
Chairman, Senate Interior Committee.

GENTLEMEN: We in Dist. 3 of the Montana Wildlife Federation feel our present mining laws are far outdated. Our present location requirements are not responsive to an awakened public who has strong feelings about aesthetics and the related problems of virtually uncontrolled disruption of natural surface areas. We are operating with laws designed for the pick and shovel prospector. Today's prospector more than likely uses a large bulldozer. There is little similarity in the two methods.

We do not feel we have the expertise to intelligently discuss words and phrases of this very complicated problem at this time. We do feel strongly that the discovery pit and subsequent assessment work must be abandoned in favor of some sort of mineral lease arrangement. Our public land managing agencies must have the authority and guidelines to control the roads and trails that are being built with little regard for the land and future Americans.

We will strongly support mining laws that show a feeling for our land and all its people.

Respectfully,

JOHN S. GILPATRICK,
Pres., District 3, Montana Wildlife Federation

[From Lewistown Daily News, Dec. 21, 1969]

JUDITH MTS. RAVAGED—OUTMODED LAWS BLAMED

(By Louise Fleege)

The precious mineral-laden West Fork of Armells in the Judith Mountains lies ravished and raped, the victim of man's greed and outmoded laws.

Eventually the rain and melting snows will gut out her inards, spewing them down the mountainside into the valley below. Already, beaver dams have been upheaved, fish have relinquished their clean ponds to the gravel pit, and the slow, ambling creek has become a rock-lined torrent which this past year ripped out the road.

The pock-marked facade of Lewistown's once-beautiful Judiths now lies gouged with discovery holes which serve no value, and scarred with paths of fallen timber which provided the closest exit for a bulldozer.

Many of the holes and trails are justifiable; however, many more are a result of uncaring mining concerns, eager to stake a claim and produce enough disturbance to warrant ownership of that claim.

Attention to the situation was brought by John Gilpatrick of Hilger, president of district three of the Montana Wildlife Federation. Gilpatrick stated that he did not attend the recent State Fish and Game Commission meeting in Helena as a member of the Lewiston Rod and Gun Club, as stated by a state news report, but as president of the district three Wildlife Federation. He also stated that he was not attacking the Anaconda Company for their actions in the mountain area, but that his primary object was to promote legislation needed to change the requirements for mining claims.

"We have to let people know what is going on up here," said Gilpatrick. "Many of these holes and paths are justifiable. I am not attacking the mining com-

panies as much as the laws that require what they do to stake these claims. The laws are outmoded. These companies have to use modern, up-to-date equipment with out-of-date laws. Many of them have no respect for the land and don't bother to clean it up. Some of us (ranchers) have to go in and try to reclaim the ground in order to preserve our streams and farmland."

"People have a right to know about this," Gilpatrick continued. "I feel the mining companies would like to see some change in the laws, too."

"I was brought up to live and enjoy this country. We have something good here, and we should keep it for the generations of the future."

"If the laws could be changed, in order to give the companies a chance to make their claims without ruining the countryside, it would be a service to all."

Gilpatrick was speaking of the more modern practice of diamond drilling for mineral deposits, rather than gouging huge holes and gullies with bulldozers.

One such gully, whose scar shows for miles through the tall lodgepole pines, is approximately 400 feet long. From here the gravel has washed in mounds down the mountainside and worked its way into the valley below, bringing destruction in its path.

The present laws governing mining concerns and parties were established in 1892. In order to preserve their claim at least \$100 worth of improvements per year must be performed on the area. Herein lies the problem—to keep the claim active without destroying trees around the discovery holes, to preserve the aesthetic quality of the land, to prevent erosion and wildlife disturbance.

"The practice of this degrading mutilation of Central Montana's natural beauty is a fact which will soon involve us all," said Gilpatrick. "We are not anti-development. If it can be of economic benefit it is justified. But, we hate to see them turn up the country only in an effort to provide the amount of work to keep their claims."

The West Fork of the Armells is country rich in history and beauty. Carpeted with thick, beautiful pine, prospectors' cabins set into the hillside, homesteads, and rich, green valleys, it stands on the verge of becoming a ravaged product of man's unconcern.

Mr. GAYLORD EASTON,
Laurel, Mont.

BILLINGS, MONT., August 12, 1971.

DEAR MR. EASTON: My husband and I have recently been spending some time on the Stillwater River and are concerned that mining will destroy the area. We feel that mining laws definitely need to be revised to protect the people and land. If the Stillwater's water is ruined it will affect a great amount of land and many people, including those of us in Billings, so we are concerned.

Sincerely,

MRS. DON MEIDINGER.

Senator FRANK E. MOSS,
Chairman, Senate Interior Subcommittee of Minerals, Materials and Fuels,
Washington, D.C.

LAUREL, MONT., August 16, 1971.

DEAR SENATOR MOSS: Three hundred eleven members of The Laurel Rod and Gun Club Inc., at their August meeting voted unanimously against any further development or exploration in the area affecting drainage to the Stillwater, Boulder, Clarks Fork Rivers and Rock Creek. In the event they are continued, it should be only after an acceptable program properly funded to protect the environment and reclamation of the land is presented.

If this program be protested as too costly, it is our contention it is not worthy of development. Be it private or public land.

Yours Truly,

J. E. FREEBURY, Secretary.

Senator FRANK E. MOSS,
Chairman, Senate Interior Subcommittee,
Washington, D.C.

LAUREL, MONT., August 12, 1971.

DEAR SIR: To assist in your efforts for revised mining laws in Montana, we extend our full support.

We must protect our water from damage by mining development. It is a question of life or death for our valley—not today but for all the tomorrows to come. The public must be made aware *now* as to the antiquated mining laws and the danger to future generations if this development is allowed to continue under present mining laws.

We must ask ourselves one question—what is more valuable than life itself—without clean, clear water, little life can exist.

Man's ingenuity has always found a way to solve a problem, and with proper mining laws we should still be able to have some mining without endangering our rivers, lakes, and streams. No half way laws or measures than can be twisted to suit the mining yoguls, but laws to benefit us all is what we must have.

I can't imagine any mineral worth more than clear water—diamond or otherwise.

Sincerely,

Mr. and Mrs. FRANK DIETRICH.

BILLINGS, MONT., August 12, 1971.

DEAR MR. EASTON: Please do all you can to revise the mining laws so as to protect our rivers and streams from pollution that will destroy our natural wild life and lovely "Big Sky" state of Montana.

CHARLENE S. HERMAN.

LAUREL, MONT., August 12, 1971.

DEAR MR. EASTON: I am interested in seeing the mining laws are such that they will help keep and ecological balance with nature.

I would like to keep our rivers and lakes clean and our lands replenished after it has been mined.

You spoke at a meeting I attended and I am confident you will handle the situation in the necessary manner.

I hope thousands of others have answered your call and that something can be done to keep Montana Green and Clean.

HERB WOOD,
Concerned Citizen.

LAUREL, MONT., August 12, 1971.

DEAR MR. EASTON: The Stillwater River is one of our blue ribbon fishing and other recreation activities.

I for one do not want it to be ruined, for it will be if that mining operation is allowed to proceed under the present mining laws.

I sincerely hope that everything will be done to control this.

Sincerely,

CHARLES M. WOOD, Sr.

LAUREL, MONT., August 12, 1971.

DEAR MR. EASTON: Please do all you can by changing the mining laws to protect our land and rights and needs of people; so that our rivers and streams are not polluted, drained, or diverted and our lovely state of Montana won't have enough water for our needs and recreation.

Sincerely,

SYLVIA WOOD.

LAUREL, MONT., August 12, 1971.

TO WHOM IT MAY CONCERN: I am very much interested and concerned about the mining activity in the Stillwater complex. The mining laws should be revised to keep our trees from being destroyed and our waters from being polluted.

EDNA SHERROW.

AUGUST 11, 1971.

DEAR MR. EASTON: I'm writing this letter in reply to an editorial in the Laurel Outlook about the Stillwater mining Complex. I don't know anything specific about this project and I don't know anything specific about mining laws. How-

ever, last quarter at University of Montana, I took a course in Montana history from K. Ross Toole, a well known Montana historian, and got my eyes opened a little about the extent to which Montana has been exploited.

First of all let me say that I am strongly in favor of new mining laws to protect the people and the land.

Secondly, if this project is going to go on I think that the Montana public should be informed of some of the following information:

1. Who owns the greatest share of this project, who gets the money, and where they live.
2. What, if any, good will this do for Montanans?
3. What harms this will do for Montanans.
4. The wight, economically of the good points against the bad.
5. Alternatives to this project.
6. How we can stop such a project if it will do harm to the State.

I will be glad to help solicit information about this project and its effect on Montana if help is needed.

Sincerely yours,

MERRILEE HALL.

