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BY THE COMPTROLLER GENERAL

Report To The Congress

OF THE UNITED STATES

A Shortfall in Leasing Coal From Federal Lands: What Effect On National Energy Goals?

In January 1981--after a 10-year moratorium--the Department of the Interior plans to resume competitive coal leasing. But flaws in the new program, unless corrected early, may greatly reduce the amount of coal available from Federal lands.

Interior's plans for the first sale include only about one-third as much coal as needed. Faulty assumptions in setting the leasing target risk a Government-caused production shortfall by the late 1980s.

Interior's failure to obtain expressions of leasing interest from industry during land use planning unnecessarily restricts coal development and may force it to less economically and environmentally suitable locations.

More coal data is needed to identify and evaluate tracts and industry needs to be encouraged to do more exploration.

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COMPTROLLER GENERAL OF THE UNITED STATES
WASHINGTON, D.C. 20548

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To the President of the Senate and the
Speaker of the House of Representatives

This report brings to the attention of the Congress and the administration problems in implementing the Department of the Interior's new Federal coal leasing program and the possibility of a Government-caused coal production shortfall by the late 1980s. Its basic purpose is to provide feedback on the workability of the program at an early stage so that corrective measures can be taken.

Copies of this report are being sent to the Director, Office of Management and Budget; the Secretary of the Interior; the Secretary of Energy; and the Secretary of Agriculture.

Elmer B. Staats
Comptroller General
of the United States

COMPTROLLER GENERAL'S
REPORT TO THE CONGRESS

A SHORTFALL IN LEASING COAL FROM FEDERAL LANDS: WHAT EFFECT ON NATIONAL ENERGY GOALS?

D I G E S T

Serious problems are indicated in the Department of the Interior's first attempt to implement its new Federal coal leasing program through the January 1981 lease sale in the Green River-Hams Fork region of Colorado and Wyoming. The problems involve

--not leasing enough coal,

--not selecting the best coal areas for lease, and

--not having needed coal data.

Unless these problems are corrected early, Federal lands may not contribute significantly (as they could) to meeting the Nation's need for more coal in the years ahead.

Resumption by Interior of the coal leasing program--after almost 10 years of inactivity--comes at a crucial time. Coal--which this Nation has in abundance--is expected to be relied on increasingly throughout the remainder of this century as the one major energy supply source which can help bridge the gap between our overdependence on imported oil and gas and our ultimate reliance on inexhaustible resources. And because much of the Nation's most accessible and economically mineable coal lies on Federal or interspersed non-Federal lands in the West, Federal leasing policies hold an important key to whether this gap can and will be filled.

EMD-80-87

INADEQUATE LEASING TARGETS COULD LEAD TO SHORTFALLS IN COAL PRODUCTION

Interior establishes coal leasing targets by considering the difference between its mine production estimates and the Energy Department's demand estimates to determine the amount of coal production that must be generated from new Federal leasing. Factors such as mine life, Federal/non-Federal coal ownership ratio, coal recovery ratio, and level of uncertainty are all taken into consideration.

GAO found, however, that certain assumptions being used by Interior in deriving its leasing targets are questionable and/or invalid. As a result--for the 1981 Green River-Hams Fork sale--at least three times more coal needs to be leased than is presently called for in the leasing target.

Limited tract delineation activity in Green River-Hams Fork will preclude Interior from making available at this late date sufficient amounts of additional coal to make up for the 1981 leasing shortfall. Thus, immediate action--including a possible 1982 follow-on lease sale--is necessary to assure that enough coal is made available to meet the region's projected coal demand.

In addition to shortfalls in the coming Green River-Hams Fork sale, if Interior does not revise its assumptions and improve the target-setting process, there is increased risk of not leasing sufficient coal in other future sales to satisfy national energy needs. (See p. 18.)

LATE EXPRESSIONS OF INDUSTRY INTEREST AFFECT THE LEASING PROCESS

Exclusion of formal expressions of leasing interest during land use planning may unnecessarily restrict coal development and force it to less economically and possibly even less environmentally suitable locations. (See p. 34.)

For the first lease sale, Interior selected two tract areas containing an estimated 180 million tons of coal for the land use planning effort. Those tracts, however, contain lower quality coal than the average for the region and their selections ignored two tract areas containing an estimated 800 million tons of higher quality coal. The selection of low-quality coal areas not only could result in leasing less economically suitable coal but, because of threshold development levels, also could limit the amount of higher quality coal that could be leased in the future. (See p. 35.)

Industry is currently interested in mining some areas--including areas for synfuel development--that may not be considered for leasing until 1987 or later. Industry interest is given a low priority in deciding what potential coal mining areas should be evaluated for leasing. The request for and use of industry input would give better focus on where land use planning should be done. (See p. 37.)

INSUFFICIENT DATA
LIMITS COAL LEASING

The Geological Survey does not have sufficient information to identify and evaluate tracts to meet the Bureau of Land Management's planning schedules. (See p. 41.)

In the past the Survey has not been able to assess the need for drilling and other exploration work to support leasing actions. Now that a leasing program is in effect, it can better identify these needs and effectively plan for this work by developing long-range exploration plans, obtaining public input on target exploration areas, and assigning permanent team leaders for tract delineation. (See p. 42.)

The condensed time frame allowed the Survey by the Forest Service and the Bureau of Land Management for coal data acquisition may severely restrict the number of tracts that could be delineated and considered for leasing between 1981 and 1985. Failure to allow adequate time for drilling to fill data gaps may also limit competition. For example, a tract for the 1981 proposed lease sale with a potential mining unit size of over 3,400 acres was restricted to about 400 acres because of lack of data. (See p. 45.)

In addition, lease tract evaluation procedures need to be improved. Criteria for computing reserve estimates are not consistently applied and procedures for evaluating reserves do not assure the consideration of all known conditions. Furthermore, review of reserve estimating procedures has been informal and weak, resulting in understatements of coal reserves on some tracts because some mineable coal is not considered and overstatements on other tracts because coal is projected to exist where it probably does not. (See p. 51.)

A substantial portion of pre-lease drilling is done by the Survey, even though the private sector could do more if encouraged. In evaluating the reserves on a potential exchange tract, the Survey was directed to do the drilling--at a cost of $1.5 million--even though a utility offered to do it at its expense and make all the data public. (See p. 55.)

At present--because Interior has not decided on which tracts will be set aside for special leasing opportunities (e.g., for public bodies)--coal companies have no assurance when obtaining exploration licenses that they will actually be able to bid on any such explored areas eventually put up for lease. A decision by Interior, one way or the other, at the time licenses are granted would give industry added incentive to invest in exploration activity. (See p. 56.)

Coal exploration efforts by the Survey on certain Forest Service lands have been frustrated because of a lack of guidance as to which agency establishes estimating standards. (See p. 47.)

RECOMMENDATIONS

Recommendations to the Secretaries of Energy and the Interior

Limited tract delineation efforts in Green River-Hams Fork will preclude Interior from making available at this late date sufficient quantities of additional coal to make up for the 1981 leasing shortfall. Therefore, the Secretary of the Interior should initiate immediate plans for a follow-on sale--possibly in 1982--to meet the region's projected coal demand. In re-calculating the regional leasing target, he should:

--Exclude production from the Cherokee mine.

--Allow for a more realistic lead time for leases to reach full production.

--Require estimates for coal recovery, mine life, and Federal coal ownership based on the most recent, site-specific analysis.

--Include a margin of error for the Geological Survey's coal reserve estimates.

Even more basically, however, Interior needs to improve its target-setting process related to other future lease sales. Because of its criticality, GAO recommends that the Departments of Energy and the Interior jointly review the assumptions used in establishing leasing targets, including the factors indicated above, to assure that sufficient coal will be leased to satisfy national energy goals, as well as to promote healthy competition. The review should be documented with a written report submitted to the respective Secretaries.

To insure that areas of high-quality coal are not ignored in future lease sales, the Secretary of the Interior should:

--Add a requirement that the Bureau of Land Management formally and periodically request, through the Federal Register, expressions of interest in possible lease tracts for all land use planning areas that contain Federal coal.

--Insure that land use planning for coal is not limited to so-called Known Recoverable Coal Resource Areas when development interest is indicated by industry and coal data is available elsewhere.

--Decide on whether, and if so how, threshold development levels will be used so that present uncertainty over how much leasing can actually occur in given areas is eliminated.

The new coal program requires substantial amounts of coal data for use in numerous analytical and decisionmaking steps. To meet this need, the Secretary of the Interior should require the Director of the Geological Survey to:

--Develop long-range plans, at the field level, for coal exploration activities in direct support of tract delineation, and obtain formal public input on potential exploration areas.

--Appoint permanent tract delineation team leaders for all coal regions where leasing is anticipated.

--Clarify procedures for making reserve estimates and establish formal procedures for quality controls in the reserve estimate computation process.

In addition, the Secretary of the Interior should require the Director of the Bureau of Land Management to coordinate with the Geological Survey before determining the time to be allotted for the Geological Survey's work in activity planning--allowing, if possible, at least one drilling season for the tract delineation process.

To promote drilling by the private sector, the Secretary of the Interior should:

--Develop explicit procedures under which land exchange applicants could drill candidate exchange tracts.

--Inform companies or others when they obtain an exploration license that they will or will not be allowed to bid on the tract if it is offered for lease.

Recommendation to the Secretary of Agriculture

The Secretary of Agriculture should require that the Chief of the Forest Service

--Direct his staff to rely on the Geological Survey's standards for coal reserve estimates to be used for land use planning--as well as for tract delineation.

--Coordinate with the Geological Survey as early as possible concerning proposed sites for drilling so that the Geological Survey can plan drilling and other exploration activities needed to prepare for any future leasing--as well as for the preparation of land use plans.

AGENCY COMMENTS

Comments from the Departments of the Interior, Energy, and Agriculture are included as Appendixes I, II, and III to this report and analyzed in chapter 7.

Interior stated, "We find ourselves in agreement in whole or in part with all your recommendations," but raised a variety of issues and questions which are dealt with in detail in chapter 7. It plans to undertake a number of studies, including a look at its assumptions for developing leasing targets and ways to encourage more industry participation in the coal program. The studies should be useful but are not reasons for delaying certain actions.

The Department of Energy provided no substantive comments. Agriculture offered two comments concerning the role of the Forest Service in coal leasing, and GAO has made appropriate changes in the report to reflect its views.

C o n t e n t s

ABBREVIATIONS

BLM	Bureau of Land Management
BTU	British Thermal Unit
CRO-CDP	Coal Resource Occurrence - Coal Development Potential
EMARS	Energy Minerals Activity Recommendation System
GAO	General Accounting Office
KRCRA	Known Recoverable Coal Resource Area

GLOSSARY

British Thermal Unit (BTU)	The standard unit for measuring quantity of heat energy. The amount of heat required to raise the temperature of one pound of water one degree Fahrenheit under stated conditions of pressure and temperature.
Coal Development Potential	A subjective determination of the comparative potential of Federal coal lands for development of a commercially viable coal mining operation under a Federal coal lease.
Coal Resource Occurrence	A compilation of maps that indicates the amount, depth, location, and structure of coal in a given area.
Demonstrated Reserve Estimate	A collective term for the sum of coal in both measured and indicated reserves.
Indicated Reserve Estimate	Coal for which estimates of rank, quality, and quantity have been computed partly from sample analyses and measurements and partly from reasonable geologic projections.
Inferred Reserve Estimate	Coal in unexplored extensions of demonstrated reserves, for which estimates of the quality and size are based on geologic evidence and projections.
In-place Reserve	That part of the identified coal resources which is of mineable depth and thickness.
Known Recoverable Coal Resource Area (KRCRA)	Formerly called Known Coal Leasing Area (KCLA). Area in which the Federal coal land is classified, by virtue of the available data being sufficient, to permit evaluation as to extent, location, and potential for developing commercial quantities of coal.

GLOSSARY

Measured Reserve Estimate	Coal for which estimates of rank, quality, and quantity have been computed, within a margin of error of less than 20 percent, from sample analyses and measurements from closely spaced and geologically well-known sample sites.
Preference Right Lease Application (PRLA)	An application for a lease which will be issued if the applicant has discovered commercial quantities of coal. The application can be made for lands under prospecting permit before enactment of the Federal Coal Leasing Amendments Act of 1976.
Recoverable Reserve	That part of the in-place reserve that can be mined using current technology and economics.

CHAPTER 1

INTRODUCTION

This report evaluates the Department of the Interior's progress in implementing the Federal Coal Management Program, which was established June 2, 1979.

The report is a follow-on to our 1979 report, "Issues Facing the Future of Federal Coal Leasing", 1/ in which we identified many issues that could impede the development of sound Federal coal management and the use of Federal and non-Federal western coal in meeting the Nation's energy needs.

The effectiveness and responsiveness of the Federal coal leasing program in meeting domestic energy production requirements is a serious and ongoing congressional concern. We have recently testified about Federal coal leasing issues before subcommittees of the Senate Committee on Energy and Natural Resources and the House Committee on Interior and Insular Affairs. This report is part of our continuing effort to keep the Congress apprised of Interior's coal leasing activities.

In the long run the Nation must develop inexhaustible sources of energy in order to sustain economic growth. This transition--from the use of scarce, exhaustible energy resources such as oil and natural gas to inexhaustible resources such as solar-based technologies--will require expanded use and production of coal, an abundant resource, as well as concerted efforts towards energy conservation.

Declining domestic oil and natural gas resources, security and availability problems associated with foreign oil and natural gas resources, uncertainties that surround nuclear power development, and the limited number of available sites for hydropower all work towards elevating the role that coal must play during the transition period. Solar technologies are in an embryonic state of development. Long lead times--into the twenty-first century--will probably be required for overcoming technological and economic barriers associated with the commercial and widespread development of inexhaustible resources.

1/"Issues Facing the Future of Federal Coal Leasing," EMD-79-47, June 25, 1979.

Furthermore, a general consensus is growing in the national and international community that greater coal production is needed to extricate the Western nations from overdependence on unstable supplies of Middle East oil. The Congress has stressed the importance of increased coal production through legislation passed in recent years, including the recently enacted synthetic fuels program. The administration's National Energy Plan also calls for increased coal production and greater reliance on coal as a national energy strategy.

Federal coal accounts for approximately 60 percent of coal reserves in the west and 30 percent of total domestic coal reserves. In addition, Interior estimates that the Government controls about 20 percent of non-Federal western coal, because many of the western coal regions are characterized by intermingled ownership patterns. Although large tonnages--about 17 billion tons--are now under lease, Interior does not know how much of this coal is efficiently mineable. Size, location, and other characteristics of coal deposits may make a substantial amount of it unmineable from an economic or environmental standpoint.

If coal demand develops rapidly, new leases will be an important element to increasing supplies and controlling energy costs. If demand grows less rapidly, mining will not not take place. Interior believes there are unacceptable costs to leasing more coal than may eventually be needed. According to Interior the costs are in terms of foregone opportunities for use of land resources other than coal, the inability of governments to plan effectively, and the creation of expectations that lead to lawsuits and other forms of resistance. Interior's concern is with overleasing "in excess of that required for national security and competitive purposes." We agree that enough coal to ensure the protection of the national security and the competitive marketplace are of fundamental and overriding importance.

The Under Secretary of the Interior recently stated that the first lease sale effort has the highest priority among Departmental programs and that "its success is essential to demonstrate our commitment to national energy security."

METHODOLOGY AND SCOPE

We undertook this review for several reasons.

--The Congress and the administration want to decrease America's dependence on foreign oil by increasing the use of domestic coal.

--Federal coal leasing will affect national energy security and the national welfare for decades to come.

--Interior is now preparing to resume coal leasing for the first time in 10 years.

--The Congress is maintaining its oversight of Interior's coal leasing efforts.

The coal program is strongly influenced by three recently enacted laws: the Federal Coal Leasing Amendments Act of 1976 (amending 30 U.S.C. 181 et seq.), the Federal Land Policy and Management Act of 1976 (43 U.S.C. 1701 et seq.), and the Surface Mining Control and Reclamation Act of 1977 (30 U.S.C. 1201, et seq.). We reviewed these and other pertinent laws and regulations governing coal leasing.

We focused our review on Interior's implementation of the Federal Coal Management Program, with particular attention to the establishment of leasing targets (how much should be leased), the selection of areas for land use planning (where to lease), and the delineation of lease tracts (how much can be leased). A General Accounting Office (GAO) geologist performed the technical review of the reserve estimates on the delineated tracts.

We selected the proposed 1981 Green River-Hams Fork lease sale for review because it is the first lease sale proposed by Interior under the Federal Coal Management Program. By reviewing this lease sale we have identified and evaluated problems relevant to Interior's leasing program and subsequent leasing efforts. Actions are recommended to improve the effectiveness of the program and future leasing efforts.

We analyzed Interior's leasing target to assess the reasonableness of Interior's determination of how much coal should be leased. We did this by evaluating production estimates for existing and planned mining operations not dependent on new leasing. We also compared the factors Interior used in calculating the target with factors independently derived by the Bureau of Land Management (BLM) and the Geological Survey in evaluating the lease tracts to be considered for leasing.

We evaluated the geographic coverage of BLM's land use planning actions for the first lease sale to assess the reasonableness of Interior's determination of where to lease. We did this by determining (1) if parts of the planning areas not evaluated for leasing contained potential lease tracts as indicated by the Survey, private industry, or other sources; (2) if the Survey or industry had done coal evaluation work in these areas; and, (3) if these areas may have environmental problems that would prevent mining from the perspective of BLM and the U.S. Fish and Wildlife Service.

We evaluated the Survey's exploration and evaluation efforts to assess the reasonableness of their determination of how much coal can be leased. We reviewed the geologic and mining engineering studies for each of the tracts and our geologist analyzed a sample of these tracts and gave his opinion on the reliability of assumptions and method of analysis used by the Survey.

To evaluate the effectiveness of the Survey's planning system, we reviewed its methods of planning exploration work and related them to the requirements of the Federal Coal Management Program. We also compared BLM plans for future lease sales with the Survey's plans for coal exploration work to evaluate the timeliness of the planned exploration work. We compared the Forest Service--specifically, the Manti-LaSal National Forest--plans to evaluate lands for coal leasing with the Survey's plans for exploration and coal data acquisition to assess the coordination and timeliness of actions between the two agencies.

We interviewed Interior, Bureau of Land Management, and Geological Survey headquarters and field officials and reviewed appropriate agency records concerning the locations and quantities of coal to be leased. We interviewed U.S. Forest Service field officials and reviewed records of the coordination between the Forest Service and Interior. We also discussed the coal leasing program with numerous representatives of the coal mining industry and environmental organizations.

We made our review at these locations: the headquarters of the Department of the Interior, the Bureau of Land Management, and the Geological Survey; three Bureau of Land Management State offices and three District offices; three Geological

Survey district offices; one Forest Service regional office and one National Forest; one U.S. Fish and Wildlife Service office; the Wyoming State Game and Fish Department; and the Colorado Department of Natural Resources. We selected these locations to provide a coverage of the Government agencies participating in the initial lease sales.

AGENCY FIELD LOCATIONS CONTACTED

Bureau of Land Management

State Office	District
Colorado - Denver	Craig
Utah - Salt Lake City	
Wyoming - Cheyenne	Casper Rawlins

Geological Survey

Conservation Division
District Offices

Casper, Wyoming

Denver, Colorado

Salt Lake City, Utah

Forest Service

Region	National Forest
Ogden, Utah	Manti-LaSal

Fish and Wildlife Service

Office of Biological Services

Denver, Colorado

CHAPTER 2

LEASING PLANS, LEGAL CONSTRAINTS, AND THE PLANNING PHASES OF THE FEDERAL COAL MANAGEMENT PROGRAM

Coal production goals and leasing targets are established through a process that requires close coordination between the Departments of Energy and the Interior. As a result of initial coal production goals, Interior has announced tentative leasing targets for 1981 and 1982 and is considering additional leasing actions in 1982, 1983, 1984, and 1987 in seven western coal regions. Before coal can be leased, however, a number of separate but interrelated steps pertaining to land use planning and lease tract evaluation activities must be accomplished.

INTERFACE BETWEEN THE DEPARTMENTS OF THE INTERIOR AND ENERGY IN ESTABLISHING COAL PRODUCTION GOALS AND LEASING TARGETS

The Department of Energy Organization Act (42 U.S.C. 7101, et seq.) requires the President to establish 5- and 10-year production objectives for coal and other energy fuels. The act also requires the President to identify the strategies for achieving production objectives, forecasting the level of production and investment necessary in each of the supply sectors, and outlining the appropriate Federal policies and actions that will maximize private production and investment consistent with applicable Federal, State, and local environmental laws, standards, and requirements.

Energy and Interior have agreed to establish production goals for Federal energy resources, based on

--production estimates provided by Interior;

--production estimates developed by Energy for lands scheduled to be leased;

--increases or decreases in these estimates resulting from modifications to pertinent regulations or statutes, anticipated advances in technology, or use of enhanced recovery methods; and

--any additional increases or decreases in production which the Secretary of Energy may propose.

The agreement requires Interior to be guided by the final production goals in establishing or revising leasing programs and lease planning schedules.

According to its July 1979 coal management regulations, Interior, in consultation with Energy, State Governors, and other concerned parties, will biennially adopt regional coal production goals established by Energy. Interior's leasing targets will then be based on Energy's goals and an analysis of estimated production from existing and planned operations that are not dependent on new Federal leasing. The difference between the goals and the planned production will be the estimate of production shortfall that will occur without new leasing. Interior will attempt to satisfy these needs by leasing to avoid the shortfall.

In the environmental impact statement for the coal program, Interior states that selection of leasing targets includes consideration of the full range of Federal land management responsibilities and applicable State statutory requirements and policies. Interior officials stated that these factors--particularly those affecting environmental protection--may conflict with regional lease sale scheduling designed to meet Energy's production goals, and that Interior should make adjustments where necessary.

As we pointed out in chapter 1, Interior should be leasing sufficient coal to meet the needs of national security and to assure competition. In a previous report 1/ we said that numerous laws

> "emphasize the multi-faceted nature of coal resource management, taking into consideration three interrelated goals--domestic energy development, environmental protection, and socio-economic security--which, at times, may be in conflict but for which a reasoned balance through appropriate trade-offs is the ultimate objective."

1/"Issues Facing the Future of Federal Coal Leasing," EMD-79-47, June 25, 1979.

In that report we recommended that Interior use regional coal production goals as well as demand estimates for non-coal resources, as a regular part of its evaluation of land use alternatives. Interior rejected the recommendation. We stressed that the application of resource demand to all resources would encourage comprehensive land use decisions that are based not only on supply, environmental, socio-economic, and other legal or policy criteria, but also on demand factors.

Our concerns are again raised in terms of the balancing process for making land management decisions and the establishment of leasing targets. If the land use planning decisions are not made by evaluating the demand for all resources, the result could be an arbitrary limitation on the ability of the area to contribute to meeting demand for a particular resource--in this case, coal.

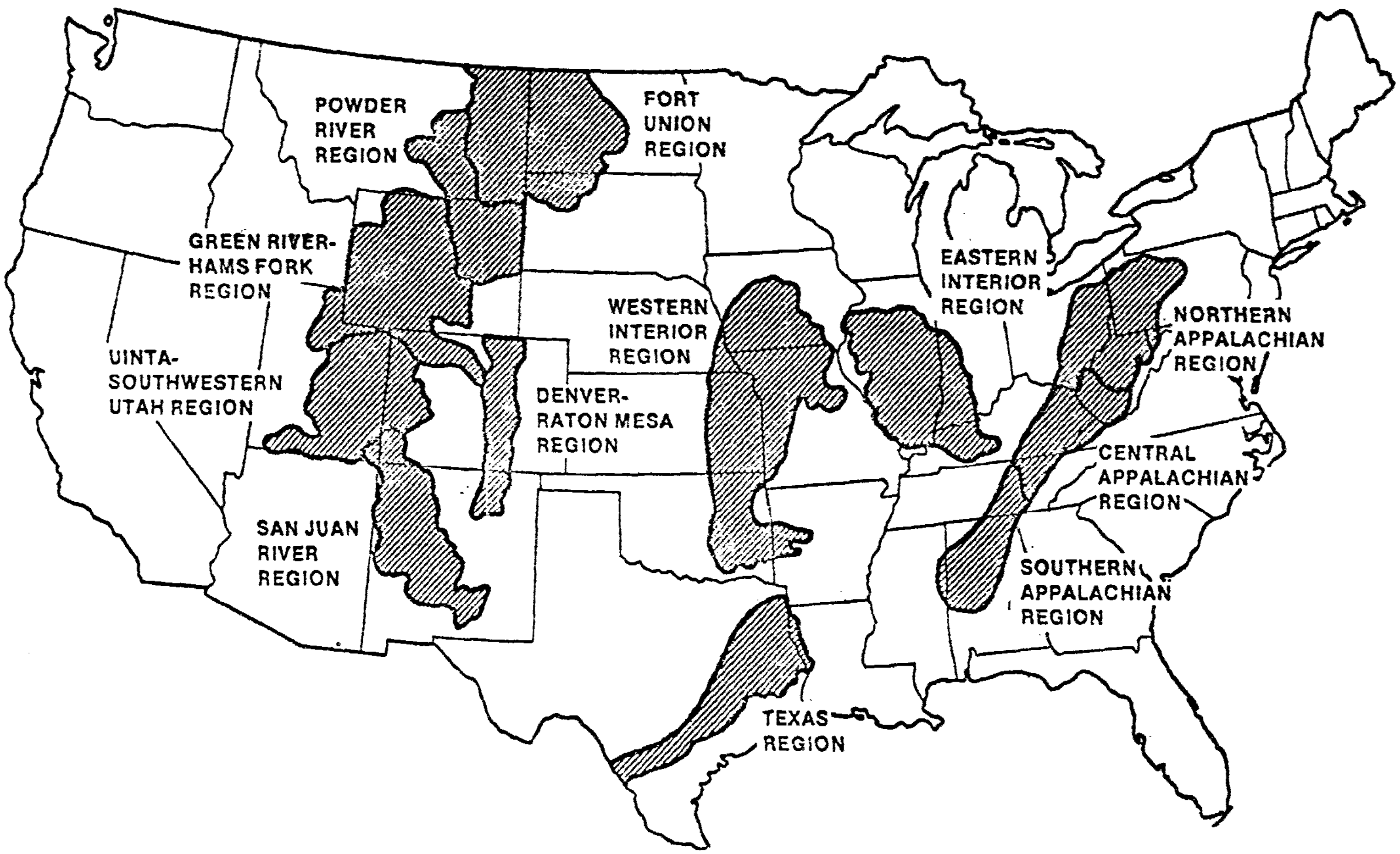
GENERAL PLANS FOR THE RESUMPTION OF LEASING

When the Secretary of the Interior adopted the Federal Coal Management Program on June 4, 1979, he set a goal of January 1981 for holding the first lease sale since the 1971 leasing moratorium. This lease sale is scheduled to occur in the Green River-Hams Fork Coal Region of Colorado and Wyoming.

When the proposed lease sale schedule was announced, Interior estimated that about 1.4 billion tons of in-place coal 1/ would be leased in 1981 and 1982 in three coal regions to meet energy production goals through 1987. This estimate has subsequently been increased to 1.6 billion tons. The regions and amounts of coal tentatively targeted for leasing are as follows:

1/See glossary.

U.S. COAL REGIONS



Coal region	Coal (million tons)
Green River-Hams Fork	a/ 520
Uinta-Southwestern Utah	b/ 322
Powder River	776
	1,618

a/The original target of 531 million tons (with no safety margin) has been adjusted to 416 million tons, plus a 25-percent safety margin of 104 million tons. Leasing targets are discussed in ch. 3.

b/The original target of 109 million tons (with no safety margin) has been adjusted to 322 million tons (with no safety margin).

These estimates will probably be updated as revised production goals are developed by Energy and new plans for existing and proposed mines are made known.

In addition to the three lease sales, BLM is anticipating seven additional lease sales in the West in 1982, 1983, 1984, and 1987. The coal regions where these lease sales might be held include the following.

1982: Western Interior.

1983: Uinta-Southwestern Utah.
Fort Union.
San Juan.

1984: Green River-Hams Fork.
Powder River.

1987: Denver-Raton.

Sixteen lease tracts delineated for the first lease sale

Portions of three BLM land use planning areas were reviewed to identify locations that would be considered for the first lease sale in Green River-Hams Fork. Of the 253,994 acres reviewed, about 57,292 acres were eliminated for the following reasons.

Reason for elimination	Acres eliminated	Percent of total acres reviewed
Unsuitability criteria	34,110	13
Multiple use trade-off	7,122	3
Surface owner consultation	16,060	6
	57,292	22

Sixteen tracts totaling 109,018 acres--55 percent of the remaining area--have been delineated for further consideration. 1/ According to BLM and the Geological Survey, 10 of these tracts could increase annual coal production in 1987 by about 23.7 million tons. However, as discussed in detail in chapter 3, there is considerable uncertainty about whether or not this production will be achieved. One of the 10 tracts is an isolated block of Federal coal between two existing mines. Consequently, this tract and the remaining six tracts--which we refer to as maintenance tracts--are not expected to increase total annual production. These tracts are adjacent to existing operations and are either needed to support those operations or not large enough to attract competitive interest by new operators. The adjacent mining operators are expected to bid successfully on the tracts, if they are offered for lease, and to incorporate them into existing operations without substantially increasing annual production. However, the maintenance tracts may extend the life of the mining operations in the long run.

LEGAL CONSTRAINTS AFFECTING INTERIOR'S COAL LEASING EFFORTS

According to Interior, the early date for the first lease sale precluded BLM from expanding its review of unsuitability criteria beyond the areas which were selected for its testing. The selection was made prior to adoption of the criteria and the Federal Coal Management Program. A court order 2/ prevented Interior from taking action to implement a leasing

1/See app. IV for a list of the tracts and coal reserve data.

2/Natural Resources Defense Council, Inc. v. Hughes, 437 F. Supp. 981 (D.D.C. 1977), modified, 454 F. Supp. 148 (1978).

program prior to the issuance of a final new programmatic environmental impact statement--which was issued April 30, 1979. Included in the court order was a prohibition, with certain exceptions, on "taking any steps whatsoever, directly or indirectly, calling for the nominations of tracts for Federal coal leasing, and issuing any coal leases" until the environmental impact statement was issued.

Legal constraints on other Interior programs also affect BLM's ability to give complete and unqualified attention to coal leasing. One such constraint was imposed by another 1978 court order 1/. This constraint is more far reaching than the previously mentioned order. It requires BLM to complete over 200 environmental impact statements on livestock grazing lands by 1988 and to establish a schedule for completing the statements.

Instead of doing separate enviornmental impact statements for coal and livestock, BLM decided it would be more efficient to do the environmental impact statements in conjunction with its land use planning efforts. However, this may delay the timing for future lease sales because an Interior official estimated that about 80 percent of BLM's planning effort was being directed to satisfy the court order. Lease sales have been further delayed because BLM estimates it will take about 4 years to complete each land use plan and environmental impact statement. Consequently, land use planning where coal leasing is concerned must be closely coordinated with the grazing work requirements.

THE PLANNING ELEMENTS OF THE FEDERAL COAL MANAGEMENT PROGRAM

The Federal Coal Management Program is based on a two-stage planning system. The first stage is land use planning by the surface management agencies such as BLM and the Forest Service. The second is activity planning by BLM, with input from the Geological Survey, State governments, and other Government agencies. Activity planning results in a lease sale schedule, approved by the Secretary of the Interior, to meet Interior's coal leasing target.

1/Natural Resources Defense Council, Inc. v. Andrus, 448 F. Supp. 802 (D.D.C. 1978), _modifying_ Natural Resources Defense Council, Inc. v. Morton, 388 F. Supp 829 (D.D.C. 1974).

Land use planning

The principal coal resource decision in the land use plans is to identify areas acceptable for further consideration for coal leasing. This involves screening out areas that

--have coal reserves of low development potential

--are environmentally unsuitable for leasing,

--are considered in the resource trade-off analysis to be more valuable for other uses, and

--are preferred for non-mining uses by the qualified surface owner.

The development potential screen is the first test applied. The government identifies areas it believes to be uneconomic for coal development--lands with low development potential--and excludes them from further land use planning efforts for coal resource management. These lands may be included in later land use planning cycles if they are subsequently determined to have economic potential. The Federal Coal Management Program was designed so that the major source of information for this screening would be the Geological Survey's maps of coal resource occurrence/coal development potential. 1/ In a report soon to be issued, we evaluate this mapping effort and recommend actions to make this stage of land use planning more effective.

The second screen applies the 20 unsuitability criteria to the medium- and high-potential coal lands. Many of the criteria implement requirements of laws such as the Surface Mining Control and Reclamation Act of 1977 (30 U.S.C. 1201, et seq.). Other criteria are based on Interior policy. Examples of the categories for which criterion have been developed are wilderness study areas, migratory birds, State fish and wildlife, wetlands, endangered species, and alluvial valley floors.

1/See glossary.

The unsuitable for leasing screen is designed to provide greater assurance that if a lease is issued the coal can be mined. However, even after applying this screen, uncertainties still exist as to whether mining operations will be permitted on the lease tracts. BLM may not be able to apply all the criteria during land use planning. If not, lands may then be designated as suitable pending acquisition of more data and further analysis. For example, for some of the tracts in Green River-Hams Fork, BLM has insufficient information to determine if some areas should be precluded from leasing consideration due to wildlife concerns, flood plains, alluvial valley floors, and historical sites. Therefore, BLM has designated the tracts as suitable pending acquisition of more data and further analysis. Furthermore, whether or not all unsuitability criteria are applied during land use planning, final unsuitability determinations for a lease are made by the Office of Surface Mining Reclamation and Enforcement at the time a mining and reclamation plan is submitted for review and approval.

In the third screen, resource trade-off analysis, BLM makes resource-balancing decisions on resource values not considered in the unsuitability screen. According to the environmental impact statement for the coal program:

> "The adjustments at this stage in the land use planning process would be made to accommodate unique, site-specific resource values clearly superior to coal but which are not included in the criteria. A prime recreation site or campground might be an example. The responsible official would balance these values against the value of possibly offering additional coal from the planning unit."

In the fourth screen, surface owner consultation, BLM consults with owners of the surface estates which rest on surface-mineable Federal coal reserves, as required by the Surface Mining Control and Reclamation Act of 1977. After completion of the land use plan, and if a qualified surface owner's land is identified as acceptable for further consideration, the owner may file a written refusal to consent to leasing. As a result, the coal would not be considered further for leasing during the life of the land use plan unless there were a change in surface ownership.

Interior has emphasized the need for public participation in the land use planning process, but does not formally request expressions of leasing interest from the industry during land use planning. According to Interior, the industry, States, and other parties are encouraged to participate in this process through hearings, meetings, and written comments. Interior emphasizes in various program documents the importance of industry participation by stating:

> "Industry is a critically important participant in the coal program not only because it will bid for and produce the coal, but also because industry will provide information needed to help determine where and when Federal coal should be leased in order to assure the earliest and most efficient production of all coal being developed in any region."

BLM field officials stated that for the first lease sale effort they considered public input in selecting areas for land use planning. At the BLM district office the input was in the form of nominations obtained in the previous coal leasing program, the Energy Minerals Activity Recommendation System (EMARS), previous environmental impact statements, a public workshop that considered coal issues, and various meetings with individual parties. The BLM State office considered the district office recommendations and selected areas for the consideration and approval of the BLM Director.

Land use planning is now in a transition stage, with on-going land use plans incorporating aspects of the new planning process. Curent planning starts are based totally on the new planning system. The new process will take approximately 4 years for each plan, with the first plan expected to be completed in 1984. Prior to completing the transition, BLM will supplement existing already completed land use plans by reexamining certain priority areas for unsuitability criteria and surface owner consultation. This will enable BLM to determine if the area reexamined is acceptable for further consideration for leasing. When the full procedures are implemented after 1984, a new land use plan will be made, as required by the Federal Land Policy and Management Act of 1976 (43 U.S.C. 1701 et seq.).

Activity planning

The purpose of activity planning is to delineate and select for sale a sufficient number of tracts--ideally, more tracts than would be needed--to meet a regional leasing target. The tracts are selected from the areas designated in the land use plan as "acceptable for further consideration for leasing." Activity planning includes the following:

--A call for industry submissions of expressions of interest in leasing possible tracts;

--Preliminary delineation of tracts;

--Site-specific analyses of the delineated tracts;

--Tract ranking on the basis of environmental, social, and economic effects and a cumulative analysis of the tracts;

--Selection of lease sale schedule alternatives; and

--Preparation of a regional lease sale environmental impact statement.

The first step in activity planning is the invitation, through a formal announcement in the Federal Register, for industry expressions of interest in leasing possible tracts. Interior stresses that at this time the States are encouraged to suggest possible tracts, particularly tracts important to the leasing of State-owned coal. According to Interior, this is a

> "critical element in the decisions on delineation and subsequent ranking of tracts, since the interest of companies or the States in these areas would normally reflect important data collected by both parties and market judgements by the companies."

Once the expressions are submitted, preliminary tracts are delineated and site-specific, as well as cumulative, analyses are conducted. The boundaries of the preliminary tracts are based primarily on these considerations: expressions of interest, technical coal data, resource conservation objectives, and surface ownership patterns. During site-specific analyses, potential environmental impacts related to each tract are identified and evaluated. Boundary readjustments reflecting environmental or social considerations occur as the tract ranking and selection process proceeds.

Tract ranking and selection of lease sale schedule alternatives are done by a regional coal team, made up of BLM and State Governors' representatives. The regional coal team is established to facilitate coordination and consultation among Interior, State Governors, other Federal land management agencies, and other Federal and State agencies with expertise relevant to the tract ranking and selection process. An analysis projecting cumulative impacts is prepared to aid the regional coal team in its deliberations.

The Secretary of the Interior's selection and scheduling of tracts for lease sale are directed toward meeting the coal leasing target. In establishing the target Interior reviews and adjusts that portion of the Department of Energy's coal production goal which applies to the Federal coal production region. Expected production from existing Federal leases and other non-Federal coal properties is subtracted from the adjusted production goal. Final targets are established after the States have been consulted and the public and industry have been given an opportunity to submit comments on the preliminary targets.

The ranking and selection process results, the proposed lease sale schedule, and the ranking criteria are published in a regional lease sale environmental impact statement. This is followed by a public hearing and the submission of comments. Following release of the final environmental impact statement, Interior formally consults with the affected State Governors and Federal surface management agencies. The surface management agencies have to consent to the issuance of the lease before Interior can issue it. If a Governor objects to the lease proposal, Interior will reconsider the proposed lease sale, but is not required to withdraw the proposal.

The final step of the leasing process is the lease sale. Several activities are included in this step, such as mineral evaluation and determination of fair market value, acquisition of surface owner consent, and determination of lease sale and bidding methods.

CHAPTER 3

LEASING TARGETS ARE BASED ON QUESTIONABLE AND/OR INVALID ASSUMPTIONS THAT COULD LEAD TO SIGNIFICANT SHORTFALLS IN MEETING NATIONAL ENERGY NEEDS

Our analysis indicates that about three times more coal should be leased than is presently called for in Interior's leasing target for the Green River-Hams Fork region. Because limited land use planning and tract delineation efforts preclude Interior from making up this shortfall at this late date, immediate actions--such as efforts toward a 1982 follow-on lease sale--are necessary to meet the region's 1990 projected coal demand.

Interior's 1981 Green River-Hams Fork leasing target of 520 million tons of coal is based on the Department of Energy's medium production goal and Interior's estimate of planned and expected production independent of new Federal leases. The difference between Energy's goal and Interior's estimate of planned and expected production is the amount of annual production considered necessary for development from new Federal leasing. Factors pertaining to mine life, Federal/non-Federal coal ownership ratios, coal recovery ratios, and uncertainty were applied to this amount, resulting in an estimate of the quantity of coal that is needed to be leased to support a given level of annual production.

Because of certain questionable assumptions and the failure to revise the target with more current data, however, Interior understated the leasing target and thus is not planning to lease enough coal. The errors are as follows:

--Interior assumed that one mine would be in full production--5 million tons per year by 1987--even though the company owning 50 percent of the coal reserves has repeatedly informed Interior, before the most recent leasing target was made, that the mine will not be operating at full capacity by that time. This could increase the leasing target by about 195 million tons (see p. 21).

--Interior assumed that mines would be in full production 6 years after leases are issued, even though 9 years would seem more realistic. This could increase the leasing target by an additional 781 million tons (see p. 22).

--Interior used factors pertaining to mine life, Federal/non-Federal ownership ratios, and coal recovery ratios which do not agree with more recent, site-specific analyses by the Survey. This could further increase the leasing target by 82 million tons (see p. 24).

--Interior added a 25 percent safety margin to cover various contingencies, but did not provide for a recognized minimum margin of error in the Survey's coal reserve estimates. This could increase the leasing target by another 121 million tons (see p. 26).

Consequently--in total--the 1981 leasing target for Green River-Hams Fork is understated by about 1.2 billion tons. This may even be conservative since the Department of Justice believes that--to assure healthy competition--normally about 2 to 3 times more coal should be leased than would be indicated by Energy's production goals.

In addition to shortfalls in the coming Green River-Hams Fork sale, if Interior does not update its assumptions and improve the target-setting process, there is increased risk of not leasing sufficient coal in other future sales to satisfy national energy needs.

The following table summarizes--conservatively we believe--the extent to which Interior's leasing target may be understated.

Calculation of Tonnage Needed to Avoid a Shortfall a/

	Interior's calculation	GAO's calculation
Estimate of annual production need from new Federal Coal leasing (see p. 24)	18.5	43.5
Coal recovery factor (see p. 25)	÷ 80%	÷ 85%
Projected annual demand for in-place coal (million tons)	23.1	51.2
Estimated mine life (years) (see p. 25)	x 30	x 27
In-place reserve estimate needed to be stimulated by leasing effort (million tons)	693.8	1381.8
Adjustment for margin of error in reserve estimate (see p. 27)	--	x 120%
In-place reserve estimate adjusted for margin of error (million tons)	--	1658.1
Federal coal ownership ratio (see p. 25)	x 60%	x 82%
Leasing target, not adjusted for uncertainty (million tons)	416.3	1359.7
Adjustment for uncertainty (see p. 27)	x 125%	x 125%
Leasing target adjusted for uncertainty (million tons)	520.4	1699.6
Less: Interior's current leasing target (million tons)		-520.4
Additional in-place tonnage that might have to be leased to avoid a shortfall (million tons)		1179.2

a/This method is based on Survey data from delineating nine lease tracts and assuming that the averages for recovery factors, mine life, and Federal coal ownership ratios would apply to additional tracts. A factor has been added to adjust for the margin of error in Survey's estimate of coal reserves. The adjustment for uncertainty is the same as used by Interior.

According to the Geological Survey, however, only 22.7 million tons of annual production can be achieved for the tracts that have been delineated for the lease sale in Green River-Hams Fork--20.8 million tons less than the adjusted estimate of annual production that needs to be developed from new Federal leasing (43.5 less 22.7). Interior does not plan a followup lease sale until late 1983 or early 1984--too late to realistically prevent the projected shortfall from occurring during the period 1987 through 1990. The actual amount needed to be leased can only be determined after all the tracts have been delineated by the Survey and ranked by by the regional coal team. But, based on our calculations, about 1.7 billion tons would have to be leased in 1981 in the Green River-Hams Fork Region to avoid a production shortfall, instead of the 520 million tons which Interior presently plans to lease.

INTERIOR'S ESTIMATE OF ANNUAL PRODUCTION NOT DEPENDENT ON NEW FEDERAL LEASING IS INVALID

Interior overstated by at least 5 million tons the amount of annual production not dependent on new Federal leases. It assumed that a new mine, referred to as Cherokee, would be constructed and producing coal at an annual rate of 5 million tons by 1987. However, the company which owns about one-half of the coal reserves in the proposed mine has repeatedly informed Interior that the coal has a relatively low heat value and a high percentage of sulfur and will probably not be transported out of the region. According to the company, the coal could potentially supply a mine-mouth power plant or be used in synthetic fuel production. However, because the mining of Cherokee could probably only be tied to the development of a nearby industrial facility, the lead time involved in the construction of a plant will preclude any near-term production from the mine. The company does not expect the project to produce coal by 1985, although small amounts could be mined by 1990.

An Interior official stated in December 1979 that

> "* * * there is some remaining question on whether the production from the Cherokee mine in Carbon County, Wyoming, ought to be included on the list (a mine-by-mine list of production estimates). The company involved also has indicated that there is some question of the project's viability."

However, Interior discounted this uncertainty in coming up with its estimate of planned or expected production.

Without the proposed Cherokee mine, the annual production needed from new leasing would be 23.5 million tons instead of the 18.5 million used in Interior's calculation. This could increase the leasing target by about 195 million tons.

Another figure in the estimate of annual production not dependent on new Federal leases may also be misstated. The estimate for Green River-Hams Fork does not consider any production from the region's 26 preference right lease applications containing an estimated 300 million tons of recoverable coal. 1/ Currently, 172 applications which contain about 10 billion tons of recoverable coal are being considered by Interior for conversion to leases. Interior has not included production estimates from these lands in the target because of the uncertainties associated with converting the applications into leases.

According to the coal management regulations, BLM will complete the processing of all preference right lease applications by December 1, 1984. If the applications in the region where leasing is planned are not converted to leases, their effect on annual production in the lease target year should be ignored, as Interior is doing, since it is unlikely they would be in production before 1990.

INTERIOR'S ESTIMATES OF LEAD TIME FROM LEASE ISSUANCE TO FULL PRODUCTION ARE TOO SHORT

The lead time allowed by Interior for achieving full production from leases issued in 1981 is only 6 years. A mine needing more than 6 years to achieve full production might not be able to respond adequately to the demand for coal by 1987, Interior's target date. This uncertainty also increases the risk of having too little coal leased to satisfy the demand in 1990.

1/See glossary.

Instead of 6 years, BLM used 9 years in the draft regional environmental impact statement, with 1990 as the year that full production would occur for leases issued as a result of the 1981 Green River-Hams Fork lease sale. Assuming BLM's 9-year lead time is more realistic--and we believe it is--Interior's leasing target is understated by about 781 million tons.

BLM's analysis assumes production will start in 1987 and full production will be reached in 1990. However, it gave a partial disclaimer to these estimates by saying that neither its assumptions that full production of all mines will be reached in 1990 nor Interior's assumption that full production for all mines will be reached in 1987 is realistic. BLM claims it is more likely that full production from these mining units will be achieved over a span of time; for example, some mining units may be in production by 1985, with others coming on line over the period to 1991.

Many coal industry officials believe 8 to 10 years is more realistic for a variety of reasons--such as weak market conditions and lengthy permitting procedures. In the Secretarial Issue Document for the Federal Coal Management Program, Interior stated the minimum feasible time from lease issuance to actual production would be about 4 years, but that 6 to 7 years would be more likely. Interior stated that especially where a buyer for the coal must first be found, some leases might need 10 years to get into full production. Interior may therefore be overly optimistic in its production assumptions for the Green River-Hams Fork leasing target.

In summary, the following table shows the annual production needed to be stimulated from new Federal leasing assuming full production from new leases will not be reached until 1990 and the Cherokee mine will not be in full production by that date.

Annual Production
Needed to be Stimulated by New Federal Leasing
(million tons)

	Interior's calculation for 1987	GAO's calculation for 1990
Energy's medium production goals	a/ 85.2	102.5
Interior's estimate of coal production not dependent on new federal leasing (see app. VII)	- 66.7	- 64.0
Adjustment for Cherokee mine not being in production	(b)	+ 5.0
Annual production needed to be stimulated by new federal leasing	18.5	43.5

a/This is computed by making a straight-line (equal increments) interpolation between Energy's 1985 medium productions goal of 73.6 million tons and its 1990 medium production goal of 102.5 million tons.

b/Interior assumes the Cherokee mine will be in full production in 1987.

THE METHOD FOR CALCULATING LEASING TARGETS USES OUTDATED ASSUMPTIONS

Interior's calculation of the leasing target is based on arbitrary decisions not supported by site-specific data and conclusions of the Geological Survey regarding the delineated tracts. The Survey prepared conceptional mine plans on all of the delineated tracts. The plans estimate mine life, Federal/non-Federal coal ownership ratios, and coal recovery ratios. In all cases, the average of the Survey's/ estimates differs from the averages used by Interior in developing the leasing target. Interior's latest target calculation resulting in 520 million tons was made after preliminary tract delineations were completed. However, the Survey's site-specific information was not used as the basis for this leasing target.

According to the Survey's data, the weighted average for mine life is 27 years and ranges from a low of 16 to a high of 31 years. Interior used a mine life of 30 years. In addition, the Federal ownership ratio computed from the Survey's data is 82 percent. For some of the tracts about one-half of the recoverable reserves are estimated to belong to the Federal Government, while for some of the other tracts all of the coal is owned by the Federal Government. Interior used a Federal ownership ratio of 60 percent. The coal recovery ratio is the only factor in Interior's formula that did not vary considerably from tract to tract; the Survey estimated all tracts to have about an 85-percent recovery ratio. Interior used a recovery ratio of 80 percent.

To satisfy the need for coal, Interior currently plans on leasing 520 million tons of in-place reserves. 1/ Interior computed the leasing target by dividing the 1987 projected production shortfall of 18.5 million tons by an estimated coal recovery factor of 80 percent. This translates into an annual in-place reserve estimate needed to support the annual production. This amount was multiplied by the estimated mine life of 30 years, giving the total in-place reserves needed to be developed by the leasing effort. This amount was then multiplied by the Federal coal ownership ratio of 60 percent to determine how much in-place coal the Government needs to lease. Finally, the amount was adjusted for uncertainty by multiplying it by 125 percent (to add 25 percent), resulting in a leasing target of 520 million tons.

Strictly following Interior's current 1981 Green River-Hams Fork leasing target without modifications based on the Survey's tract delineation data could result in Interior not leasing sufficient coal to satisfy its own 1987 projected annual production shortfall of 18.5 million tons. Assuming that Interior's methodology is correct, that the Department of Energy's projections are accurate, and that the Survey's data more accurately reflects how much coal should be leased, the leasing target could be further understated by about 82 million tons.

1/See glossary.

LEASING TARGETS DO NOT ADEQUATELY ACCOUNT FOR UNCERTAINTY

The process for developing leasing targets implicitly assumes that every ton of coal offered for lease sale would receive an acceptable bid; that every high bidder would receive affirmative anti-trust review; and that for leases that are issued no environmental or marketing problems would be encountered that would make parts or all of the leased coal unmineable. However, the Green River-Hams Fork regional coal team has recognized that "the probability is less than 100% that the coal we offer for lease will receive a successful bid and reach mature production." We concur, and believe it is unlikely that all coal offered for lease will ever be mined due to statutory, regulatory, and market requirements.

The Departments of Energy and Justice and the Council on Wage and Price Stability are concerned that sufficient coal be leased to foster healthy price competition and discourage anti-competitive coal pricing. The argument is that healthy price competition among companies bidding to supply electric utilities with coal would result if there were more coal available than that indicated by the sum of utility contract requirements. This argument has merit from at least two perspectives. First, the Survey cannot accurately forecast the cost of producing coal from delineated tracts and other potentially mineable unleased Federal coal and, therefore, cannot guarantee that BLM will offer for lease sale the lowest cost coal in the marketplace. Second, according to the Department of the Interior, a major objective of resuming leasing under the Federal Coal Management Program is to improve the state of competition in the western coal industry.

The Department of Justice asserts the leasing targets should normally be two or three times as high as would be indicated by Energy's production goal. They claim that any attempt to match leasing with predicted future demand is inadvisable since predictions would sometimes underestimate demand--and when they did the price of coal would substantially increase. Furthermore, Justice believes that even if demand predictions were essentially correct, the efficient resource allocation decisions of the marketplace would be supplanted by less efficient Government decisions.

Interior recognizes some of the risks associated with the leasing targets, but its actions to compensate for the risks do not appear to be sufficient. On January 23, 1980, the

Secretary increased the in-place tonnage target for Green River-Hams Fork of 416 million tons by 25 percent to 520 million tons. This increase is to account for the likelihood that not all coal offered for lease will be mined, to promote competition and reasonable coal prices, and to provide greater assurance that Energy's production goals are satisfied.

It is questionable if the 25-percent safety margin adopted by Interior is sufficient to cover all uncertainties with the leasing process. This is especially so since the reserve estimates calculated by the Geological Survey could be substantially different from the actual amount of coal that is contained in the lease. Reserve estimates are approximations of the actual amount that is contained in a given area. The Survey generally uses demonstrated reserves in calculating estimates for delineated lease tracts. According to Survey, the estimates, at their highest level of confidence, are judged to be accurate within 20 percent of true tonnage. Consequently, the safety margin of 25 percent could be entirely accounted for by uncertainties in calculating the reserve estimates, leaving nothing for the objectives stated by the Secretary.

If a safety margin of 25 percent is used, it should be in addition to at least the 20-percent margin of error for measured reserve estimates. The 25-percent factor itself should be reviewed to assess its adequacy. Even assuming the appropriateness of the safety factor, Interior's failure to include an additional margin of error for the reserves could understate the leasing target by another 121 million tons.

THE LEASING LIAISON COMMITTEE IS A FORUM WHERE LEASING TARGETS CAN BE REVIEWED AND EVALUATED

As noted above, the leasing target developed for Green River-Hams Fork is based on many assumptions, some of which are now invalid. Furthermore, the continuing evolution of energy and economic conditions creates uncertainty about the reasonableness of any goal or target. The assumptions used in developing targets and the manner in which future uncertainties are accounted for need to be scrutinized. The Leasing Liaison Committee, created by the Department of Energy Organization Act, may be an appropriate forum where leasing targets could be reviewed and evaluated. This Committee, composed of an equal number of members from Energy and Interior, is given responsibility under its charter for:

--Identifying and solving problems related to Federal energy leasing responsibilities that arise between Energy and Interior.

--Providing timely information exchanges.

--Expediting consideration and resolution of inter-departmental energy leasing matters.

--Ensuring cooperation and assistance in preparing annual reports and reports to the Congress.

--Facilitating consultation on technical matters of concern to both departments.

The charter allows it to address policy issues and make recommendations to the respective Secretaries, but it does not allow it to function as a policymaking body. The scope of activities includes leasing matters pertaining to Federal energy resources such as coal, offshore oil and gas, onshore oil and gas, uranium, geothermal, oil shale, and tar sands.

As a mechanism to develop working procedures for implementing the process of establishing coal production goals and leasing targets, an Interior/Energy working group under the Leasing Liaison Committee was established. The group is an advisory body and its recommendations are not binding on Energy or Interior. The group's basic role is to:

--Facilitate the exchange of information on coal between Interior and Energy.

--Coordinate timing, scheduling and other technical aspects in the execution of the agreement between Interior and Energy concerning production goals and leasing targets.

--Resolve questions relating to interpretation and application of coal models used in production goal and leasing target setting.

--Provide a mechanism for interchange of technical ideas and views between Interior and Energy.

An Interior official who serves on the working group told us that the Leasing Liaison Committee has not evaluated the adequacy of leasing targets. He stated that several questions about targets have been raised at the working group level but that no analysis or review has been done. The assumptions and uncertainties discussed in this chapter demonstrate the need for the Leasing Liaison Committee--at this time--to review the factors that are considered in establishing the leasing target. If problems persist, however, more stringent actions, such as requiring that leasing targets be established independently of Interior, should be considered in the future.

CHAPTER 4

DELAY IN OBTAINING EXPRESSIONS OF LEASING INTEREST UNTIL AFTER LAND USE PLANNING ADVERSELY AFFECTS THE LEASING PROCESS

The exclusion of formal expressions of leasing interest prior to activity planning is detrimental to an effective leasing process. Industry is interested in leasing some coal areas, including coal for synthetic fuel production, that have not been considered for the 1981 and 1982 lease sales. In some cases, because land use planning must be reapplied, leasing may not be possible, if at all, until 1987 or thereafter--even though tentative plans by industry indicate a potential need for the leases in the near future. Without early expressions of interest from industry, there is no assurance that areas with the most favorable potential for energy production will be included or reviewed in a timely manner in the land use planning phase.

For example, after land use planning was completed for the first lease sale, one company expressed leasing interest in five tracts. This company submitted detailed planning information that indicated the type of mine, production rates, proposed use of coal, and transportation needs. The tracts have a combined estimated annual production of about 15 million tons. However, consideration for leasing was prevented because BLM had not reviewed these areas for possible amendment to existing land use planning decisions, particularly with reference to the application of unsuitability criteria. Thus, the tracts cannot be leased by 1981.

Furthermore, Interior has not considered the feasibility of synthetic fuel production in its plans for leasing in 1981 or 1982, even though at least three companies have informed Interior of such production intentions. One of these companies included its proposed project in an expression of interest, but BLM's request for expressions of interest was made after the land use plan was updated and thus, the proposed lease tract was excluded from the area reviewed in the updated plan.

Interior encourages a form of public involvement while it is selecting areas for land use planning, but does not request expressions of leasing interest. Interior emphasizes that the public, including the coal industry, is encouraged to submit general comments and interests at any time they might wish to indicate an interest in Federal coal in a particular area. However, reliance on informal input allows subjective decisions to be made, and weakens Interior's accountability for the disposition of such input--two conditions that it has indicated it wants to avoid in other segments of the program.

The delay in requesting formal, public expressions of leasing interest until after land use planning assumes Interior knows which areas have high or moderate development potential and require land use planning in the near future. While Interior does know this to some extent, there remains a serious knowledge gap. In light of the Nation's energy needs and the President's call for alternative uses of coal to strengthen national security, the Federal Coal Management Program should be modified to allow early expressions of leasing interest. We base this judgment on our analysis of the decision to delay expressions of leasing interest until after land use planning, the effects of the delay on the first lease sale, and anticipated effects on future lease sales.

ANALYSIS OF THE DECISION TO PROHIBIT EARLY EXPRESSIONS OF LEASING INTEREST

In October 1977 Interior decided that BLM should initiate land use planning and develop leasing targets prior to industry nominations for specific lease tracts. 1/ According to Interior, this would place the initiative with Federal resource managers to integrate coal program decisions with other resource management responsibilities. Furthermore, Interior believed it would not run the risk of industry domination over land use and activity planning decisions to the detriment of environmental and community values. Industry would not be formally asked to indicate the tracts it desired to lease until after land use planning.

1/Nominations and expressions of interest are essentially synonymous. The term nominations was used under the former leasing program, the Energy Minerals Activity Recommendation System.

Interior has identified certain advantages and disadvantages in its decision. The advantages are

- --to assure that new Federal coal development will be located only in those specific areas in which the Federal Government believes it to be most desirable,

- --to assure to a greater extent that environmental impacts will be minimized,

- --to reduce the likelihood of litigation,

- --to simplify planning by State and local governments and industry through advanced designation of areas, and

- --to provide a closer planning link with Energy production goals through the use of leasing targets.

The disadvantages are that

- --coal development might unknowingly be excluded in areas where there is strong demand,

- --coal development might be forced to less economically and/or environmentally suitable locations, and

- --impacts of Federal coal development could be concentrated in certain limited areas, creating political controversy in areas opposed to development.

The advantages mentioned by Interior do not arise, however, from delaying expressions of interest until after land use planning, but they arise from other coal management policies. Moreover, the first two disadvantages acknowledged by Interior may have already appeared in the Green River-Hams Fork proposed lease sale for 1981, and may recur in future lease sales.

The first advantage mentioned by Interior is a function of both land use planning and tract ranking. According to Interior, land use planning, along with effective enforcement of environmental laws, will assure that Federal coal is committed to production in an environmentally acceptable manner which is responsive to local communities and landowners affected by Federal coal development. As previously discussed, Interior intends to accomplish this by applying the four land use planning screens. (See ch. 2)

Land use planning prior to leasing, as a basis for allocating resources on public lands, is required by the Federal Land Policy and Management Act of 1976 (43 U.S.C. 1701, et seq.) and the Federal Coal Leasing Amendments Act of 1976 (amending 30 U.S.C. 181, et seq.). The Surface Mining Control and Reclamation Act of 1977 (30 U.S.C. 1201, et seq.) also directs Interior to conduct a review of Federal lands to determine whether they should be designated unsuitable for surface coal mining operations.

Tract ranking, which takes place later in the leasing process, also helps provide assurance that leasing will occur where it is most desirable. Tracts which have been delineated for leasing are ranked by evaluating, comparing, and rating them on the basis of such factors as coal economics, environmental concerns, reclamation potential, transportation, and socioeconomics. The ranking is done by the regional coal team, which consists of Federal and State Government officials; and, its recommendations are forwarded to the Secretary of the Interior prior to tract selection for the lease sale.

The second advantage Interior identifies, assurance that environmental impacts will be minimized, is achieved largely by the application of the unsuitability criteria. In essence, the criteria eliminate from lease consideration areas that would be adversely affected by surface mining and, in some instances, underground mining. Regardless of whether or not a company wants to mine a specific tract, the coal cannot be mined if the area is determined to be unsuitable for mining after application of twenty rigorous unsuitability criteria.

The third advantage, simplified coal development planning by State and local governments and industry through advanced Government designation of coal leasing areas, is achieved by the same evaluative processes as discussed above--the four land use planning screens and the tract ranking and selection process. However, planning is complicated by BLM's failure to find out where the areas of industry development interest are located so that proper priorities can be established.

To achieve the final advantage listed above, Interior uses Energy's production goals as a guide in setting regional leasing targets. Public comment during the planning effort may influence Interior's leasing target estimate. However, expressions of leasing interest by industry merely indicate its perception of where leasing should be located--not necessarily how much in total should be leased.

EFFECTS OF SELECTING AREAS OF LOW-QUALITY COAL FOR LAND USE PLANNING AND ACTIVITY PLANNING

BLM's ability to lease sufficient quantities of coal to meet competitive market needs is dependent on the coverage of the land use planning process over potential coal production areas. In an area of southcentral-Wyoming, the coverage for the first lease sale focused on areas of low-quality coal--areas of high-quality coal were excluded.

BLM selected the low-quality area because it had been included in a proposed mine plan and recommended for lease consideration in the existing land use plan. One area of high-quality coal was excluded because of perceived environmental problems even though three environmental studies indicated a substantial area of mineable coal and the existing land use plan described it as an area where future leasing will be considered. Another area of high-quality coal was excluded because the Survey had not yet designated it as a Known Recoverable Coal Resource Area, but a company was planning to mine in the area. BLM officials expect some of the high-quality areas to be included in the 1982 update of the land use plan, unless funding is not available.

BLM will study coal areas within time frames for land use planning cycles when the areas are identified and when BLM funding and staffing capabilities allow it to review them. Environmental and socioeconomic concerns may force a limit on the total number of mining operations that will be permitted and on the amount of Federal leasing that will be done in a given area. Leasing that is confined to coal tracts of lower energy value than other tracts that could also be considered might jeopardize future leasing of the higher quality tracts. BLM's land use planning regulations require threshold development levels, and these, when imposed, can restrain the amount of leasing and coal production that will be considered in a given area. Our concern is that leasing low-quality coal first could jeopardize the leasing of more valuable coal in the future.

Areas selected contain low-quality coal

Two delineated lease tracts--Red Rim and China Butte--contain an estimated 180 million tons of recoverable coal that is strip-mineable. The coal, however, is lower in quality than the coal of most other tracts being considered for lease sale. One measure of coal quality is the number of British thermal units (Btu's) contained in a pound of coal--the greater the number of Btu's, the higher the coal quality. The two tracts contain coal with a heating value of approximately 8,500 Btu's per pound. Other tracts, in comparison, contain coal of about 10,500 Btu's per pound. The heat value of Green River-Hams Fork coal, for example, averages more than 10,000 Btu's per pound. In contrast, the heat value of Wyoming's Powder River Basin coal averages 8,300 Btu's per pound. Less high-Btu coal needs to be mined to generate a specified amount of energy than low-Btu coal.

This issue was raised by a coal mining company when Interior asked the coal industry to submit expressions of interest. The company questioned Interior's logic in selecting the two low-quality coal lease tracts, and submitted an expression of no-interest in leasing which stated:

> "Coal quality in this area is below that of other available coal supplies in strong demand from the Green River/Hams Fork Region. Powder River coal is competitive with Red Rim/China Butte coal in quality, but is minable at much lower cost. Our findings regarding quality and marketability are inconsistent with the department's as a rationale for leasing; thus, we have no interest in leasing."

The selection of low-quality-coal areas for leasing consideration could limit the quantity of higher quality coal which will be leased in the future. Cumulative environmental and socioeconomic impacts may eventually restrict the development of other tracts containing higher quality coal. The two tracts being evaluated for leasing are located in the same planning unit where at least nine prospective mining operations, including a mine-mouth synthetic fuels plant, have been identified. This area presently contains no mining operations. Furthermore, the development of most of these prospective operations is contingent on additional Federal leasing, but only the two tracts are presently being considered for leasing.

For each land use planning area, Interior and BLM have been considering the determination of maximum coal production rates--known as threshold development levels. BLM has generally defined thresholds as levels of resource use, production, or development which are established as maximum or minimum constraints in resource management. The methods and procedures for determining and applying thresholds are yet to be established.

The Assistant Secretary for Land and Water Resources requested that BLM undertake in March 1979 a high-priority task to develop the threshold concept, yet very little has been done to develop the concept. If thresholds are applied they could limit the amount of leasing due to cumulative anticipated environmental impacts associated with wildlife, air quality, or other resource values and/or socioeconomic impacts associated with population influx or other factors. Future leasing of higher value tracts could consequently be constrained by the leasing of low-quality tracts.

The application of thresholds is not the only factor which calls into question whether low-quality lease tract areas should be evaluated during land use planning rather than high-quality areas. Ranking and cumulative environmental impact analyses of tracts during activity planning is another factor. It might result in different decisions if high-quality tracts were reviewed during land use planning. A larger data base might then be available from which BLM and the States could assess tracts which would be the most or least favorable in terms of energy, environmental, and social concerns.

<u>Areas not selected contain high-quality coal</u>

At the time BLM decided on which lands should be included in the land use planning effort, it was aware of at least two other tracts which could support mining operations that would be similar to Red Rim and China Butte. These two tracts are Cow Creek and Corral Canyon, both located in south-central Wyoming. Corral Canyon was excluded because it was not designated by the Geological Survey as a Known Recoverable Coal Resource Area. 1/ BLM district office officials told us

1/ Coal bearing areas designated by the Geological Survey as containing mineable coal deposits. See glossary.

that they could have included this area in the land use planning effort if the decision had been to review the area. This is discussed on page 38.

BLM officials excluded Cow Creek, an area of known industry interest and high-quality coal, from the land use planning effort due to perceived environmental problems. Cow Creek is located about 6 miles south of China Butte--a lower quality coal tract. Cow Creek is estimated to contain about 700 million tons of surface and underground mineable coal rated at about 10,500 Btu's per pound. During the 1970s several companies expressed interest in leasing the area, and three companies submitted competitive lease applications.

BLM officials stated Cow Creek was not included because it is environmentally sensitive and might be eliminated from lease consideration by the unsuitability criteria. BLM and the U.S. Fish and Wildlife Service issued three wildlife studies in 1977 and 1978 that identified critical wildlife habitats in parts of Cow Creek that could prevent mining there. However, the same studies also indicate that about 36 square miles of the area are not such habitats. According to officials of the BLM district office with responsibility for land use planning in the Cow Creek area, the wildlife information in the studies is inconclusive, not fully refined, and covers only a short term--therefore it was not used. However, these studies were considered in selecting the Red Rim and China Butte tracts. Furthermore, some of the wildlife aspects of the studies, such as critical elk winter ranges and sage grouse mating areas, also apply to some other tracts in Wyoming and Colorado which are being considered for leasing.

As of February 1980, an update of the 1978 BLM study with new information from the Wyoming Game and Fish Department still indicated that large areas in Cow Creek were outside of critical wildlife habitats.

EFFECTS OF DELAY IN OBTAINING EARLY EXPRESSIONS OF INTEREST IN SUBSEQUENT LEASE SALES

By selecting areas for land use planning before considering industry leasing interest, Interior will continue to exclude some high-quality coal areas. Industry is currently interested in mining certain areas that Interior may not be able to consider for leasing until 1987 or later. Some of the areas are not presently included in Known Recoverable Coal

Resource Areas or are not considered to be of either moderate or high development potential. In some cases, BLM was completely unaware of industry's interests. Clearly, more industry input earlier would better focus Interior's land use planning evaluations.

According to the Federal coal management regulations, leases can only be issued on lands included in Known Recoverable Coal Resource Areas. However, BLM has stated that while land use planning is underway, lands to be evaluated for leasing are not limited to these areas. This allows BLM to go ahead with activity planning if a favorable land use planning decision on a non-KRCRA is arrived at. A lease can then be issued as soon as the Survey designates it as a Known Recoverable Coal Resource Area.

This procedure was not followed in the Green River-Hams Fork 1981 lease sale. Only coal lands already classified as Known Recoverable Coal Resource Areas were evaluated for leasing in the land use planning. According to BLM district office officials, areas reviewed were selected after determining if they

--were within a Known Recoverable Coal Resource Area,

--were covered in an existing land use plan (so that only an amendment would be needed),

--were the most environmentally acceptable based on current knowledge,

--had high/moderate coal potential (although CRO/CDP maps were not available for all areas),

--were limited by constraints of time frame and budget, and

--had high industry interest based on previous input.

Thus, some high-quality coal areas in which industry was interested were not evaluated for leasing consideration. For example, BLM disapproved a district office request to include an area known as Corral Canyon in the initial planning efforts because it was not included in a Known Recoverable Coal Resource Area. This area is estimated to contain about 45 million tons of surface-mineable coal rated with a heat value of 10,900 Btu's per pound. The Survey is in the process of including Corral Canyon in a Known Recoverable Coal Resource Area. BLM anticipates reviewing the area in a land use plan, scheduled to be completed in 1982--in time for a proposed 1984 lease sale.

The exclusion of another area, known as Kindt Basin, is likely to occur for similar reasons. It is a potential lease tract area in the same planning unit. It lies outside a Known Recoverable Coal Resource Area, and in 1979, a company expressed interest in leasing it. BLM officials have been aware of this potential tract area since before 1978, but at the time of our field work they stated that the unsuitability criteria would only be applied to areas within a Known Recoverable Coal Resource Area. Since then, according to the BLM district office, it has changed its procedures and established a priority system for application of the unsuitability criteria. Even with the new procedures, however, Kindt Basin may not be available for lease consideration in the proposed 1984 lease sale. If this occurs, Kindt Basin probably will not be considered for leasing until after 1989 when a new land use plan is scheduled to be completed.

The new procedures give highest priority for application of the unsuitability criteria to coal lands the Survey declares to have a high or moderate development potential by virtue of the coal resource occurrence-coal development potential mapping program--a program primarily limited to Known Recoverable Coal Resource Areas. The Survey has no plans to designate such an area in Kindt Basin at this time. A lower priority is given to all other coal lands industry or State governments consider to have a strong development potential. According to a BLM district office official, BLM plans to apply the unsuitability criteria to coal lands that are included in both the high- and low-priority categories and Kindt Basin is planned to be reviewed in 1981. However, because of its lower priority the review would be dropped if funds were limited.

Other areas may also be excluded from lease consideration because the Survey considers them not to be of moderate or high development potential for conventional mining. For example, one company has indicated interest in obtaining a lease in the Wyoming Powder River Basin to develop an underground coal gasification project. The company has already performed a privately funded demonstration project on a State coal lease in the area. Company officials state that before they dedicate an estimated $50 to $200 million for project research and development, they need assurance that they can bid on a lease.

The coal is at least 400 feet below the surface, a depth that is not currently considered feasible for conventional mining in the Powder River Basin. Consequently, the area was not included in the land use planning update. BLM limited its current planning effort to surface-mineable coal; current planning schedules do not call for a revision in this effort until 1986. Thus, if the tract were included in the planning process, it might be available for lease sale in 1987 or 1988. This, however, is 3 to 4 years after the time the company claims to need the lease in order to begin a commercial synthetic fuels project that would be operating in 1990.

A BLM official told us no special effort was made to lease coal tracts in 1981 and 1982 for synthetic fuels use in Green River-Hams Fork and Powder River Basin. Nevertheless, at least three companies have formally or informally indicated interest in obtaining Federal coal leases for synthetic fuel development in these regions. Two of the indicated tracts of interest are in areas which were not reviewed for unsuitability criteria. The other tract of interest may not be large enough for a synthetic fuel operation, and is considered by the Survey to be suitable for a conventional mining operation.

CHAPTER 5

INSUFFICIENT COAL DATA LIMITS

THE AMOUNT OF COAL THAT CAN BE

CONSIDERED FOR LEASING

A key ingredient in the success of the new coal leasing program is the availability of adequate data. However, the Geological Survey in most cases does not have enough data to identify and evaluate tracts at a moment's notice, as is implied by the new program. Industry data may be used when available; otherwise, the Survey has to acquire the data through a Government-financed and managed exploration program. Exploration programs might take 12 to 24 months or longer when significant data gaps exist.

The resumption of Federal coal leasing activities after almost 10 years and the experience with the first couple of lease sales demonstrate the crucial importance of coal data. In many cases what is needed most is what is least available. An all-encompassing data base is lacking. During most of the past 10 years, the Survey has been intensively studying the geological characteristics of certain coal fields and collecting coal data; however, work has not progressed to the point, and perhaps never will, where the Survey could review an existing coal data base and delineate lease tracts without the need for considerable field work and drilling.

Clearly, there is a need for more and better coal data. These actions by the Survey, the Forest Service, BLM, and Interior headquarters would help:

--The Survey's exploration planning capability should be improved.

--The Forest Service and BLM should improve planning requirements.

--The Survey's lease tract reserve evaluation procedures should be improved.

--Interior should encourage private sector exploration.

THE SURVEY'S EXPLORATION PLANNING CAPABILITY SHOULD BE IMPROVED

Exploration activities are needed to improve the Survey's knowledge of coal resources and to delineate tracts. Now that a leasing program is in effect, the Survey can better identify the need for drilling and other exploration work and effectivey plan for this work.

Planning in the past was difficult because of the absence of a leasing program. Coal data used in delineating tracts for the first proposed lease sale was obtained before the Secretary of the Interior adopted the Federal Coal Management Program. For the Green River-Hams Fork and Uinta-Southwestern Utah regions, coal data is limited and, except for some of the tracts already delineated and ready for economic evaluation, generally not adequate for delineating tracts. According to Survey officials this is also true for most other coal regions, although some data is available.

Three conditions point to the need for improvements in exploration planning. First, planning to date has been limited generally to the next drilling season, which usually occurs between spring and fall. Longer range plans have not been prepared, although some Survey field offices are beginning to implement long-range planning.

Secondly, effective planning is constricted not only by the Survey's incomplete knowledge of the coal regions but also by the fact that formal input from the public is not obtained. Others may be more knowledgable than the Survey of some potentially mineable coal deposits that are inadequately drilled or are only projected to exist. Thirdly, planning does not always involve the Survey official responsible for managing the tract delineation phase of activity planning. Tract delineation team leaders are not yet assigned for every coal region where leasing is anticipated.

Certain actions will provide a more systematic and orderly process in planning exploration activites and identifying the need for drilling. These are:

--Development of long-range exploration plans.

--Industry input on target exploration areas.

--Assignment of permanent team leaders for tract delineation.

Development of long-range exploration plans

Survey field officials have not yet identified potential drilling requirements for 1981. The officials indicate that they know in a general way where drilling is needed to continue their ongoing evaluation of coal reserves, but that specific plans have not been made. Survey headquarters estimates that about $4.4 million may be available for all coal drilling activities in 1981. This may not be adequate for data-gathering activities that are needed to support the leasing program.

Field geologists presently estimate that drilling costing about $3.4 million is needed to delineate lease tracts for a 1984 lease sale in Green River-Hams Fork. This is a preliminary estimate and subject to change as more is known about the need for leasing in 1984, and as more geologic information is obtained. The Survey is planning to do some of the drilling in 1980 but has not determined when the remaining drilling will be completed.

Drilling requirements for a 1983 lease sale in Utah have not yet been identified, although Survey field officials are reviewing the leasing area to determine the requirement. The Survey has allocated $2.2 million for drilling in Utah in 1980, and it is attempting to provide an additional $2.3 million. This drilling will probably provide some data for both the 1981 and 1983 lease sales. Drilling is expensive in Utah because of the depth of the coal. Some holes are projected to cost between $80,000 and $100,000--as compared to some holes in northwest Colorado estimated to cost between $10,000 and $20,000. Survey field officials believe that about $5 million per year will be necessary for drilling in Utah over the next 2 or 3 years.

With the adoption of a leasing program, exploration planning is necessary to determine funding and staffing requirements. A long-range exploration plan that forecasts coal data requirements for tract delineation in all coal regions where leasing may occur will improve the Survey's ability to anticipate needs and make appropriate budget requests. In response to our concern, Survey field officials have started to prepare a 5-year exploration plan for coal regions in Colorado and Utah. This 5-year plan will be in addition to the plan the Survey already has developed as a result of the Federal Coal Leasing Amendments Act of 1976. The latter does not consider specific drilling estimates in support of the tract delineation phase of the new leasing program.

A long-range plan will also help the Survey determine the impact of current and proposed staffing levels on its ability to explore and delineate lease tracts. For example, a reorganization in the Conservation Division--the Survey organization responsible for lease tract evaluation--is being implemented which may substantially reduce the number of field geologist positions. Field officials have told us that for the office responsible for exploration in Colorado and Utah, the staff will be cut by about 35 percent--from 65 to 42 positions. This is a loss of 23 positions, most of which are geologists.

The advisability of a reduction in geologist positions for coal evaluation at a time when a new leasing program is being implemented is questionable, particularly when the program is dependent on large amounts of data. A senior Survey official told us that after the reduction, geologist positions in coal evaluation may have to be reauthorized. Until the Survey does an analysis of the effect of a decrease in geologist positions, a reduction should not be approved. A long-range exploration plan would help the Survey anticipate staffing needs and assess the impact of a decrease in geologist positions.

The long-range plan should relate exploration estimates to preliminary judgments of the quantity of coal reserves which may be identified. This can then be related in a general but nonetheless meaningful way to BLM's leasing targets for each coal region. This estimate would be useful for judging the adequacy of the exploration program. In addition, a plan that identifies target areas for exploration work--specific areas on a map--can be used as a coordination tool for conferring with BLM district and State offices, other Federal agencies, State agencies, and members of the regional coal teams.

Industry input on target exploration areas

The Survey must identify, explore, and evaluate coal deposits on a continuing basis to minimize inadequacies in coal data for activity planning. As emphasized in the previous section, long-range exploration planning will help contribute to meeting this objective. Industry input on target exploration areas will add an important dimension to the Survey's long-range planning function.

Existing provisions for industry input do not focus on the need for exploration. Expressions of interest identify tracts that industry would like to lease in limited areas specified by BLM. They only pertain to exploration if the tract requires additional drilling to meet Survey reserve estimating criteria. Because they only pertain to limited areas, long-range exploration planning is not benefited.

The Survey's exploration strategy could be enhanced by obtaining industry's perspective on where resource evaluations should be focused. If this were done, situations as have occurred in the Green River-Hams Fork activity planning phase would be avoided or reduced to a minimum. For example, a potential tract of about 3,400 acres, known as Bell Rock, had to be decreased by the Survey to about 400 acres because they did not have data to evaluate the entire tract. If the entire 3,400-acre tract could be approved for lease sale, it might generate competitive interest because of the size of the potential reserves--which may be about 100 million tons of underground mineable coal. If only the 400-acre tract is leased, an adjacent mining operator will probably be the only party to bid at a lease sale. This is apparent since the 400 acres is estimated to contain only about 12 million tons of underground mineable coal, and it is accessible by an adjacent operator from an existing mine without the need for a new mine shaft. Thus, with more data, which could possibly be obtained from the industry, considerably more coal could be leased and competition would be improved.

The Survey should attempt to obtain all information possible to help pinpoint the coal deposits where drilling is needed to identify recoverable reserves, expand Known Recoverable Coal Resource Areas, and assess mining potential. This is particlarly important since the Survey's knowledge, although comprehensive in certain cases, is in most cases incomplete. The Survey has no means to solicit and obtain formal industry input on areas where coal exploration is needed. Such input would be a valuable source of information to the Survey in planning a long-range exploration program that would deal with exploration needs in many coal regions. The combination of this information with the Survey's knowledge of coal deposits would help geologists best select the areas where the limited Federal funds will be spent and, consequently, where the Survey will defer to the private sector for drilling, either in the short-run or the long-run.

Assignment of team leaders for tract delineation

The immediate designation of team leaders for tract delineation in each coal region where leasing is anticipated would be more orderly and efficient. BLM is planning ten regional lease sales in the West in fiscal years 1981 through 1984, as well as fiscal year 1987, but tract delineation team leaders have not yet been appointed for some of the regions.

The acquisition of coal data is time-consuming. According to Survey officials, about 2 years may be needed to obtain data on prospective tracts that have not been explored. The formal designation of tract delineation team leaders in coal regions where leasing is anticipated would create a focal point for planning the exploration of target areas where tracts may eventually be delineated and leased.

Such an orderly and systematic process was not used in the Survey's preparation for the first proposed lease sale. The Survey did not have time to prepare adequately for this work. Once activity planning started, the Survey had to quickly delineate tracts with available data, without an opportunity to evaluate the adequacy of the data. After initial delineation, reserve estimates on about half of the tracts were revised as a result of the Survey's re-examination of the coal data.

The team leader would also serve as a point of contact with other Federal and State agencies as well as the private sector. This official would assimilate and review available coal data in anticipation of tract delineation. Responsibility for tract delineation functions would consequently be fixed early in the process, when problems could be anticipated and solved.

FOREST SERVICE AND BLM PLANNING REQUIREMENTS SHOULD BE IMPROVED

The Forest Service and BLM need coal data for land use planning, site-specific analyses, tract ranking, tract selection, and leasing. However, the time allowed the Survey by both agencies for coal data acquisition may restrict the number of tracts that could be delineated and considered for leasing between 1981 and 1985. Leasing decisions might be different--considering mining economics, coal quality, environmental impacts, socioeconomic impacts, etc.--if adequate lead times for coal data acquisition were factored into land use planning and activity planning schedules.

Two conditions point to the need for revisions in Forest Service and BLM planning requirements and schedules. The conditions pertain to lead times for acquiring coal data in land use planning and activity planning. First, Forest

Service officials in the Manti-LaSal National Forest--located in the Uinta-Southwestern Utah Coal Region--are preparing a new land use plan for the Forest and will not say whether coal data submitted by the Survey will be used if it does not meet a "demonstrated" level of reliability. 1/ The time frame for developing a data base is short, and under present circumstances, the Survey will probably not be able to evaluate all prospective coal mining areas in time to meet the Forest Service's deadline.

Secondly, BLM's activity planning schedules for the 1981-1983 period do not provide sufficient lead times to undertake and complete exploration and drilling work for tract delineation and evaluation. Exploration prior to activity planning will not resolve all the data deficiencies or necessarily provide the number of tracts needed for a lease sale.

Certain actions will help provide adequate lead times for coal data acquisition.

--Establishment of standards for the reliability of coal reserve estimates need to be retained as a Survey responsibility even for land use planning efforts undertaken by the Forest Service.

--Reasonable lead times need to be developed for tract delineation in BLM's activity planning schedules.

Establishment of standards for the reliability of coal reserve estimates need to be retained as a Survey responsibility even for land use planning efforts undertaken by the Forest Service

The Forest Service--as well as BLM--needs coal data for land use planning. The Federal Coal Leasing Amendments Act of 1976 requires that "no lease sale shall be held unless the lands containing the coal deposits have been included in a comprehensive land-use plan and such sale is compatible with such plan." According to the act, the plan shall include an assessment of the amount of coal which is recoverable.

1/See glossary.

Forest Service officials for the Manti-LaSal National Forest state that their existing land use plan is inadequate for the current requirements of coal management. A new plan is now in the initial phases of development and is expected to be completed by July 1981. The plan will be effective for 10 years and will be reviewed in 5 years. It will include a land management decision on areas to consider for future coal leasing. However, estimates of recoverable reserves are needed for lands to be considered for this potential leasing category. While Forest Service officials have not specified the level of reliability needed for the reserve estimate, they believe that a demonstrated reserve estimate 1/ will probably be necessary. The officials could not tell us whether areas with a lesser degree of reliability in the estimate would be considered in the land use plan.

The desire of Forest Service officials to have coal data for land use planning that meets tract delineation requirements brings into question the Survey's role in technical coal-related matters. Under provisions of the Federal Coal Leasing Amendments Act of 1976 the Government's coal resources must be evaluated. Survey is the technical arm of the Government for coal data acquisition and analysis. It has established procedures for drilling and evaluating coal deposits that are owned by the Government. We agree with the Secretary of Agriculture that "The Forest Service does not have the responsibility for deciding the standards for coal reserve estimates."

Another problem associated with the preparation of reliable reserve estimates is the lead time for data acquisition. This is a constraint because, according to Forest Service officials, exploration work must be completed in the fall of 1980 for its new land use plan. If coal data is not available, the area will not be evaluated for inclusion in the potential leasing category. Survey was officially informed of the land use planning effort, and the associated coal studies that would be required, in April 1980.

A number of factors decrease the probability that the Survey will accomplish a significant amount of drilling in 1980 to evaluate areas for the land use plan--let alone to delineate tracts for a 1983 or other subsequent lease sale in the Manti-

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1/See glossary.

LaSal National Forest. The Survey presently lacks the funds and, in any event, Forest Service officials state they would not be ready to authorize Survey's access to many of the drill sites until mid- to late-summer. Much of the drilling planned by the Survey for 1980 probably will not be approved until July or August because the Forest Service and the Survey must complete an environmental assessment. Forest Service officials state that 4 to 6 weeks are required to prepare each environmental assessment and that their workload allocation among various activites as well as limited access to the site because of snow places constraints on when the proposed drilling can be reviewed. In addition, the Survey prepares an environmental assessment, with most of the information extracted from the Forest Service report. The Survey's report requires approximately 2 weeks to prepare.

Consequently, because of the lack of clear guidance pertaining to coal evaluation work to support land use planning decisions and short lead times for completing the work, the Forest Service and Interior may have a limited data base from which to make coal leasing decisions over the next 5 to 10 years in the Manti-LaSal National Forest. The land use plan could be revised before the 5-year review point is reached. However, an amendment might be time consuming, especially if an environmental impact statement would also be required. This action, if caused by a failure to consider coal data that is not at the level of reliability used for tract delineation but which would meet the Survey's requirements, could be anticipated and avoided.

Furthermore, the Forest Service's ability to permit drilling in a timely manner and the Survey's ability to drill the required number of holes over a short period are factors that need to be seriously considered in establishing data requirements. The Forest Service and the Survey need to coordinate as early as possible concerning proposed drilling sites to enable the preparation of drilling schedules so that timely coal evaluations can be accomplished.

Reasonable lead times need to be developed for tract delineation in BLM's activity planning schedules

Under the Federal Coal Management Program, BLM obtains coal data for land use planning from the Survey's coal resource occurrence/coal development potential and regional mapping programs. Neither of these mapping programs can be depended upon to provide sufficient information for tract delineation.

Furthermore, under existing planning schedules, the Survey will probably not be able to complete exploration of all potential lease tracts prior to the tract delineation phase of activity planning. In the first two proposed lease sales, the Survey has demonstrated that drilling is required in the activity planning stage to delineate tracts.

BLM's planning for lease sales between 1981 and 1983 does not reflect the lead times necessary to gather and evaluate coal data in the activity planning phase. BLM estimates that activity planning will require an average of 21 months. This estimate pertains to all activity planning functions, including tract delineation, site-specific analysis, regional lease sale environmental statement, etc. The average period allotted for tract delineation and site-specific analysis is about 10 months. Based on the time required for tract delineation and site-specific analysis for the first proposed lease sale, about 6 months would be allotted to tract delineation.

For the first proposed lease sale the initial work schedule prepared by BLM called for tract delineation to start August 24, 1979, and finish September 14, 1979--3 weeks. The tract delineation team actually spent over 3 months. After this was completed, most of the tract reserve evaluations were revised. About half of the 16 tracts had to be re-evaluated as a result of further environmental analysis during activity planning. Partially as a result of our review of some of the tracts, the Survey also undertook a more rigorous examination of the coal data which resulted in revised reserve estimates.

BLM's activity planning schedule shows that planning for the 1981-1983 lease sales will start in the same fiscal year quarter that drilling can usually occur. This may be too late for the Survey to plan for and complete any substantial additional drilling needed for the delineation effort--after land use planning is completed and expressions of interest are received.

Survey field officials believe that tract delineation--obtaining coal resource data and evaluating the data to identify potential lease boundaries--should be done over at least a 1-year and possibly 2-year period to allow for intensive data collection and interpretation. The time needed will depend on the area being considered for the sale, the data that is available, and the magnitude of the sale--among other factors.

In order to allow time for at least one drilling season for data acquisition, about 6 months would have to be added to the activity planning phase because the drilling season is limited by weather conditions and does not last year round in most western coal regions. Its length usually varies from 4 to 6 months, beginning in the spring and ending in the fall. Planning for the drilling season adds another 4 to 6 months to this cycle at the front end, so that the necessary drilling contracting can be done.

The failure to allow adequately for drilling to fill in data gaps during activity planning may not only limit the amount of coal that can be considered for leasing but also may affect competition. Some tracts may consequently be so limited in size that interest in bidding would be diminished. Furthermore, future leasing of adjacent areas could be necessary to complete the formation of a mining unit. The tract (see p. 45) which was reduced from over 3,400 acres to about 400 acres because of a lack of coal data may fall in this category.

The activity planning schedule consequently has a major impact on the Survey's ability to delineate tracts both of a desirable mining unit size and of sufficient quantity. Interior officials told us the schedule was developed in Washington. The time required by the Survey to complete tract delineation work is best estimated by the tract delineation team and field management officials. The Survey field participants were not consulted about this prior to the time the work schedule was established. Closer coordination between BLM and the Survey would help prevent unrealistic schedules from being developed and used in scheduling future lease sales.

SURVEY LEASE TRACT RESERVE EVALUATION PROCEDURES SHOULD BE IMPROVED

The Green River-Hams Fork lease sale effort, the first attempt by Interior to lease coal under the Federal Coal Management Program, is also the first attempt at tract delineation. Strict time frames for the lease sale prevented the development of a tract delineation system. As previously discussed, the Survey was requested to prepare reserve estimates as quickly as possible. Throughout the tract delineation phase, Survey field officials informed BLM and the regional coal team that many of the estimates were not valid and that additional exploration and review of geologic data would be necessary. The officials emphasized to us that BLM needed estimates as quickly as possible to begin site-specific environmental analyses and to prepare a draft environmental impact statement in order to meet the leasing schedule.

Two conditions point to the need for improvements in least tract reserve evaluation procedures. First, criteria for computing reserve estimates are not consistently applied and procedures for evaluating reserves are not adequate to assure the consideration of all known conditions. Second, the review of reserve estimating procedures, data, assumptions, and calculations has been informal and weak. Senior field management officials have not sufficiently participated in the review and approval of in-place and recoverable reserve estimates.

Certain actions will improve lease tract reserve evaluation procedures.

--Procedures need to be clarified for making reserve estimates.

--Formal procedures are needed for quality control.

Procedures need to be clarified for making reserve estimates

Our geologist reviewed delineation work on 25 percent of the tracts in Green River-Hams Fork. As previously stated, our initial review resulted in a re-examination by the Survey of some of the tracts. Our followup review indicated substantial improvements. However, we are still concerned about the procedures and assumptions being used in estimating reserves. The following two examples indicate that reserve estimating procedures are not yet fully developed.

On one of the tracts a coal bed was excluded because it was "less than the minimum 4 feet in thickness." This is not consistent with the Survey's published (Bulletin 1450-B) reserve calculation criterion of a 28-inch minimum thickness. If the published criteria is not valid for computing reserve estimates, it should be revised. If it is valid, the in-place reserve estimates for lease tracts should be based on it.

Furthermore, the reserve estimate for this tract may be understated. Drill logs indicate the existence of other potentially mineable underground coal beds which lie above the beds included in the tract. If the upper beds are excluded from the tract, maximum economic recovery of the lower coal beds may be decreased because coal may have to be left in place to keep the upper beds from caving in.

On two tracts, the reserve estimate may be overstated because the Survey concluded in the tract delineation report that "burned beds and oxidized zones are not believed to occur significantly." Burned coal can occur when coal is exposed (outcrop) on the side of ridges where it is more exposed to oxygen.

Some of the beds in question are on ridges and have (or had) outcrop exposures of up to 11 feet. According to the tract delineation report the outcrop was projected on a topographic map and Survey geologists state that it was not identified when drilling was done.

The report's conclusion is contradicted by a 1930 Survey publication (Bulletin 812-c) and a conclusion given us by a former Survey coal geologist. According to these sources substantial areas of burned coal exist in the area where the tracts are located. This was also confirmed by a coal mining company knowledgable of the area.

The failure to consider burned coal on these tracts is inconsistent with the method for computing reserves on another tract. On the other tract Survey geologists projected an area of burned coal and factored this into the reserve estimate calculation. We did not compute a reserve estimate on the tract for which the Survey did not consider burned coal, but our geologist estimates that the reserves could be overstated by between 10 and 25 percent.

Inconsistencies in estimating procedures, discrepancies with published estimation criteria, failure to include all known coal that is technically mineable, and failure to consider all known geologic conditions indicate that reserve estimating procedures need to be improved. The validity of the reserve estimates is important not only for a number of different steps in the activity planning process but also for the overall credibility of the Federal Coal Management Program. In addition, the Federal Coal Leasing Amendments Act of 1976 strongly emphasizes the importance of valid reserve estimates. Reserve estimating procedures need to be clarified to prevent the above problems from recurring.

Formal procedures are needed for quality control

Quality control has been weak at best. It is informally administered and does not directly involve senior field management officials. Invalid reserve estimates have been reported to the regional coal team. This should not have been allowed to occur--regardless of the time constraints. The amount of time and work for delineating and evaluating tracts is increased when inaccurate data is used and poor decisions result from the use of this data.

Formal quality control procedures that require a rigorous and intensive examination of coal data, assumptions, and evaluations will help insure that the reserve estimate conforms with Survey standards and is as complete as the available data and geological knowledge of the area permit. It is a "check and balance" that all involved in the process should welcome as a constructive and positive procedure.

After the Green River-Hams Fork tracts were delineated, the tract delineation team leader requested a peer review of the work. While this type of review can be constructive, it is an informal mechanism that is not built upon the authority of senior field management officials. The process would be strengthened if the reviewers were directly responsible to senior field management officials. Such a review should be documented, indicating findings such as omitted data, questionable assumptions, etc. Senior field management officials should make the final determination on the reasonableness and validity of the reserve estimate and report his/her conclusions to the regional coal team.

INTERIOR SHOULD ENCOURAGE PRIVATE SECTOR EXPLORATION

As we stated in our 1976 report, 1/ the private sector should be encouraged to engage in pre-lease informational drilling. To some extent companies are obtaining exploration licenses to drill prior to lease sale. For certain tracts in the Green River-Hams Fork and Uinta-Southwestern Utah Coal Regions, several companies have obtained or indicated they would apply for exploration licenses. The resumption of a leasing program has undoubtedly contributed to a greater interest by the industry in drilling without a preferential right to a lease. However, the substantial portion of pre-lease informational drilling is still done by the Survey. The private sector could do more drilling if encouraged to do so by Interior.

1/"Role of Federal Coal Resources in Meeting National Energy Goals Needs to be Determined and the Leasing Process Improved," RED-76-79, April 1, 1976.

Two conditions point to the need for Interior to more strongly encourage added exploration by the private sector. First, in evaluating the reserves on a potential exchange tract--the Utah Power and Light land exchange evaluation authorized by Public Law 95-554--the Survey was directed to do the drilling even though Utah Power and Light offered to do it at its expense and make all the data public. Secondly, Interior will not assure coal companies at the time exploration licenses are granted that the licensee can bid on the tract being evaluated if a lease sale is held.

Certain actions will encourage private sector exploration:

--Procedures are needed for private sector drilling on candidate exchange tracts.

--Assurance is needed that a company which drilled on a non-exchange tract can bid for the tract.

Procedures are needed for private sector drilling on candidate exchange tracts

In a significant, possibly precedent-setting coal land exchange being considered by Interior, the Survey is paying about $1.5 million to drill a candidate exchange tract. This drilling was unanticipated by the Survey when the 1980 drilling budget was prepared. It has affected the Survey's ability to drill in 1979 and 1980 on other tracts that could be considered for competitive leasing. An option for drilling of candidate exchange tracts by the private sector has been turned down in this case, and Interior's policy on future drilling by the private sector is unclear.

A land exchange evaluation for preference right lease applications held by Utah Power and Light Company was authorized by the Congress in an amendment to the Mineral Leasing Act of 1920 which was passed in October 1978. In March 1979 Interior and Utah Power and Light Company signed an agreement for the evaluation of the exchange lands. In the agreement, Utah Power and Light Company was authorized to do the drilling on a prospective exchange tract in the Manti-LaSal National Forest. Under an exploration license, the company would be protected from public disclosure of the drilling data according to the Federal Coal Leasing Amendments Act of 1976.

When the Forest Service was notified of the agreement, it objected. One of the reasons was the propriety of Utah Power and Light Company's obtaining confidential drilling information.

It was felt this might discourage competitive bidding if the tract were offered for lease sale rather than leased in exchange for the company's preference right lease applications.

In June 1979 a revised agreement was signed which required the Survey to do the drilling rather than Utah Power and Light Company. However, the Forest Service's concern about Utah Power and Light Company doing the drilling had been alleviated in May 1979. The company agreed to make the results of its drilling program public. Consequently, according to the Regional Forest Office, the Forest Service dropped its objections to drilling by Utah Power and Light Company. Nonetheless, the final agreement for the exchange evaluation required the Survey to do the drilling, presumably to meet the Forest Service's objection.

Future exchange evaluations may be made--it is uncertain what the magnitude might be. If the Survey is required to drill these tracts, the cost could be substantial. Clear policy guidance, advance coordination with all parties involved, and thorough review of the effect of Government versus private sector drilling will help avoid the chaotic situation created in this exchange evaluation case. Procedures should be developed under which land exchange applicants could drill the candidate exchange tracts.

Assurance is needed that a company who drilled on a non-exchange tract can bid for the tract

Companies who obtain coal exploration licenses have no assurance that they will be given an opportunity to bid on the coal they explored, if it is included in a lease sale. Interior's policy allows it to keep open all options until late in activity planning. For example, options include unlimited competitive bidding versus limited competitive bidding (special lease sale set aside). However, it may discourage private sector exploration. If it does--and some companies we have talked to believe it will--the cost to the Government for managing public lands will be increased unnecessarily.

The Federal Coal Leasing Amendments Act of 1976 states that "the issuance of exploration licenses shall not preclude the Secretary from issuing coal leases at such times and locations and to such persons as he deems appropriate." Interior, however, is of the position that the act's requirement that "a reasonable number of leasing tracts shall be reserved and offered for lease * * * to public bodies" prevents the Secretary/ from assuring any exploration licensee an opportunity to submit a bid at a lease sale. It is clear, however, that this reservation requirement would not prevent Interior from assuring an exploration licensee the opportunity to compete for a non-reserved tract.

If the private sector is to be encouraged to explore to supplement drilling by the Survey, this disincentive should be removed. Interior, through its own drilling program or through information obtained by public bodies or small businesses, could reserve tracts for special leasing opportunities and still provide an opportunity for exploration licensees to bid on tracts that they drilled if the tracts become available for leasing.

CHAPTER 6

CONCLUSIONS AND RECOMMENDATIONS

The Department of the Interior is resuming coal leasing activities--after almost 10 years of inactivity--by implementing the Federal Coal Management Program. It comes at a crucial time. This Nation has coal in abundance and it is expected to be relied on increasingly throughout the remainder of this century as the one important energy supply source which can help bridge the gap between overdependence on foreign oil and gas and ultimate reliance on inexhaustible resources. And because much of the Nation's most economically mineable coal lies on Federal or interspersed non-Federal lands in the West, Federal leasing policies hold the key to whether this gap can and will be filled. Yet, our review of the first scheduled lease sale--to be held in Wyoming and Colorado in January 1981--suggests problems with the new program. If not corrected early, these problems could seriously impair the program's success and the Nation's attempt to satisfy its energy needs. The problems include:

--Leasing targets based on questionable and/or invalid assumptions that could lead to significant shortfalls in meeting national energy needs.

--Delay in obtaining expressions of leasing interest until after land use planning, adversely affecting the leasing process.

--Insufficient coal data limiting the amount of coal that can be considered for leasing.

LEASING TARGETS BASED ON QUESTIONABLE AND/OR INVALID ASSUMPTIONS THAT COULD LEAD TO SIGNIFICANT SHORTFALLS IN MEETING NATIONAL ENERGY NEEDS

Our analysis indicates that Interior's leasing target should be about three times greater than it is. The assumptions used by Interior in deriving its leasing targets are questionable in some cases and invalid in others. In addition to significant shortfalls in the coming Green River-Hams Fork sale, if Interior does not update its assumptions and improve its target-setting process, the risk also is increased of not leasing sufficient coal in other future sales to satisfy national energy needs.

In the first instance, Interior should not assume that the Cherokee mine will be in full production by 1987, since the company owning 50 percent of the coal reserves has repeatedly informed them the mine will not be operating at full capacity by the target year. Taking this into consideration, the production shortfall calculated by Interior should have been 23.5 million tons of annual production in 1987 rather than 18.5 million tons--which could understate the leasing target by 195 million tons.

In addition, the lead time allotted by Interior between lease issuance and full production needs to be increased to realistically account for uncertainties. Interior admits the actual lead time needed is unknown but estimates the time would range from 4 to 10 years depending on such things as market conditions. However, for this lease sale, Interior assumed a lead time of only 6 years, even though BLM used a 9-year lead time in its environmental analysis. If the 6-year lead time is too short--which Interior admits may be the case--the risk is increased not only of having a further production shortfall in 1987, but also not leasing sufficient coal to satisfy demand in subsequent years. This could further understate the leasing target by about 781 million tons.

Also, Interior used outdated data or made inaccurate assumptions pertaining to coal recovery factors, mine life, and ownership ratios. Assuming Interior's method for calculating the leasing target is correct, but using the Survey's later site-specific data and analysis, this could understate the leasing target by 82 million tons.

Further, Interior's recent action to increase its leasing target for Green River Hams Fork by a 25 percent "safety margin" in order to both account for uncertainty and increase competition may be insufficient to do either. The 25 percent margin could be entirely accounted for by inaccurate coal reserve estimates, since such estimates--even at the highest level of confidence may be inaccurate by at least 20 percent. Thus, Interior might not be leasing sufficient coal either to stimulate healthy price competition and reasonable coal prices or to account for the likelihood that some of the coal offered for lease will not receive an acceptable bid and that some of the coal leased will not be mined. This could further understate the leasing target by 121 million tons.

In summary, our analysis indicates that because of faulty assumptions Interior's leasing target of 520 million tons could be understated by about 1.2 billion tons.

It is noted, however, that the Survey's estimated total Federal production from all the tracts delineated for the Green River-Hams Fork sale totals only about 509 million tons--about 1.2 billion tons less than the leasing target. Thus, since additional coal from Green River-Hams Fork cannot be made available at this late date for the 1981 lease sale, immediate action--possibly a 1982 follow-on lease sale--is needed to provide sufficient coal in Green River-Hams Fork to meet the region's projected coal demand.

Because Interior's leasing actions are a critical element in meeting national coal production goals, it would seem to be within the scope of the Leasing Liaison Committee to evaluate these and other assumptions used in formulating the targets and to make recommendations to the respective Secretaries on how modification to the targets could better assure that national energy goals are satisfied. In some cases, the Committee might not have the expertise to address certain issues. In such instances the Committee should call upon the persons and or agencies that would best assist them in evaluating the targets.

DELAY IN OBTAINING EXPRESSIONS OF LEASING INTEREST UNTIL AFTER LAND USE PLANNING ADVERSELY AFFECTS THE LEASING PROCESS

The exclusion of formal expressions of leasing interest prior to land use planning is detrimental to an effective leasing process. Areas of high-quality coal that industry is interested in mining have been ignored in the first lease sale. When he approved the Federal Coal Management Program the Secretary determined an immediate need for leasing. Areas were selected for application of the unsuitability criteria without regard to where coal development might be most favorable. This approach to planning indicates some high-quality-coal areas in which industry is interested will be overlooked in the future.

BLM requests formal public input on where leasing should occur in an area only after the land use plan for that area is completed. The plan's coverage of coal land has been limited to land which is within a Known Recoverable Coal Resource Area and rated as having moderate or high development potential. Once the land use plan is completed, excluded areas--even though they may contain high-quality coal--cannot be considered for leasing until the land use plan is revised. As a result, Interior will probably exclude areas of high-quality coal from possible lease consideration until the late 1980s, even though tentative plans by industry indicate a potential need for the leases in the near future.

Several areas in Green River-Hams Fork and the Powder River Basin serve as illustrations. They have drawn industry interest in recent years in connection with coal-based synthetic fuel development. Such development, however, is not being considered in the 1981 and 1982 lease sales even though one company formally expressed an interest in a coal lease for this purpose. The expression was not asked for prior to selecting areas for the application of unsuitability criteria. This situation is likely to recur.

Cumulative environmental and socioeconomic impact assessment and Interior's intent to use threshold development levels to guide the leasing program make these issues more significant. The use of thresholds could preclude Interior from leasing additional coal in an area because that area has reached a predetermined maximum level of development. Though well intended, this could be unfair. Interior needs to consider all potential mining operations from an energy, economic, environmental, and socioeconomic standpoint to determine leasing priorities <u>before</u> it awards leases. As discussed above, BLM does not now consider all potential mining operations--formal expressions of interest are not obtained prior to updating land use plans for unsuitability criteria. Thus, some areas considered to be of high production potential by the industry are not included in the land use planning effort.

Clearer signals are needed between industry and Interior so that lands with development potential can be evaluated for leasing. Interior's position against early formal expressions of interest works against this. Critical energy needs, particularly for coal development, necessitate a more active role on Interior's part. Periodic requests for expressions of interest, not limited by the status of land use planning, would place industry on notice that its plans are essential for establishing planning priorities and evaluating the potential for leasing of tract areas in a timely manner. Early expressions would also help Interior allocate time-consuming and resource-consuming activities that precede lease issuance.

In light of the Secretary's determination that there is an immediate need for coal leasing and the President's call for alternative uses of coal to strengthen the national security, Interior needs to request early, and formally, information from all concerned parties on where coal leasing should take place. This information would not bind Interior to where leasing would take place but would increase its data base for determining the areas of highest priority for land use planning. Early expressions would better focus the planning processes of Interior and the leasing and production processes of the private sector, and put them on the same course, rather than separate ones. This "check and balance" would also help to better focus the commitment of limited funds and personnel to optional areas for possible leasing and coal production.

INSUFFICIENT COAL DATA LIMITS THE AMOUNT OF COAL THAT CAN BE CONSIDERED FOR LEASING

A key ingredient in the success of the new coal leasing program is the availability of adequate data. However, the Geological Survey in most cases does not have enough data to identify and evaluate tracts at a moment's notice, as is implied by the program. Industry data may be used when available; otherwise, the Survey has to acquire the data through a Government-financed and managed exploration program. Exploration programs might take 12 to 24 months or longer when significant data gaps exist.

The exploration and tract delineation process can be improved by the Survey. In fact, the Survey field office working on the first proposed lease sale has already started to implement some of our recommendations. In some cases, we are taking what this office is doing and recommending adoption throughout the Survey.

The Survey's exploration planning should be improved by planning on a long-term basis, obtaining formal public input on target exploration areas, and designating tract delineation team leaders for all coal regions where leasing is anticipated. A long-range exploration plan that is periodically updated will not only be a budgeting tool for use in determining funding and staffing requirements but also a mechanism to estimate exploration needs which reflect the Department of Energy's production goals. Periodic formal public input on target exploration areas will help the Survey identify those areas where drilling should be done. The Survey does not possess complete knowledge of where the best coal deposits are located, from either a mineability or environmental standpoint. Attempts to acquire information in a public and open setting should be encouraged. Permanently assigned tract delineation team leaders for all coal regions where leasing is anticipated will strengthen management and planning, particularly for assessing future drilling needs early.

The Survey's lease tract reserve evaluation procedures should be improved by clarifying procedures for making reserve estimates and formalizing procedures for quality control. Clarified procedures will promote the preparation of valid reserve estimates if they focus on (1) eliminating inconsistencies in estimating procedures and discrepancies with published estimation criteria and (2) assuring that all coal that is known to be technically and economically mineable and all known geologic conditions will be included in preparing the estimates. Formalized quality control procedures that involve senior field management will help insure that reserve estimates conform with Survey standards and are as complete as data and geological knowledge will allow.

BLM and the Forest Service have an impact on the tract delineation process and should take action to develop more realistic planning requirements. BLM should develop reasonable lead times for tract delineation in activity planning schedules. This will allow the Survey to complete exploration needed before tract delineation can occur, and will insure that data gaps can be filled in and mining units completed before leases are issued. The Forest Service should clarify that the Survey will establish standards for reserve estimates that are to be used for land use planning as well as for tract delineation purposes, and should work closely with the Survey so that the necessary lead time will be available for the Survey to obtain sufficient data for tract delineation purposes.

In addition to Government-sponsored exploration, the private sector could obtain large quantities of coal data. Interior should actively encourage the private sector to engage in pre-lease informational drilling. Interior should develop procedures under which land exchange applicants could drill candidate exchange tracts. This could promote the establishment of clear policy guidance and prevent the recurrence of costly and unnecessary Survey drilling, such as happened in the Utah Power and Light Company exchange case.

Interior should also establish a policy that those who obtain exploration licenses to drill non-exchange tracts would be allowed to bid for the tract if a competitive lease sale were held. If a public body does not desire to participate in a drilling program with other companies requesting an exploration license, Interior should have no objection to making such a determination. This will not affect tracts for special leasing opportunities since Interior would have to designate these early or identify such tracts through its own drilling program. It will encourage private sector drilling.

RECOMMENDATIONS

Recommendations to the Secretaries of Energy and the Interior

Limited tract delineation efforts in Green River-Hams Fork will preclude Interior from making available at this late date sufficient quantities of additional coal to make up for the 1981 leasing shortfall. Therefore, we recommend that the Secretary of the Interior initiate immediate plans for a follow-on sale--possibly in 1982--to meet the region's projected coal demand. In re-calculating the regional leasing target, the Secretary should:

--Exclude production from the Cherokee mine.

--Allow for a more realistic lead time for leases to reach full production.

--Require estimates for coal recovery, mine life, and Federal coal ownership based on the most recent, site-specific analysis.

--Include a margin of error for the Geological Survey's coal reserve estimates.

Even more basically, however, Interior needs to improve its target-setting process related to other future lease sales. Because of its criticality, we recommend that the Departments of Energy and the Interior--through the Leasing Liaison Committee--jointly review the assumptions used in establishing leasing targets, including the factors indicated above, to assure that sufficient coal will be leased to satisfy national energy goals, as well as to promote healthy price competition. The review should be documented with a written report submitted to the respective Secretaries.

To insure that areas of high-quality coal are not ignored in future lease sales, the Secretary of the Interior should:

--Add a requirement that the Bureau of Land Management formally and periodically request, through the Federal Register, expressions of interest in possible lease tracts for all land use planning areas that contain Federal coal.

--Insure that land use planning for coal is not limited to so-called Known Recoverable Coal Resource Areas when development interest is indicated by industry and coal data is available elsewhere.

--Decide on whether, and if so how, threshold development levels will be used so that present uncertainty over how much leasing can actually occur in given areas is eliminated.

The new coal program requires substantial amounts of coal data for use in numerous analytical and decision making steps. To meet this need, the Secretary of the Interior should require the Director of the Geological Survey to:

--Develop long-range plans, at the field level, for coal exploration activities in direct support of tract delineation, and obtain formal public input on potential exploration areas.

--Appoint permanent tract delineation team leaders for all coal regions where leasing is anticipated.

--Clarify procedures for making reserve estimates and establish formal procedures for quality controls in the reserve estimate computation process.

In addition, the Secretary of the Interior should require the Director of the Bureau of Land Management to coordinate with the Geological Survey before determining the time to be allotted for the Geological Survey's work in activity planning--allowing, if possible, at least one drilling season for the tract delineation process.

To promote drilling by the private sector, the Secretary of the Interior should:

--Develop explicit procedures under which land exchange applicants could drill candidate exchange tracts.

--Inform companies or others when they obtain an exploration license that they will or will not be allowed to bid on the tract if it is offered for lease.

Recommendation to the Secretary of Agriculture

The Secretary of Agriculture should require the Chief of the Forest Service to:

--Direct his staff to rely on the Geological Survey's standards for coal reserve estimates to be used for land use planning--as well as for tract delineation.

--Coordinate with the Geological Survey as early as possible concerning proposed sites for drilling so that the Geological Survey can plan drilling and other exploration activities needed to prepare for any future leasing--as well as for the preparation of land use plans.

CHAPTER 7

AGENCY COMMENTS AND OUR EVALUATION

Comments on a draft of this report were solicited from the Departments of Agriculture, Energy, and the Interior. Their responses are reprinted as appendixes I, II, and III, respectively, to this report.

The Department of Agriculture addressed two issues concerning the role of the Forest Service--one in setting standards for coal reserve estimates and the other in denying a proposal by the Utah Power and Light Company to do exploration on a proposed exchange tract.

Agriculture stated that the example cited with the Manti-LaSal Forest indicates a local communication problem which they plan to correct. Agriculture's position is that it is up to the U.S. Geological Survey--not the Forest Service--to set standards for coal reserve estimates and that the Forest Service will use that determination in its planning system. (See App. I, p. 81, par. 3 .) We agree with this position and have reflected this in the final report. As for the Utah Power and Light Company issue, Agriculture's response indicated that insufficient coordination between the Forest Service, Interior, and Utah Power and Light Company apparently resulted in the Survey's deciding to do the exploration even though Utah Power and Light agreed to do it and to make their data public. This issue--which remains unresolved--is more fully discussed on page 55.

The Department of Energy offered several editorial comments which we considered in this final report but had no substantive comment. (See app. II.)

After stating that "we find ourselves in agreement in whole or in part with all your recommendations," Interior raised a variety of specific issues and comments--many of which appear counter to its overall agreements with our recommendations and, in some cases, its planned actions. (See app. III.) These are discussed in detail below.

INAPPROPRIATE EMPHASIS ON FIRST LEASE SALE

Interior stated that it is unfortunate that we chose for evaluation the first regional lease sale under the new leasing program since one of the Department's purposes in holding this initial sale was "* * * to discover and rectify promptly serious inadequacies in the program." (See p. 85, par. 3.) We do not find this unfortunate. In fact, this is precisely why we felt it important ourselves to take a hard look at the first sale under the new program. This is also consistent with a commitment--made in our June 1979 "Issues Report" 1/--to provide early feedback to the Congress on the workability of the new program. We hope that the discussions we have had with Interior officials as well as this report will contribute to improvements in implementing such a complex and sophisticated program. Unless corrected, many of the problems which have surfaced in this first sale will recur in future lease sales.

INCONSISTENT RECOMMENDATIONS

Interior believes we are making inconsistent recommendations by advocating on the one hand that the Survey be given "* * * more time to conduct its resource evaluation efforts and place more emphasis on encouraging industry to collect the basic coal information," then by suggesting, on the other hand, that "we be prepared to offer a follow-up sale in the Green River-Hams Fork Region sale area on a tighter schedule than the one currently in effect for the first sale." (See p. 86, par. 1.)

More accurately stated, the recommendations to which Interior is referring address holding an early follow-on lease sale in Green River-Hams Fork--possibly in 1982 (See p. 64, par. 1.)--and allowing sufficient time for Survey to explore tracts that are preliminarily delineated, possibly at least one drilling season. (See p. 65, par. 2.)

Scheduling a follow-on sale in late 1982--29 months from now--is not inconsistent with our recommendation that the Geological Survey needs more time to do its drilling. The initial Green River-Hams Fork lease sale is scheduled to be held in January 1981--27 months after the selection of areas was made to apply the unsuitability critiera. Allowing for a similar lead time and assuming prompt actions are taken--particularly with identifying prospective tracts and completing exploration--another lease sale could be held in late 1982. In addition, Interior has gained valuable experience in preparing for lease sales in the coal regions of Green River-Hams Fork, Unita-Southwestern Utah, and

1/"Issues Facing the Future of Federal Coal Leasing," EMD-79-47, June 25, 1979.

Powder River Basin--all of which should help reduce the time required in preparing for future sales. Interior itself states that "the experience gained in solving these problems (with the tract delineation process in the first lease sale) should make future delineation efforts more efficient." (See p. 96 , par. 2.)

Rather than having only one drilling season, in fact, the Survey would have time to do drilling in both 1981 and 1982, and industry could immediately begin to evaluate prospective tracts if it knew a sale would be forthcoming. Thus, Interior could assure that the Survey would have considerably more than the 3 months it had in preparing for the first Green River-Hams Fork lease sale to complete drilling and delineation of lease tracts through an expanded drilling program.

CHANGED ENERGY SITUATION

Interior stated that a number of problems in the first lease sale can be attributed to the rapidly changing energy situation in the United States, especially over the last 2 years. It emphasized that "we expect future demands on the Federal coal management program to be more predictable than heretofore" because the synfuel bill has been passed and both Interior and Energy have had time to absorb the events of the last 2 years and incorporate these considerations in their long-range planning efforts. (See p. 86 , par. 2.)

We see no basis for Interior's expectation that future demands on the Federal Coal Management Program will be more predictable than heretofore. Attempts to predict future energy needs will always be filled with uncertainties and unpredictable events--given the many diverse elements--economic, energy, political, international, etc. The last decade was characterized by dramatic changes in the energy situation and, very likely, one can expect to see more of the same in this decade. It is for this reason that we believe more flexibility needs to be built into the leasing program.

Interior feels that the "program has been designed so as to be as responsive as possible to new developments and information." (See p. 86 , par. 2.) We disagree with this assessment. For example, Interior's position that an early follow-up lease sale in Green River-Hams Fork is not possible demonstrates that it needs to be more responsive to the national energy needs.

In addition, Interior "concurs in spirit" with our recommendation for an early follow-up lease sale, but stated that it will be impossible to conduct such a sale in 1982 and not sooner than late 1983, if even then. (See p. 88, line 6.) Consequently, the Nation may have to wait 3 years for leasing that we believe could take place sooner.

COAL--ONLY ONE OF MANY COMPETING PUBLIC LAND USES

Interior believes we may have missed the spirit of what land use planning is all about by stating that "the purpose of land use planning is to identify areas acceptable for further consideration for coal leasing * * *" and not explicitly recognizing all public land resources that BLM is accountable for in the land use planning process. (See p. 86, par. 3.) That was not our intent--as we believe is evidenced from other parts of our report in which we discuss competing resource demands. Nevertheless, we have reworded the sentence to recognize that this is only one purpose. From the standpoint of coal it is the principal decision-point--and that was the context of our statement.

Interior recognizes coal as one of the most critical resources and states that the effects of competing and conflicting demands for resources other than coal must be considered in the design and implementation of the land use planning system. (See p. 86 , par. 3.) What appears to be missing in Interior's land use planning system is a consideration of the effect of the demand for coal. As we pointed out in our 1979 report , 1/ the application of resource demand to all resources would encourage comprehensive land use decisions that are based not only on supply, environmental, socioeconomic, and other legal or policy criteria, but also on demand factors. We believe that if land use planning decisions are not made by evaluating the demand for all resources, the result could be an arbitrary limitation on the ability of the area to contribute to meeting demand for coal.

COST OF OVERLEASING

Interior pointed out that leasing more coal than required for national security and competition purposes interferes with effective land use decisions and makes the program

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1/See footnote on p. 68.

more susceptible to crippling lawsuits which could stymie any Federal leasing effort. (See p. 87, par. 1.) We agree. We are not calling for indiscriminate leasing, but rather only leasing sufficient quantities of coal to account for the uncertainties in calculating the leasing target. Furthermore, if some of the uncertainties factored into the target do not materialize, such excess can be easily accounted for in future sales--thus not jeopardizing national security and a competitive market place.

DIFFERENCES IN LEASING TARGETS

Interior implied that the main reason for the difference between our calculation of the coal leasing target and theirs was that ours was based on more recent data not available to them when they made their calculation. (See p. 87, par. 3.) They also said that the target will be analyzed prior to the Secretary's decision on the sale schedule. (See p. 87, par. 4.) Contrary to Interior's implication, our leasing target--which is more than three times greater than theirs--was based on either the same data or very similar data available to, but not used by, Interior officials in calculating their target in January 1980. Actually, the main reason for the difference had to do with Interior's use of faulty assumptions concerning:

--Expected production from a lease not yet in operation (i.e., Cherokee mine).

--Allowance for lead time from lease issuance to production.

--Estimates for coal recovery, mine life, and Federal coal ownership ratio.

--Provision for a margin of error in coal reserve estimates.

We hope our observations concerning these assumptions will be useful to Interior when it next analyzes the leasing target prior to the Secretary's decision on the sale schedule.

Concerning the Cherokee mine, Interior stated that it used the best information available to it at the time of its planning effort, which indicated that the mine would produce 5 million tons of coal per year by 1987. (See p. 88, par. 1.) Our review, however, showed that in November 1979, the company owning about half of the coal reserves (Rocky Mountain Energy Company), submitted a report to Interior analyzing Federal coal leasing for the Green River-Hams Fork region which stated:

> "Another major error in the DOI list is the production estimate for the Cherokee leases held by Pacific Power and Light Company subsidiary NERCO (mistakenly listed by DOI as Resource Development Co.). This property contains relatively low heat value, high sulfur coal which will probably not be transported out of the region. The coal could potentially supply a mine-mouth power plant or be used in synthetic fuel production. However, because the mining of Cherokee could only be tied to the development of an industrial facility, the lead times involved in the construction of a plant will preclude any near-term production from the mine. The project will not produce coal by 1985, although small amounts could be mined by 1990."

Recent discussions with Rocky Mountain Energy Company indicate that the most probable use of the coal is for synthetic fuel production and that only under the most optimistic circumstances could the plant be in full production by 1987. It is unclear if there will be a synfuel plant in operation in the Cherokee Area during this decade. At the present time a current mine plan has not been submitted or approved nor have any permits for the mine or the synfuel plant been obtained. In 1976 Pacific Power and Light Company submitted a mine plan on the Cherokee mine but claims the plan was preliminary and submitted only so that the mine could be included in the South Central Wyoming Environmental Impact Statement. In view of the risks and uncertainties associated with the effects coal leasing may have on national energy security, we continue to believe it is inappropriate for Interior to assume the Cherokee mine will be producing 5 million tons of coal a year by 1987.

As to the lead time issue, Interior seems to stick with its 6-year assumption, but with some hedging--including the prognosis that it hopes to minimize permitting time without sacrificing environmental protection. (See p. 88 , par. 2.) We question why Interior insists on using a short and idealistic lead time of 6 years, especially since Interior admits it does not know how long the actual lead time will be but that it could possibly be as high as 10 years. Furthermore, Interior's position on this issue is puzzling since it admits that the increasing demand for coal makes the leasing targets extremely sensitive to assumptions in the lead times.

We do not believe it is realistic for Interior to assume at this point that the permitting process will be quick and smooth. Even though Interior oversees much of the permitting process and they claim they are taking steps to minimize permitting time without sacrificing environmental protection, they have no experience on how long it will take. In fact, because some aspects of the permitting process are new, Interior will probably encounter many start-up problems--as they did in this lease sale--that could extend the lead time even further. Again, this would suggest the need to "play safe" in factoring in a lead time assumption--rather than vice versa.

Concerning our recommendation on the use of site-specific data when calculating the leasing target, Interior stated that this:

> "* * * shows a basic misunderstanding of the Department's goal in the leasing aspects of its coal management program, i.e., to lease sufficient reserves to meet annual production shortfalls that would likely otherwise occur. The assumptions attacked are general guides used to arrive at a Federal tonnage leasing target; however, the essence is that tracts offered allow an appropriate increase in annual production by 1987, which we currently estimate at 18.5 million tons." (See p. 88, par. 3.)

We have no misunderstanding of what Interior is trying to do in calculating--and then meeting through leasing--an annual projected production shortfall. The difference is that we calculate a much higher production shortfall--in part because we used more recent site-specific data pertaining to the tracts under consideration for leasing. We think this makes sense and note that Interior apparently now plans to apply basically the same approach, as indicated by its further response to this point:

> "When setting the lease sale schedule, the Secretary will consider the actual characteristics of the tracts available for inclusion in the sale when considering the number needed to meet the shortfall." (See p. 89 , line 3.)

In addition, Interior never really addressed our recommendation to include an additional margin of error (20 percent) to allow for uncertainty in the coal reserve estimates--other than to recognize that "further support is needed for whatever security factor is selected in future lease sales" and to commence a study to give them further guidance. (See p. 89 , par. 1.) While such a study is in order, in the meantime we feel our recommendation to "play safe" by siding on the conservative end of Survey's estimate makes good management sense--particularly since the Survey has shown a tendency to develop high reserve estimates. For example, in a 1978 report 1/ we compared the recoverable reserve estimates for 219 existing leases and found that, in the aggregate, the Survey estimates were 22 percent higher than what the leaseholders computed. While the determination of who's right cannot be made until the coal is mined, we believe it supports the argument to factor in an appropriate margin of error.

Finally, Interior pointed out that the Department of Justice has "yet to supply any analyses which supports their conclusion" that 2 to 3 times more coal than the amount indicated by Energy Department's goals should be leased to ensure healthy price competition. (See p.89, par. 2.) While this may be true, we believe it does raise an important question concerning just how much more coal should be leased for this purpose over and above projected demand. This should perhaps be considered further in Interior's planned "study of uncertainty on the supply side" (see p. 89 , par. 1.)

EXPRESSIONS OF LEASING INTEREST

Interior stated that obtaining expressions of interest prior to activity planning is not necessary because

> "* * * public involvement begins with the identification of issues during the first planning step, either in the update of existing land use plans or the preparation of new plans. Industry, environmentalists, and the public are invited to participate in the planning process at the beginning. In this way, even without a formal expression of interest, industry has the opportunity to become involved. Industry can therefore have an impact on the making of the land-use allocation decisions during land use planning." (See p. 89 , par. 3.)

1/"Inaccurate Estimates of Western Coal Reserves Should Be Corrected," EMD-78-32, July 11, 1978.

We question Interior's continuing reluctance to obtain expressions of interest from industry as part of land use planning--especially since Interior's need to improve coordination with industry has been brought to light in preparing for the first few lease sales. In addition, Interior's response appears to acknowledge that a lack of communication exists between industry and themselves and they indicated that they will be considering various methods to insure the availability of industrys' expertise during the land use planning process. (See p. 90 , par. 1.) But they still are reluctant to do what we believe really needs to be done--i.e., systematically obtain expressions of industry interest.

As pointed out in this report, Interior has not identified some high-quality coal areas of interest to industry, and its planning efforts excluded certain types of coal that may be needed for synfuel development. As a result, some of these areas will not be available for lease consideration until the late 1980s.

Furthermore, if expressions of interest are obtained formally on a periodic basis for all coal regions where Federal coal exists it would increase Interior's data base on where and what types of coal may be needed to satisfy future market demand. Contrary to Interior's assertion, we do not believe passage of the synfuel bill will make future coal demand more predictable than heretofore. But rather, with the passage of that bill, Interior needs to work even more closely with industry in order that it can respond in a timely manner to the possible rapidly changing coal needs for synfuel development as well as other mining development.

In a somewhat related vein, Interior stated that they will not give areas within KRCRA's and included on CRO/CDP maps as having a high or moderate development potential a higher priority than areas not included in KRCRA's or on CRO/CDP maps. (See p. 91, par. 3.) BLM District Office officials, however, claim they will. This lack of communication within the Department prompted our recommendation on page 64 to the Secretary of the Interior to insure that land use planning for coal is not limited to so-called Known Recoverable Coal Resource Areas when development interest is indicated by industry and coal data is available elsewhere.

AVAILABIITY OF ADEQUATE DATA

Interior agreed with us that the availability of adequate data is a key ingredient critical to the success of the new program and indicated that our suggestions to better involve industry in both the coal drilling priority setting process and in the collection of information through exploration licenses are good ones. (See p. 92 , pars. 1 and 2.)

Interior's response on the time necessary to obtain coal data, however, does not reflect an appreciation of tract delineation problems encountered in the first lease sale and likely to be encountered in future sales. While it recognized that "* * * no matter how well we are able to plan our drilling program, it is still going to take quite a few years to completely cover all of the high interest coal," (see p. 92, par. 1.) it also said that "* * * the coal resource evaluation should be completed and available before actual tract delineation (activity planning) is started." (See p. 96 , par. 3.) Interior's desire to have the exploration completed by the time tract delineation is started would be the ideal way to do it if all data were available--but, realistically, such data is not available.

The first sale was planned and scheduled with the assumption that adequate coal data was available. In northwest Colorado, the Survey has been drilling since 1975 and all available data pertaining to the tracts being considered for the first lease sale was used. But additional drilling still had to be done on many of the tracts. In future sales, the existing coal data base can be expected to be even more limited.

Prior to tract delineation, sufficient field mapping, drilling, and other field investigations are needed to study potential tract areas. It is important to note here that early expressions of industry interest can play a key role in helping to define preliminary tract boundaries. However, additional work is normally required after tract delineation has started to firm up tract boundaries. For example, in some areas the surface topography and subsurface geology may be very complex, thus complicating drilling and requiring more data to establish an acceptable level of reliability for reserve estimates.

Thus, Interior's implication that drilling prior to activity planning will eliminate the need for drilling once tract boundaries are established is not realistic and, we believe, not possible.

BASIC AGREEMENT WITH OUR CONCLUSIONS AND RECOMMENDATIONS

Interior responded very positively to many of our conclusions and recommendations including:

--Need for a follow-up sale in the Green River-Hams Fork Region "as soon as possible" (although not until late 1983 or early 1984). (See p. 92 , par. 4.)

--Agreement that the current leasing target needs to be reviewed prior to a final lease sale decision--which "will include adjusting various assumptions." (See p. 92 , par. 5.)

--Its intention to continue working with the Department of Energy--through the coal subcommittee to the Leasing Liaison Committee--on the production goal/leasing target process. (See p. 92 , par. 6.)

--Agreement that all possible high-quality coal should be considered when high and moderate development potential coal is identified. (See p. 92 , par. 7 .)

--Our recommendations on increasing the effectiveness of its coal data gathering processes. (See p. 93 , par. 1.)

NEED FOR ADDITIONAL STUDIES

While indicating general agreement with most of our recommendations and suggestions, however, Interior stated that additional studies--in areas cited below--are necessary before taking certain actions.

--"The Department has recognized * * * that further support is needed for whatever security factor is selected in future lease sales. To this end we will commence a study of uncertainty on the supply side of the target to give us further guidance in future targeting decisions." (See p. 89 , par. 1.)

--"We will be studying various methods to improve our procedures for ensuring that high quality coal is not ignored in future lease sales." (See p. 92 , par. 7 .)

--"* * * we do recognize the importance of industry input and will be studying methods for insuring that industry avails itself of the opportunities already designed into the planning process." (See p. 92 , par. 7 .)

--"The GS is preparing to initiate a major study on various methods of shifting a substantial part of the drilling workload to private industry." (See p. 93 , par. 1.)

In addition, Interior officials have since told us that a study of lead time is also being done to help determine what time factor is appropriate--i.e., the time required from lease issuance to mine production--for calculating the leasing target.

While these studies will undoubtedly be helpful and should be completed expeditiously, we believe they should not hold up action to implement our recommendations in these areas. Unless an effective and responsive program is in place, with identified problems resolved, Federal coal may not be leased when, where, and in the quantities needed.

Interior has been studying and developing the design and procedures of the Federal Coal Management Program for 3 years. For the past year it has been making preparations for its first three competitive lease sales. What we consider to be the basics of any program to lease coal--e.g., the determination of how much coal to lease and what coal to consider for leasing, an effective way for industry to participate, the acquisition of coal data, and a capability to respond quickly to changing leasing needs--are in need of further refinement and development. These and other issues discussed in this report need to be dealt with immediately so as to insure not only the achievement of desired domestic coal production goals but also the availability of a sufficient supply of coal for market competition.

Of paramount importance is the Nation's energy security. It appears that this factor has not received the priority it deserves in the Federal Coal Management Program. As this report demonstrates, the first lease sale will not satisfy a minimum level of leasing needed to avoid a projected production shortfall in 1990--without even considering the amount of additional coal that should be leased to foster adequate competition.

OTHER COMMENTS

Interior's response includes other more detailed comments. including various editorial suggestions (see pp. 93 - 98). For the most part, however, they merely amplify the more general comments already dealt with in prior sections of this chapter. In addition, we have made various changes in the body of this report, when appropriate, to recognize certain other comments. Others, in our judgment, either stand on their own or warrant no response. Several others, however--presented below--need to be treated.

Reallocation of Personnel to the Most Critical Energy Programs

Interior stated that the Survey has numerous high priority energy programs and is reallocating personnel to programs other than coal believed to be most critical. (See p. 95, par. 3.) Consequently, the number of coal geologists are being reduced through a reorganization of the Conservation Division--the Survey organization responsible for coal lease evaluation work--and other experienced geologists are voluntarily leaving the Division.

The unavailability of adequate data and the need for sound professional judgments in making reserve estimates raise serious questions about the advisability of a reduction in coal geologist positions. Furthermore, as we point out in chapter 5, it would seem questionable to undertake a reorganization which will impact on its ability to do coal evaluation work until it has determined the requirements for such work. Interior's response to this concern seems to suggest that the coal program is of low priority.

Quality of tract delineation work

Interior stated that revisions to the reserve estimates on delineated tracts for the proposed sale were made based on:

--Changes to tract boundaries required as a result of site-specific analysis during activity planning (see p. 95 , par. 6)--which included the further application of unsuitability criteria.

--Acquisition of more accurate data or, as time permitted, further analysis of existing data. (See p. 97 , par. 3.)

Survey officials have emphasized to us that the pressing objective was to delineate the tracts quickly so that BLM could begin site-specific analyses for environmental and social factors. But this rush resulted in the initial delineation of some tracts and preparation of related reserve estimates on less than a sound geologic basis. Even though the Survey subsequently corrected many of the deficiencies--after we pointed them out--we believe this demonstrates that inadequate time for tract delineation work can be expected to result in recurring problems.

For example, in our review of two tracts--Danforth Hills II and III--our geologist found that the Survey had not evaluated the extent of the coal beds identified by drill logs. Survey's initial evaluation demonstrated that the entire area for the two tracts had sufficient drill holes to support a measured and indicated reserve estimate. However, for areas beyond the measured zone, an average coal thickness of 34.5 feet for all the beds over the entire area was used. This created considerable error due to the absence of at least two of the beds in topographic lows, i.e., the beds are present on hill tops but are absent in the valleys. There was at lease one case where 19 feet of coal in the two top beds was absent in the adjacent valley and the two remaining beds totaled only 20.5 feet. However, the average of 34.5 feet was used to calculate the initial reserve estimate. Consequently, coal was projected to exist where obviously there was none.

In the case of the two tracts, a more rigorous analysis was made as a result of our concern using the same data that was available to them when they made the initial analysis. The reserve estimates were subsequently decreased by about 58 million tons or 21 percent.

In addition, Interior commented on our observation that "burned coal" was not factored into the reserve estimate on these tracts, while on another tract it was. In the latter case, it maintained that it had the data to make an estimate, while in the former case it did not. Again, we call attention to our statements in chapter 5 that burned coal was known to exist in the area and refer to three different sources.

Finally, on another tract--Bell Rock--we questioned the minimum coal bed thinkess used by the Survey in preparing the reserve estimate because it did not agree with the established criteria in Bulletin 1450-B. We suggested that the Survey revise the Bulletin if the criteria is not valid or else follow it. Interior's response indicated the Survey is revising the Bulletin.

DEPARTMENT OF AGRICULTURE
OFFICE OF THE SECRETARY
WASHINGTON, D. C. 20250

JUL 25 1980

Honorable Henry Eschwege
Director, United States General
Accounting Office
Washington, D.C. 20548

Dear Mr. Eschwege:

We have reviewed the draft GAO report "A Shortfall in the Coal Leasing Program: What Effect on National Energy Goals?" and we have the following comments:

The draft report recommends, on pages viii, and 96, that the Forest Service should ". . . decide on the standards to be followed in establishing coal reserve estimates for the Manti-LaSal National Forest land use plan . . ." The discussion of this issue on pages 66-68 implies that Manti-LaSal officials believe that available data may be inadequate but have not specified the level of accuracy required.

The Forest Service does not have the responsibility for deciding the standards for coal reserve estimates. The U.S. Geological Survey (USGS) is depended upon to indicate whether or not a specific planning area has medium to high coal potential. The Forest Service uses that determination in its planning, regardless of the method used by the USGS. Therefore, the tentative findings indicate a local communication problem (which we will investigate and correct) not a National policy matter. If you wish to address this issue, we suggest rewriting the recommendation to the effect that the Forest Service should clarify that the USGS will be depended upon to provide interpretations of coal potential for land management planning, and that they are responsible for determining the level of reliability for such determinations. To accommodate such a change, it will be necessary to rewrite much of the text on pages 65 to 70, and the middle paragraph on page 93.

We disagree with the implications of the other preliminary finding regarding the Forest Service, discussed on pages 80 and 81. There are established procedures for allowing private sector drilling on candidate tracts for exchange or leasing--through coal exploration licenses. These procedures provide for information obtained under a license to be made public, so that there is no special advantage to a single individual or organization. The Forest Service disagreed with the original proposal for Utah Power and Light Company (UPLC) to do the exploration on their proposed exchange tracts because it seemed to violate the no-special advantage principle. The only valid finding in this case seems to be that there may have been insufficient coordination during May and June 1979 between the Forest Service, the Department of the Interior, and UPLC. This apparently resulted in the Geological Survey agreeing to do the exploration even though UPLC had agreed to make their data public.

Sincerely,

Jim Williams

Acting Secretary

Department of Energy
Washington, D.C. 20585

JUL 18 1980

Mr. John Sprague
Energy and Minerals Division
U. S. General Accounting Office
Washington, D.C. 20548

Dear Mr. Sprague:

With my letter of July 11, 1980 to you we enclosed editorial comments on the GAO draft report entitled "A Shortfall in the Coal Leasing Program: What Effect on National Energy Goals?"

The Department of Energy has no further comments at this time. The comments provided to GAO in the letter of July 15, 1980 are retracted.

Sincerely,

William L. Jones
Acting Chief, Audit Liaison
and Follow Branch
Office of the Controller

Department of Energy
Washington, D.C. 20585

July 9, 1980
(July 11, 1980)

Mr. John Sprague
Energy and Minerals Division
U. S. General Accounting Office
Washington, D. C. 20548

Dear Mr. Sprague:

In response to Mr. J. Dexter Peach June 13, 1980 request, the Department of Energy's formal comments on the GAO Draft report entitled "A Shortfall in the Coal Leasing Program: What Effect on National Energy Goals? are being prepared. Enclosed for your consideration in finalizing your draft report is a an annotated copy of a draft report with editorial comments.

The Department's formal comments on the subject report are being sent by separate letter to the General Accounting Office.

Sincerely,

William L. Jones, Acting Chief
Audit Liaison and Follow-up Branch

Enclosure

United States Department of the Interior

OFFICE OF THE SECRETARY
WASHINGTON, D.C. 20240

JUL 18 1980

Mr. J. Dexter Peach
Director, Energy and Minerals
Division
U.S. General Accounting Office
Washington, D.C. 20548

Dear Mr. Peach:

We appreciate the opportunity to review the draft report "A Shortfall in the Coal Leasing Program: What Effect on National Energy Goals?" The GAO staff is to be congratulated on the depth of the research they conducted in preparing the paper. Overall, we found the report to be a fairly accurate analysis of the existing situation in the Green River-Hams Fork Region. However, we would like to emphasize that this first regional coal sale was designed and scheduled so as to permit us to uncover and rectify unrecognized problems in the new Federal coal management program. Although we will express a number of concerns about inaccuracies and conflicting findings in the body of the report, we find ourselves in agreement in whole or in part with all of your recommendations.

A few general comments are addressed in the first part of our report. The second part contains our specific comments and will consist of three sections:

1) Major policy oriented comments
2) Detailed policy comments
3) Editorial comments

General Comments

First of all, we find it unfortunate that the GAO chose the first regional lease sale under the program, the Green River-Hams Fork Region sale, from which to evaluate the program. One expects to encounter problems in initiating a new complex program especially one covering a controversial subject. To infer that each of the problems encountered in an initial start-up area is inherent in the program design and will reoccur in all future efforts is misleading. For example, a principal finding of your report is that, in the case of Green River-Hams Fork Region sale, the ability to meet the final leasing target is inhibited by the limited geographical coverage and rigorous time constraints. This tight time frame was chosen because of the need to lease coal as promptly as possible to meet industrial need for additional coal, to assure increased production of coal for national energy policy purposes, to demonstrate to all interested parties as soon as possible that a workable coal program is finally in place after a decade of inaction, and to discover and rectify promptly serious inadequacies in the program. This problem is limited to start-up procedures and will rapidly disappear in future sales. This is because more and more coal lands will be cleared through land use planning in the next few years and future regional lease sales will be conducted under lengthier schedules than that established for this first sale.

Second, we are concerned about inconsistent recommendations. The report recommends we give U.S. Geological Survery (USGS) more time to conduct its resource evaluation efforts and place more emphasis on encouraging industry to collect the basic coal information. It also suggests we be prepared to offer a follow-up sale in the Green River-Hams Fork Region sale area on a tighter schedule than the one currently in effect for the first sale. Not only is this advice inconsistent and impossible to implement, it also demonstrates the largest single problem we face: balancing comprehensive decisionmaking with constrained time schedules.

Third, a number of the problems perceived by you in this first lease sale can be attributed to the rapidly changing energy situation in the United States, especially over the last 2 years. One expects that any energy related planning effort will encounter problems as the basic situation continues to alter during the course of the effort. Now that the synfuel bill has passed and DOE and DOI have had time to absorb the events of the last 2 years and incorporate these considerations in their long-range planning efforts, we expect future demands on the Federal coal management program to be more predictable than heretofore. But unrecognized in the report is the fact that the program has been designed so as to be as responsive as possible to new developments and information. The several changes in the leasing target were not unexpected. To the contrary, our procedures require numerous updates and reconsiderations of each regional coal target prior to the final sale decision for the specific purpose of incorporating new information and correcting inaccurate assumptions.

GAO correctly points out that three recently enacted laws strongly influence the design of the new program: The Federal Coal Leasing Amendments Act of 1976, the Federal Land Policy and Management Act, and the Surface Mining Control and Reclamation Act of 1977. The first requires comprehensive land use planning to be conducted prior to leasing decisions, the second establishes specifications for comprehensive land use planning, and the third is dedicated to ensuring that coal mining be done in an environmentally sensitive way. To infer that "the purpose of land use planning is to identify areas acceptable for further consideration for coal leasing..." misses the spirit of this legislation. Coal is only one resource with which the Department must deal. Although coal certainly is one of the most critical resources, the scheduling and completion of land use plans must reflect all of Bureau of Land Management's (BLM) responsibilities. The competing and conflicting demands for the other public land resources requires comprehensive multiple use plans for protection and development. They are generated by the users of minerals other than coal: livestock owners, timber companies, recreationalists, and other users of the public lands. The effect of these demands must be considered in the design and implementation of the land use planning system which also includes all aspects of the Federal coal management program.

Major Policy Comments

Chapter One. Introduction

On page 3, the report states "If these anticipations do not materialize, mining will not take place and nothing will have been lost." Although we recognize that the cost of underleasing far exceeds the cost of overleasing, there is a "cost" in overleasing. Overleasing in excess of that required for national security and competitive purposes interferes with the ability of land management agencies or surface owners to plan for other uses of the land (multiple use planning) and complicates the planning of local and State governments to accommodate growth and mitigate adverse impacts of coal development. The cost is in foregone opportunities to use other public and private land resources during the leasing period and in the inability of governments to plan effectively. Possibly the most important cost of overleasing from a historic standpoint is that excessive overleasing creates an expectation of the worst case scenarios among the people living in the coal areas. Excessive overleasing in the 1960's led to the crippling lawsuits and State government resistance which stymied Federal efforts to institute a new leasing program through most all of the 1970s. To overlook the cost of excessive overleasing would set the stage for significant political problems in developing needed levels of coal production in the West.

Chapter Two. Leasing plans, legal constraints, and the planning phases of the Federal coal management program.

On pages 14 and 15 the report discusses the high and moderate coal potential screen and the role of the Survey's coal resource occurrence/coal development potential (CRO/CDP) maps. This discussion should also explain the role of input from industry and the public. Coal companies, the States, or members of the public may submit coal geological and economic data during this early phase of planning. Where the information demonstrates at least a medium development potential for coal, the area will be considered for further review. This is important in that CRO/CDP maps are not available everywhere and are being replaced by those produced under another program.

Chapter Three. Leasing targets are based on questionable and/or invalid assumptions that could lead to significant shortfalls in meeting national energy needs.

We find the analysis of the leasing target for the 1981 Green River-Hams Fork Regional sale interesting and thoughtful. We would like to point out that it reflects a more recent estimate than the one prepared by the Department last January. As such, more information was available to the GAO and one would therefore expect different results. In fact, our calculations changed several times as we developed our target.

Before discussing the analysis presented in the report, we would like to emphasize that the Department's target will be analyzed prior to the Secretary's decision on the sale schedule. All new information including that contained in your report will be considered. The Department has been aware for some time that the first round of leasing in the region may only marginally meet demand for coal production in the latter part of the decade. We are striving to conduct an early follow-up sale; however, the planning schedule will not allow this follow-up sale until late 1983 at the earliest. We concur in spirit with the recommendation for an early follow-up sale, but it will be impossible to conduct such a sale in 1982 as suggested. (As previously noted, your own recommendation for the lengthier tract delineation periods would, if followed, preclude a 1982 sale.)

The assumptions that the Cherokee Mine will not reach the anticipated 5 million tons per year production level is contrary to the best information available to the Department of the Interior (DOI) at the time of the planning effort. Official correspondence between the Pacific Power and Light Company and DOI, as far back as 1976 when the company submitted a mine plan, indicated that the mine would produce 5 million tons per year by 1987. Of course, annual production estimates can vary in response to a wide variety of factors such as company policy, regional economic and other market conditions, uncertainty as to Government actions and requirements, but DOI used the best official data available at the time. It may be noted that leases issued prior to August 4, 1976 must produce 2-1/2 percent of the lease (LMU) reserves by 1986, pursuant to diligence requirements regulations. If the company told GAO "the project will not produce coal by 1985" then they were, in effect, indicating that the lease might be relinquished.

The report argues that the 6 year assumption stated for the lead time between leasing and production is too short, and indicates that 9 years may be more appropriate based on GAO's contacts with informed industry sources. We have noted before that our assumption represents a middle ground of a range of possibilities from as little as 4 to as many as 10 years. The report supports the recommendation with allusion to lengthy permitting procedures and weak market conditions. The Department, as you know, oversees much of the permitting process and is taking steps to minimize permitting time without sacrificing environmental protection. Further, it seems inconsistent for the report to argue for urgent increases in leasing in the face of weak markets, although we believe that those market conditions will alter by the end of the decade. Finally, the report seems to support the argument by indicating that BLM used the 9 year assumption in the draft EIS. However, that was the unfortunate result of miscoordination and will be corrected in the final EIS. The discussion of the lead time is, however, useful, in that it brings to the front the extreme sensitivity of leasing targets to such assumptions in periods of increasing demand.

The report's third recommendation in the area of leasing targets is that the estimates for coal recovery, mine life, and Federal coal ownership be based on site-specific data from the tracts under consideration for leasing. The report's recommendation shows a basic misunderstanding of the Department's goal in the leasing aspects of its coal management program, i.e., to lease sufficient reserves to meet annual production shortfalls that would likely otherwise occur. The assumptions attacked are general guides used to arrive at a Federal tonnage leasing target; however, the essence is that tracts offered allow an appropriate increase in annual production by 1987, which we currently estimate at 18.5 million tons. When setting the lease sale schedule, the Secretary will consider the actual characteristics of the tracts available for inclusion in the sale when considering the number needed to meet the shortfall. Any alteration in the assumptions the report criticizes would not change our ultimate objective of increasing annual production.

Finally, the report suggests that an additional margin of error be incorporated in the security factor to allow for uncertainty in the estimates of reserves on the tracts under consideration for leasing. The report is incorrect to imply that this aspect of uncertainty has not been considered. In fact, the report's recommendation is virtually the same as that which we took into account in adopting the current 25 percent security factor, when we recognized that not all coal leased will be mined. The Department has recognized, however, that further support is needed for whatever security factor is selected in future lease sales. To this end we will commence a study of uncertainty on the supply side of the target to give us further guidance in future targetting decisions. Also the GAO should know that the preferred alternative is a combination of tracts which together would produce slightly more than the 18.5 million projected shortfall. Therefore, we believe there is some additional cushion to allow for reserve uncertainty.

The report states that increasing the target by 1.2 billion tons, which would result from our adopting all of the report's recommendations, may be conservative, since the Department of Justice believes that 2 to 3 times the amount indicated by DOE's goals ought to be leased to ensure healthy price competition. Please note that Department of Justice has yet to supply any analysis which supports their conclusion. While we certainly support the spirit of competition, we will not consider increasing any leasing target as suggested by Department of Justice until a documented analysis is presented and only to the extent that this narrow, single goal does not conflict with the other multipleuse stationary goals and provisions under which this Department conducts its programs.

Chapter Four. Delay in obtaining expressions of leasing interest until after land use planning adversely affects the leasing process.

The report's discussion of the timing of expressions of interest draws the conclusion that soliciting expressions of interest early in land use planning is necessary to adequately consider coal development. This is not necessary because public involvement begins with the identification of issues during the first planning step, either in the update of existing land use plans or the preparation of new plans. Industry, environmentalists, and the public are invited to participate in the planning process at the beginning. In this way, even without a formal expressions of interest, industry has the opportunity to become involved. Industry can therefore have an impact on the making of the land-use allocation decisions during land use planning.

APPENDIX III

We would like to point out that the industry "expressions of interest," somewhat equivalent to the old EMARS nominations, is a specific term used in activity planning. Industry is not precluded from supplying any information or recommendations they want during land use planning. Delaying the submission of expressions of interest until activity planning should not restrict industry's involvement in the program. We are only asking that they participate on an equal basis with other resource users and the public.

Also, the public participation stages in planning are not all informal. The various hearings held are formal as are the notices announcing them. Many companies seem to feel that the expressions of interest is their best or only formal chance to participate. We share your concern that this misconception must be rectified to ensure early participation by industry and therefore ensure the availability of their expertise for the land use planning system. We will be considering various methods to end this misconception including the possibility of being more specific in the hearing notices, as to what information is needed from industry during planning.

Concern is expressed in the report that areas of interest to industry were not considered for the first lease cycle. The report should point out that regardless of when the showings of industry interest are requested (land use planning or activity planning), the BLM will have to set a cutoff date, beyond which no further tracts can be considered. Otherwise, the Bureau would never be able to complete a land use plan or activity plan. There will always be a potential for not including a "high quality" area because of a lack of coal or other resource data and the failure of interested parties to make their interests and data available to BLM in time for consideration.

Expressions of interest in concept equate to preliminary tract delineations by industry (although a much less complete expression is acceptable). It seems most appropriate to solicit these after the basic multiple-use resource allocation decision of areas which are suitable for consideration for leases has been made. At this time, the expressions can be quite specific and of most value to the several parties involved in activity planning.

The analysis in chapter four is misleading because it does not point out the differences between the first Green River-Hams Fork regional lease sale management and the coal program in general. To be objective, the report should clearly point out the particular circumstances encountered by the BLM and the Department in connection with this first regional lease sale. For example, the time frames for completion of land-use planning and activity planning (including the Regional EIS) in the Green River-Hams Fork Region are extremely short, and the procedure and regulations for the process were being developed as the work progressed. The field offices were forced to begin their planning efforts with the information available to them at the time in order to make at least some coal available for leasing in 1980 or 1981. The problem of insufficient resource data for land use planning and activity planning will continue to be a problem in the coal program for several years, but to a greatly reduced extent compared to this first regional lease sale effort.

APPENDIX III

The real problems identified in the report have occurred in the first implementation of a rather complex process. In addition, there were constraints on how we could implement the program. For example, because of the scheduling requirements, we could update land use plans only on areas that had been used for field testing unsuitability criteria. There were many factors in addition to coal quality that entered into the original selection of the field test areas e.g. quality of existing land use plans, status of inventories, size of areas that could be completed in the test schedule, and available experienced staff. Only the first three regional lease sales will be restricted to the original field test areas.

These first sales and the process leading to them should not be considered as typical of what will follow. It is imperative that we get through the first cycle to demonstrate our ability to do so, to learn how we should do it better, and of course, to provide needed coal. Note that we have delineated sufficient tracts to more than meet the calculated and adopted leasing target, and have issued our draft environmental statement in accord with our adopted schedule.

It should be pointed out that the criteria and priorities used to select areas for land use and activity planning for the first sale in the Green River-Hams Fork Region are not representative of the system. For example, it is not correct to say that areas within KRCRAs and included on CRO/CDP maps as high or moderate potential will have a higher priority than areas not included in KRCRAs or on CRO/CDP maps. Whether or not an area will be selected will depend on the availability of information to indicate it has high or moderate development potential. Information would include that provided by private companies. This is particularly important where public information is not available. Availability of information is the key factor, since the Department cannot delay land use planning in an entire area long enough to allow exploration to be conducted. The Department recognizes this problem and is attempting to schedule land use planning far enough in advance to allow exploration to take place in time for inclusion of the exploration results into the appropriate stage of the land use planning process. The planning schedules are published and provided to the USGS to assist it in scheduling its coal exploration.

In the same discussion, it appears that the BLM is simultaneously faulted for leasing poor quality coal, criticized for offering only two tracts of this poor quality coal, and failing to consider the effects on leasing higher quality coal in the future. Some measure of coal quality other than BTU content must be used if the Bureau is to be criticized for leasing low quality coal. For steam coal, a better measure would be cost per million BTU, FOB the unit train or some other point. Different coal characteristics are more appropriate for certain uses, and it is not always readily discernable which coal is best without knowing where and how it is to be used.

APPENDIX III

Chapter Five. Insufficient coal data limits the amount of coal that can be considered for leasing.

We agree that the availability of adequate data is a key ingredient critical to the success of the new program. The report properly identifies that the Department's past inability to develop and implement a coal inventory program has constrained and continues to constrain the operation of the program. The past starting, stopping, and constant changing of direction in the program made it impossible for the BLM and the USGS to plan and implement a long range data acquisition program. With the implementation of the new Federal coal management program we have instituted a new budget planning system which we believe will result in a better integration of the coal budget and long term inventory planning between the two agencies. However, no matter how well we are able to plan our drilling program, it is still going to take quite a few years to completely cover all of the high interest coal areas.

We feel your suggestions to better involve industry in both the coal drilling priority setting process and in the collection of information through exploration licenses are good ones. We are studying the best way to do the former and continue to analyze our exploration license procedure.

Chapter Six. Conclusions and Recommendations.

As we have already commented on the conclusions earlier, we will only address the recommendations in this section.

1. We agree that there is a need for a follow-up sale in the Green River-Hams Fork Region as soon as possible. We have initiated plans for a follow up sale for late 1983 or early 1984. This is as soon as is possible, given data collection and planning schedules.

2. We agree that the current leasing target for the 1981 Green River-Hams Fork regional sale needs to be reviewed prior to making a final lease sale decision. We have always planned to review the target and consider any new information available prior to establishing the final lease sale schedule. This will include adjusting various assumptions to reflect the characteristics of the tracts recommended for inclusion in the lease sale schedule.

   We set up a coal subcommittee to the Leasing Liaison Committee a year ago and intend to continue working with the DOE on the production goal/leasing target process.

3. We agree that all possible high quality coal should be considered when high and moderate development potential coal is identified during land use planning. We will be studying various methods to improve our procedures for ensuring that high quality coal is not ignored in future lease sales. Although we do not agree with your recommendations to shift the tract delineation-oriented expressions of interest into land use plans, we do recognize the importance of industry input and will be

studying methods for insuring that industry avails itself of the opportunities already designed into the planning process. We find your recommendations on expanding the coal areas to be considered during planning and on detailing threshold procedures appropriate.

4. We agree with your recommendations on increasing the effectiveness of our coal data gathering processes. The GS is preparing to initiate a major study on various methods of shifting a substantial part of the drilling workload to private industry. We agree that coal reserve estimates must be developed for the Manti-LaSal National Forest and that the design and implementation of the exploration program must be done in cooperation with the Forest Service. Standards for estimation of reserves for Federal lands are the responsibility of the USGS and those standards are already in place.

Detailed Policy Comments

Page viii. The report recommends that the Secretary of Agriculture decide "on the standards to be followed in establishing coal reserve estimates." This statement is not clear. Technical geologic and engineering standards for reserve estimates are established by the USGS. These standards have been published in USGS Bulletin 1450-B. It is not the function of the U.S. Forest Service to establish coal reserve estimate standards.

On page 3, the report refers to the reserves under lease and implies that Interior knows little about their characteristics or likelihood of being developed. Although we do not know as much as we would like to know about our existing leases and preference right lease applicants, we have done a considerable amount of work analyzing the potential contributions to coal production. We refer the GAO to chapter 2 of the Final Environmental Statement: Federal Coal Management Program (1979) for an analysis of the estimates of the production potential from existing and pending leases. During the regional target setting process additional assessments of the existing leases and preference right lease applications will be conducted. Many of these data are maintained and monitored by the BLM and USGS in the Automated Coal Lease Data System.

Page 7, line 6, Leasing Plans. The sentence "...is considering additional leasing actions in 1982, 1983, 1984, and 1987..." is misleading. Sales are expected in 1985 and 1986, as well as 1988 and beyond. At the current time, BLM long-range budget documents only through 1985, so 1985 should be sustituted for 1987.

Page 10. Nine additional lease sales are anticipated through 1985. The list of lease sales should be as follows:

1982. Powder River, Western Interior
1983. Uinta-Southwestern Utah, Fort Union, San Juan River
1984. Green River-Hams Fork, Powder River
1985. Two sales as yet not identified
1987. The Denver-Raton Mesa sale while being tentatively planned is beyond our long-range forecasts.

Pages 11-12. The report states that some of the proposed tracts will not cause production increases due to their relationship to existing mines. While this may be true in the short term, without production from these tracts, the regional production level would eventually decline.

Pages 16-17. Interior does not formally request "expressions of leasing interest" from industry, but industry and the public are formally and informally encouraged to participate through hearings, etc... "Expressions of leasing interest" is a specific term used in activity planning. The report's implication that this is a generic term incorrectly implies industry information is not desired during land use planning.

Pages 17-18. It is misleading to indicate that we will not be operating under the full procedures of the coal program until 1984 or 1986. The fact is that we are under full procedures of the program now. For the first few years, we have the option of amending existing management framework plans if they meet quality standards. Procedures for amendments are set forth in the planning regulations and will be followed. It would be more accurate to say that planning is now in a transition stage where ongoing land use plans are incorporating aspects of the new planning process and that current planning starts are based totally on the new planning system. The new process will take approximately 4 years with the first to be completed in 1984.

On page 18, it should be noted that the purpose of activity planning is to delineate a large inventory of tracts from which the regional coal team will select the most appropriate for sale to meet a regional leasing target. As time goes on, this inventory of tracts should approach the total of the areas acceptable for further consideration. Also on page 18, it is not shown that there is also a cumulative analysis of the tracts which were ranked. This would occur before the selection of lease schedule alternatives. The report should point this out in the stages of planning and also discuss it in the narrative following "ranking and selection" at the bottom of page 19.

Page 31. The statement that the "Survey cannot accurately forecast the cost of producing coal..." is inaccurate and should be deleted. For the past several years, the Denver based Economic Evaluation Unit has been conducting coal resource economic valuations (CREV's) through comparable sales and discounted cash flow analyses to determine fair market value. This is directly derived from an analysis of cost of mining and marketing, "the cost of producing" coal referred to by the report from the applied for tracts. It is not an objective of the program, however, as the report states, to seek out and offer the lowest cost coal in the marketplace as this is done at the earlier development potential and tract delineation, ranking, and selection phases.

Page 53. In October 1979, the USGS, BLM, and the Office of Surface Mining signed a Memorandum of Understanding (MOU) for the Management of Federal Coal. As part of this MOU, the USGS will provide BLM with minerals resource assistance during land use planning. USGS input, in this respect, is not limited to established areas covered by KRCRAs or CRO/CDP maps. Information on any leasable mineral within the BLM planning unit will be provided.

A copy of the Implementation Memo to the USGS Conservation Division Managers is enclosed for the GAO's information.

Pages 57-58. The report is correct in its statement that "Planning in the past was difficult because of the absence of a leasing program." The difficulty, however, goes beyond that. Due to the same legal delays, BLM could not establish firm priorities for planning and consequently could not indicate priority areas for exploration to the USGS. The result of this was that exploration drilling was planned to improve information in known coal resource area determination and to improve the information base in areas already identified as having high development potential rather than to identify new coal areas for consideration in land use planning.

Page 58. While land use planning has not involved USGS tract delineation team leaders due to the present schedule of various coal program actions, the team leader is directly responsible to the Area Geologist. It is the latter individual that the BLM should directly involve in land use planning.

Page 61. The USGS has numerous high priority energy programs, but only limited personnel and funding levels. A review and analysis of these programs has resulted in a reallocation of Conservation Division personnel to those areas and programs believed to be most critical.

Page 63. The report's comment that with industry input "considerably more coal could be leased" is partially true. As previously stated, lead time, funding, and personnel are critical. This was the case in Bell Rock tract in the Green River-Hams Fork Regional area. The USGS has recommended that this tract be dropped and reoffered as a larger tract in a later sale.

Page 64. Elaboration is needed on GAO's statement that "Survey did not have time..." This was a result of the rapidity with which the program was set up. The Secretary of the Interior announced the new Federal coal management program in June, tract delineation started in July.

Page 65. With regard to the revised reserve estimates indicated by the report, it should be added that these were necessitated by numerous changes to tract boundaries required during site-specific analysis.

Page 65. In addition to identification by the USGS of its tract delineation team leader, equal responsibility should be given to BLM for its identification of the site-specific analysis team leader and its project manager for the regional sale. These three individuals have vital roles to play, and close cooperation and coordination to insure the program's success are imperative.

Page 66. The statement "...Forest Service...may require Survey to meet strict coal data requirements in a tight time frame," is unclear.

Page 66. In the discussion of the Forest Service and BLM planning requirements, the BLM is attempting to provide USGS with sufficient lead times to complete exploration and drilling work for activity planning requirements. This was done by having USGS review the BLM's "Planning and

Budgeting for the Federal coal management program-Fiscal Year 1980 through Fiscal Year 1985." This provided a workload analysis for planning schedules in eight coal regions and allows USGS to develop better estimates of what their exploration and drilling workload will be in support of BLM plans. The USGS will then be able to include this workload in its own planning and budgeting. The BLM feels that this type of coordination will help negate the necessity alleged on p. 72 paragraph 2 for adding 6 months to activity planning for additional data gathering. Furthermore, BLM feels obliged to respond to the current energy situation in as timely a manner as possible.

Page 71. "...average period allotted for tract delineation and site-specific analysis is about 10 months." This does not leave as much time for delineation as we would otherwise like to have.

Page 71, paragraph 2. It is not valid to compare the scheduled time period for tract delineation with what actually occurred and draw a conclusion by using only Green River-Hams Fork regional lease sale procedure as the basis. Many unanticipated problems surfaced during the first delineation process. The experience gained in solving these problems should make future delineation efforts more efficient.

Pages 70-72. In regard to the discussion of reasonable lead times needed for tract delineation, the activity planning requires an average of 24 months based on the generic schedule which was used in discussions with the Wyoming State Office on the second Green River-Hams Fork regional lease sale schedule. The activity planning phase should not be the time when coal data are gathered and evaluated. On page 72, USGS is quoted as believing that tract delineation is the time to obtain coal resource data and evaluate the data to identify potential lease tracts. Through coal exploration license data or from the USGS drilling program, the coal resource evaluation should be completed and available before actual tract delineation is started. Unless the resource data is available in a timely fashion, tract delineation is too late to start gathering and evaluating. What is needed is an aggressive drilling program 2-3 years in advance which clearly identifies the high and medium potential areas and obtains the needed data well in advance of tract delineation.

Page 71. If specific tract coal resource data has been properly available and evaluation work has been completed, the tract delineation and site-specific analysis phase requires only 6-7 months, as shown on the generic schedule that was developed, not the 10 months used in the report. Of the 6-7 months, only 2-2 1/2 are needed for tract delineation, with the remaining used for the site-specific analyses, not the 6 months cited as needed for tract delineation.

Page 73. The report states that "closer coordination by the BLM and Survey would help prevent unrealistic schedules." Generally, there was good coordination considering that the Green River sale was first under the Department's new coal leasing program and that, therefore, the schedule had never been tested. Scheduling of succeeding sales will, no doubt, be adjusted to provide for the appropriate level coordination based on experience of this first sale.

Page 75. The USGS is currently in the process of revising Bulletin 1450-B to reflect changes in mining technology, economics, and data acquisition. In response as to why a minimum of 4 feet of thickness was used rather than 28 inches, the best available engineering and market data indicated that coal below 4 feet in thickness could not be economically mined in that situation.

Pages 75-76. The difference in methodology used in calculating reserves in areas of burned coal has to do with the amount of information available as to the extent of the burn. In the one case, the USGS could not pinpoint the extent of the burned area due to time and data limitations. The best professional judgment, therefore, had to be used in estimating its extent and in calculating reserves. In the other case, the USGS had the benefit of the knowledge of a field geologist active in the area and sufficient data to determine the extent of the burned zone. Thus, this information could be "factored into the reserve estimate calculation." This does not represent "inconsistencies" but rather sound professional judgment.

Pages 77-78. The time frame available to USGS for initial tract delineation limited them to "first cut" estimates that were to be revised as new or more accurate data became available or as time permitted further analysis of existing data. More data became available and as a result, the reserve estimates for several tracts have been modified.

We have enclosed a copy of the new USGS/BLM tract delineation guidelines for your information.

Page 81. The field officials responsible for conducting the drilling program appear not to have received the information that the "Forest Service dropped its objection to drilling by Utah Power and Light Company."

Editorial Comments

Page 10. The leasing target discussion is accurate except that the activities scheduled for the Southern Appalachian Region are excluded from consideration. The leasing target set for the Southern Appalachian Region is currently 103 million tons to be offered for lease sale beginning in June 1981.

Page 11, Sixteen Lease Tracts Delineated for First Lease Sales. The acreage figures on page 22 are consistent with the data from the planning supplements, etc., for Overland and Hanna units and the Wiliams Fork document, however, the reference to "almost 23 million tons" should be changed to "annual coal production in 1987 by about 23.7 million tons."

Page 14, last double hyphen. Insert "qualified" surface owner.

Page 16, paragraph 2, Land Use Planning. Should define qualified surface owners as in 43 CFR Sec. 3400.0-5.

Page 18, line 1, Land Use Planning. "Surface owner consent" should read "surface owner consultation."

Page 20, line 18. This should read "affected State Governors and Federal surface . . ."

Page 20, line 13. This should read "proposed lease tract and lease schedule..."

Page 30, lines 2, 6, and 8 "in-place reserves." This term is not used nor defined in Bulletin 1450-B and should be replaced with appropriate term contained in that Bulletin.

Page 34 "+ 85%" not "-85%"

Page 39. Last paragraph should be corrected to read "... Interior knows which areas have high or moderate development potential..."

Page 52. The criteria list on page 52 should be reworded to correspond to the instruction provided to the field offices in Washington Office Instruction Memorandum 78-85. The wording on page 52 for the criteria is slightly different from the instruction to the field offices and is, therefore, somewhat misleading.

Page 57, line 13. The word resources should be used instead of reserves.

Page 63, line 2. The word resources should be used instead of reserves.

Page 63, line 14. Delete word "recoverable." The use of this word is not in accordance with that desribed in Bulletin 1450-B.

Page 64. BLM is planning 11 regional lease sales from 1981 to 1984, not 9.

Sincerely,

Larry E. Meierotto
Assistant Secretary - Policy,
Budget, and Administration

Enclosure

PROPOSED LEASE TRACTS FOR THE

1981 GREEN RIVER - HAMS FORK LEASE SALE AS OF 4-21-80

Tract	In place reserve estimates (millions of tons) Federal	In place reserve estimates (millions of tons) Non-Federal	In place reserve estimates (millions of tons) Total	Recoverable Reserve Estimate (millions of tons) Federal	Recoverable Reserve Estimate (millions of tons) Non-Federal	Recoverable Reserve Estimate (millions of tons) Total	Annual Production (millions of tons)	Mine life a/ (years)
New Mining Operation Tracts								
COLORADO								
Danforth Hills II	107.1	-0-	107.1	91.0	-0-	91.0	3.6	25
Danforth Hills III	105.4	7.0	112.4	89.6	5.9	95.5	3.2	30
Hayden Gulch	94.2	-Minimal-	94.2	80.1	-0-	80.1	2.8	29
Iles Mountain	38.6	.9	39.5	32.8	.8	33.6	1.7	20
Lay	81.6	6.6	88.2	69.4	5.6	75.0	2.7	28
Williams Fork Mountain	40.9	2.5	43.4	34.8	2.1	36.9	1.2	31
WYOMING								
China Butte	73.9	69.0	142.9	62.8	58.6	121.4	4.0	30
Red Rim	40.6	31.0	71.6	34.5	26.3	60.8	2.0	30
Rosebud	17.0	11.3	28.3	14.4	9.6	24.0	1.5	16
Total New Mining Operation Tracts	599.3	128.3	727.6	509.4	108.9	618.3	22.7	27
Maintenance Tracts								
COLORADO								
Bell Rock	46.6	-0-	46.6	11.5	-0-	11.5		
Danforth Hills I	40.3	-0-	40.3	34.2	-0-	34.2		
Empire	32.2	-0-	32.2	12.9	-0-	12.9		
Grassy Creek	2.1	2.7	4.8	1.8	2.3	4.1		
Pinnacle	0.9	-0-	0.9	0.7	-0-	0.7		
WYOMING								
Medicine Bow	27.1	60.0	87.1	22.1	51.0	73.1		
Seminoe II	28.2	14.7	42.9	23.4	12.5	35.9		
Total Maintenance Tracts	177.4	77.4	254.8	106.6	65.8	172.4		
Total All Tracts	776.7	205.7	982.4	616.0	174.7	790.7		

a/Mine life computed by GAO by dividing the total recoverable reserves by the estimated annual production.

Source: U.S. Geological Sruvey, Conservation Division, Central Rocky Mountain Region; and Bureau of Land Management, Colorado and Wyoming State Office.

APPENDIX IV

SIGNIFICANT RATIOS ON THE PROPOSED LEASE TRACTS

Coal recovery ratio for all tracts = $\frac{\text{recoverable reserve estimate for all tracts}}{\text{in-place reserve estimate for all tracts}}$

$= \frac{790.7 \text{ million tons}}{982.4 \text{ million tons}}$

= 80 percent

Coal recovery ratio of new mining operation tracts = $\frac{\text{recoverable reserve estimate for new mining operation tracts}}{\text{in-place reserve estimate for new mining operation tracts}}$

$= \frac{618.3 \text{ million tons}}{727.6 \text{ million tons}}$

= 85 percent

Federal coal ownership ratio for all tracts = $\frac{\text{Federal recoverable reserve estimate for all tracts}}{\text{total recoverable reserve estimate for all tracts}}$

$= \frac{616.0 \text{ million tons}}{790.7 \text{ million tons}}$

= 78 percent

Federal ownership ratio for new operation tracts = $\frac{\text{Federal recoverable reserve estimate for new mining operation tracts}}{\text{total recoverable reserve estimate for new mining operation tracts}}$

$= \frac{509.4 \text{ million tons}}{618.3 \text{ million tons}}$

= 82 percent

Weighted mine life average for new mining operation tracts = $\frac{\text{total recoverable reserve estimate for new mining operation tracts}}{\text{total estimated annual production for new mining operation tracts}}$

$= \frac{618.3 \text{ million tons}}{22.7 \text{ million tons/year}}$

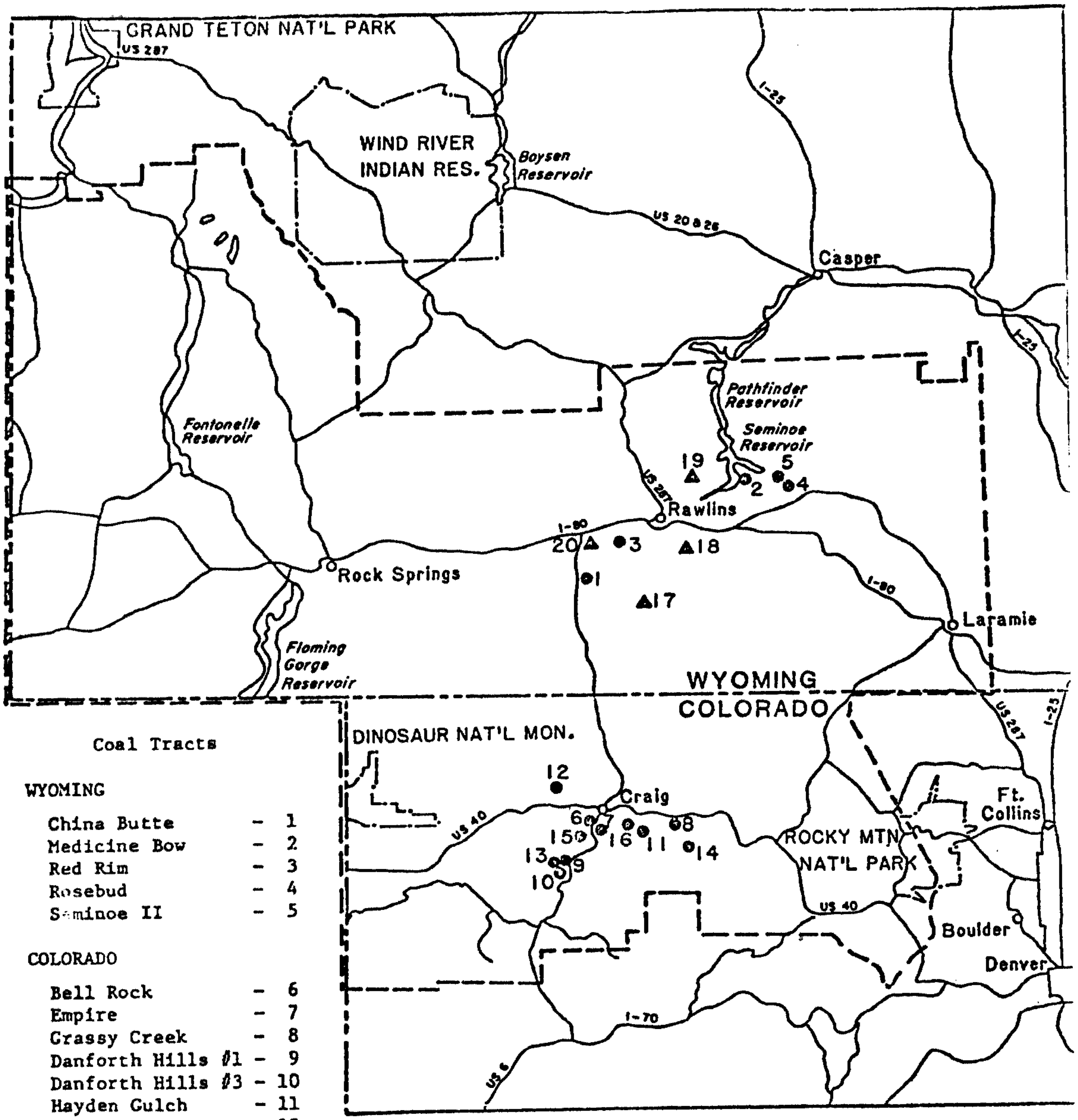
= 27 years

APPENDIX VI

MAP OF

PROPOSED LEASE TRACTS AND CERTAIN AREAS OF

INTEREST NOT CONSIDERED IN THE FIRST LEASE SALE



Coal Tracts

WYOMING

China Butte	-	1
Medicine Bow	-	2
Red Rim	-	3
Rosebud	-	4
Seminoe II	-	5

COLORADO

Bell Rock	-	6
Empire	-	7
Grassy Creek	-	8
Danforth Hills #1	-	9
Danforth Hills #3	-	10
Hayden Gulch	-	11
Lay	-	12
Danforth Hills #2	-	13
Pinnacle	-	14
Iles Mountain	-	15
Williams Fork Mtn	-	16

Other Areas of Interest

Cow Creek	-	17
Kindt Basin	-	18
Corral Canyon	-	19
Cherokee	-	20

GREEN RIVER-HAMS FORK COAL REGION

- ---- Boundary
- ● Locations of Lease Study Tracts
- ▲ Other Areas of Interest

INTERIOR'S ESTIMATE OF ANNUAL PRODUCTION THAT IS NOT DEPENDENT ON NEW FEDERAL LEASING AS OF NOVEMBER 14, 1979
(million tons)

WYOMING	1985	1990
Carbon County		
Hanna South	600	-
Medicine Bow	3,000	3,000
Rosebud	2,300	2,300
Seminoe No. 1	2,000	-
Seminoe No. 2	2,500	2,500
Vanguard No. 2	1,200	1,200
Atlantic Rim	-	-
Carbon County	1,500	1,500
Cherokee	5,000	5,000
Lincoln County		
North Block	1,400	1,400
South Block	4,400	4,400
Twin Creek	-	-
Skull Point	1,200	1,200
Sublette County		
Cottonwood	-	-
Sweetwater County		
Black Butte	6,300	6,300
Jim Bridger	7,500	7,500
Long Canyon	2,000	2,000
Rainbow	-	-
Stansbury	500	500
Winton	-	-
Reliance	-	-
Uinta County		
South Haystack	3,000	3,000
	44,400	41,800

	1985	1990
COLORADO		
Jackson County		
Mar	1,500	1,500
Canadian	300	300
Moffat County		
Colowyo	4,300	4,300
Trapper	2,000	2,000
Wisehill 5,5A,9	1,000	1,000
EFC 4	1,500	1,500
Routt County		
Apex #2	100	100
Edna	1,500	1,500
Energy Fuels No. 1,2,3	4,000	2,000
Hayden Gulch	500	500
Meadows No. 1	500	500
Seneca 2-W	1,500	1,500
Grassy Creek	250	250
	18,950	16,950
GRAND TOTAL	63,350	58,750

Interior's Estimate of 1987 Production

1985 Production	63,350
Less: Decrease in production expected by 1987 (63,350 minus 58,750 times 2/5)	- 1,840
Plus: Coal from leases without mine plans	+ 5,200
Estimated 1987 Production from mines not dependent on new Federal leasing	66,710

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