

PRELIMINARY ENVIRONMENTAL
REVIEW

Oil and Gas Leasing
Coal Creek State Forest
Flathead County, Montana

July, 1983

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STATE OF MONTANA

(406) 449-2074
(406) 449-4560 RECLAMATION DIVISION

1625 ELEVENTH AVENUE
HELENA, MONTANA 59620

(406) 449-2711 EIS TEAM

1539 ELEVENTH AVENUE
HELENA, MONTANA 59620

July 14, 1983

Dear Reader:

Enclosed for your review is a copy of a Preliminary Environmental Review (PER) prepared by the Department for the proposed inclusion of approximately 17,605.37 acres of the Coal Creek State Forest in the September 12, 1983 State oil and gas lease sale. Applications for the oil and gas leases for the Coal Creek State Forest were received by the Department in July 1982. The PER considers the immediate, cumulative, and secondary impacts of oil and gas leasing on both the physical and biological environment of the State Forest and adjacent lands, and evaluates the impact potential on the human population in terms of social, economic and cultural values.

Special protective stipulations requiring the successful lessee to submit an operating plan and other detailed information for Department review and approval at the time of any proposed exploration and development activities were developed during preparation of the PER. The PER indicates that the action of leasing the Coal Creek State Forest for oil and gas exploration and development with the attachment of the protective stipulations does not constitute a major action of state government requiring the preparation of an Environmental Impact Statement (EIS) prior to the scheduled lease sale.

Following the September 12, 1983 State oil and gas lease sale, the Department will evaluate the bids received for the Coal Creek State Forest tracts, and make a recommendation to the Board of Land Commissioners regarding the acceptance or denial of the bids. Final approval of the proposed leases rests with the Board of Land Commissioners, which includes the Governor, Secretary of State, Superintendent of Public Instruction, Attorney General and the State Auditor. It is anticipated that the Board will consider action on the lease bids at their regularly scheduled meeting on September 19, 1983.

If you have questions regarding the PER, please contact either Ralph Driear, Environmental Administrator, Department of State Lands, Capitol Station, Helena, Montana 59620, 449-2074; or Jim Gragg, Supervisor, Northwestern Land Office, Box 490, 2250 Highway 93 North, Kalispell, Montana 59901, 755-6575.

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I. INTRODUCTION

A. Purpose and Scope

This Preliminary Environmental Review (PER) was prepared in accordance with the Montana Environmental Policy Act (Chapter 1, Title 75, M.C.A.), and Sub-Chapter 6 of Rule 26.2 A.R.M. (Rules implementing the Montana Environmental Policy Act.)

The purposes of this PER are: (1) To provide a basis for making a recommendation to the Board of Land Commissioners regarding the sale of oil and gas leases on 34 tracts of State land in Flathead County, Montana, totaling 17,605.37 acres (Appendix B); and (2) to determine if the act of leasing will have a significant impact on the quality of the human environment.

This PER considers the immediate, cumulative, and secondary impacts of oil and gas leasing on both the physical and biological environment of State Forest lands, and evaluates the impacts on the human population in terms of social, economic, and cultural values.

B. Federal Leasing Activities

In the Fall of 1974, and in accordance with the federal Mineral Leasing Act of February 25, 1920, applications for oil and gas exploration and development leases on approximately 236,000 acres of National Forest land were made to the Bureau of Land Management. These large applications were for lands in Flathead County located near both the North and South Forks of the Flathead River.

Although the Bureau of Land Management (BLM) is the agency responsible for the actual issuance of the leases, the Forest Service is responsible for managing surface resources on National Forest lands. Consequently, by interagency agreement, the BLM refers all applications for mineral leases to the Forest Service for review and recommendation. If leasing is recommended, the Forest Service identifies any stipulations needed to protect surface resources and uses.

In accordance with the National Environmental Policy Act (NEPA), the Flathead National Forest prepared a Final Environmental Statement (FES) in 1976. In 1977, this document was remanded back to the Forest by the Regional Forester to correct certain deficiencies. Subsequently, the Forest Service decided not to revise the 1976 FES, but rather to complete a new environmental analysis (more programmatic in nature) covering most of the Flathead National Forest outside of classified wildernesses (USDA Forest Service 1980a). This Environmental Assessment was completed in 1980 and includes about 662,300 acres of oil and gas lease applications.

The Forest Service decision was to recommend to the BLM the granting of oil and gas leases with appropriate standard and special stipulations to protect the surface resources within areas where oil and gas leasing is compatible with surface resource management objectives. Further, it was determined that this action is not a major federal action that would significantly affect the quality of the human environment, and therefore does not require an Environmental Impact Statement. This decision was upheld in January, 1982 following an administrative appeal.

The BLM concurred with the Forest Service recommendation and has since granted approximately 300,000 acres of oil and gas leases on Forest Service land within the Glacier View Ranger District, which includes the North Fork drainage of the Flathead River. Approximately 60,000 additional acres of Forest Service lands in the Glacier View Ranger District remain under oil and gas lease application. Of these remaining lands, approximately 5,000 acres are presently being processed by the BLM for oil and gas lease approval, and 55,000 acres remain in Rare II areas pending re-evaluation for wilderness through a Forest Plan.

C. State Leasing Activities

On April 29, 1975, the Department of State Lands (DSL) received applications for oil and gas leases on fourteen tracts of school trust land within the Coal Creek State Forest in Flathead County. The tracts were deferred from a possible June 3, 1975 sale in order to conduct an environmental analysis of the proposed action. A Draft Environmental Impact Statement was issued by DSL on November 26, 1975. Public comments were utilized to extend, clarify and otherwise improve many portions, and a Final Environmental Impact Statement was issued on February 15, 1976.

The tracts were offered for bid at the March 2, 1976 oil and gas lease sale, and bids were received on all fourteen tracts. At the subsequent meeting of the State Land Board¹, all bids received were rejected.

In April, 1980, applications were again received for oil and gas leases on the same 14 tracts in the Coal Creek State Forest, plus an additional 20 tracts of State Forest lands along the north Fork of the Flathead River. Lease applications on the 34 tracts were subsequently withdrawn by the applicant prior to completion of an environmental review by the Department. Applications for lease of the 34 tracts, however, were again received by the Department in 1982. The 34 tracts, encompassing all of the State school trust lands in the North Fork drainage including the entire Coal Creek State Forest, have been deferred from each subsequent lease sale pending completion of an environmental analysis of the proposed leasing action.

D. Existing Exploration Activities

Recently, several seismographic exploration surveys have been completed on USFS and the Coal Creek State Forest lands in the North Fork drainage of Flathead River. Results of these surveys are proprietary, however, and are not available to the agencies. In 1982, a shallow exploration well was drilled on private property near Trail Creek. In early 1983, Nyvatex Inc. drilled an additional adjacent exploration well to a depth of approximately 350 feet before terminating drilling for evaluation of shallow oil traces.

¹ The State Land Board, also called the State Board of Land Commissioners, is established by the Constitution of the State of Montana to consist of the Governor, Attorney General, Superintendent of Public Instruction, State Auditor, and Secretary of State

II. DESCRIPTION OF PROPOSED ACTION

A. Location

Coal Creek State Forest consists of about 15,000 acres within the North Fork of the Flathead River drainage. The forest is located in the Whitefish range approximately 30 road miles north of Columbia Falls and for a short distance shares a common boundary (North Fork, Flathead River) with Glacier National Park.

In addition, five scattered tracts north of the Coal Creek Forest and one to the east are included in the area for consideration. Total State land acreage in the lease area is 17,605.37 acres (figure 1 and 2).

B. Proposed Use

The lease applications are for the right to explore for and develop any oil and/or gas deposits which may exist within the lease area. The leases are being sought prior to any certain knowledge that oil- and gas-bearing structures are, in fact, present. To date, although seismic investigations have taken place on adjacent lands, no exploratory drilling has occurred in the proximity of the lease area. However, the geology of the over-thrust belt, of which the lease area is a part, does show promise of oil and gas potential. Nevertheless, the probability of actually discovering commercial quantities of oil and/or gas in the lease area remains uncertain. This low probability, plus the fact that oil and gas operations are sequential (each successive step being dependent upon the success of the preceding step) makes actual development a highly speculative occurrence.

Figure 3 shows the general sequence of oil and gas operations. There are normally five phases in the operation, if production is actually achieved.

1 Preliminary Evaluation of the Area's Potential to Produce Oil and Gas.

Aerial photos and existing geological information are used to determine the presence of generally suitable geological structures which may be capable of trapping oil and gas. This step, which required no permission or actual use of the DSL lands, has been completed.

2 On-the-Ground Exploration, Utilizing Several Techniques to Confirm That Sufficient Commercial Quantities of Oil and Gas are Present.

This step involves two major phases:

- a. Detailed examination of selected geologic surface features and seismic evaluation of the geologic structure of the area--This phase basically involves the application of seismographic methods of delineating geologic substructures which may contain oil or gas fields. Vibrator trucks, very sensitive shock recorders (geophones), and computers are used.

This approach is more expensive than the older method of seismographing--exploding dynamite in deeply-drilled holes and recording the effect of the resultant shock wave. However, the results of the newer system are substantially more accurate, since the vibrator trucks create a more precise shock wave than does an explosive charge.

Initially, several miles of conductive cables are strung along roads or trails. The shock-sensitive geophones are permanently attached to this cable at about 18-foot intervals. After the cable is in place, several special vibrator trucks are moved to a pre-established location and set up to generate the necessary shock waves. Large hydraulic pads are then lowered from the trucks until they support the trucks' weight.

Once in position, the pads under each truck are vibrated simultaneously, which transmits nondestructive shock waves deep into the crust of the earth. These shock waves strike the various subsurface formations and rebound differently, depending upon the nature of the geologic feature. The return shock waves are picked up by the geophones and transmitted along the cable to computers in a nearby recording truck. Following a brief vibrating period, the vibrator trucks are moved a short distance, and the process is repeated.








Existing roads within the lease area should be adequate for the initial seismic reconnaissance. During the later stages of seismic reconnaissance, it may be necessary to cut 14-foot wide strips through the timber in order to more precisely locate the cable. Such strips would not be used as roads, however, as the cable would be laid in place by hand. Existing roads would probably also be sufficient for additional detailing work that may be needed before exploratory drilling.

Once the seismographing is completed in an area, the computer records are interpreted by geophysicists who develop subsurface geology maps and identify areas capable of trapping hydrocarbons. These data can only indicate if promising areas are present. It is at this point that the applicant must determine whether the seismic evaluations are sufficiently promising to warrant the drilling of exploratory wells to establish the possible existence of an oil or gas field.

In areas of difficult access or where road construction would cause significant surface damage, helicopter supported seismic lines may be run using a variety of techniques. One method is to detonate an air blast to impact a seismic vibration into the ground, by suspending short charges above the ground with survey lath. Another technique frequently used is to airlift small drill rigs into difficult access areas to drill the shot holes.

- b. Drilling of one or more exploratory wells to confirm the presence of commercial quantities of oil and gas--This phase would require the construction of one or more drilling sites ranging from two to six acres. Leveling of the site in order to provide a flat surface for the drill rig would require approximately 1/10 acre; slope alterations might be necessary to make the remainder of the site sufficiently level for safe and efficient operation. If the drill site is not served by a road, access roads might be required. Depending on the evaluation of the drilling results, the applicant must decide to discontinue drilling, convert the existing exploratory well(s) into development well(s), or drill additional production wells.

COAL CREEK STATE FOREST
 PROPOSED OIL & GAS LEASE AREA

LEGEND	
	State Forest Boundary
	Wild and Scenic River Bndry.
	Timber harvest unit
	Main roads
	Secondary roads
	Intermittent stream
	Perennial stream

Scale 1"=1 mile

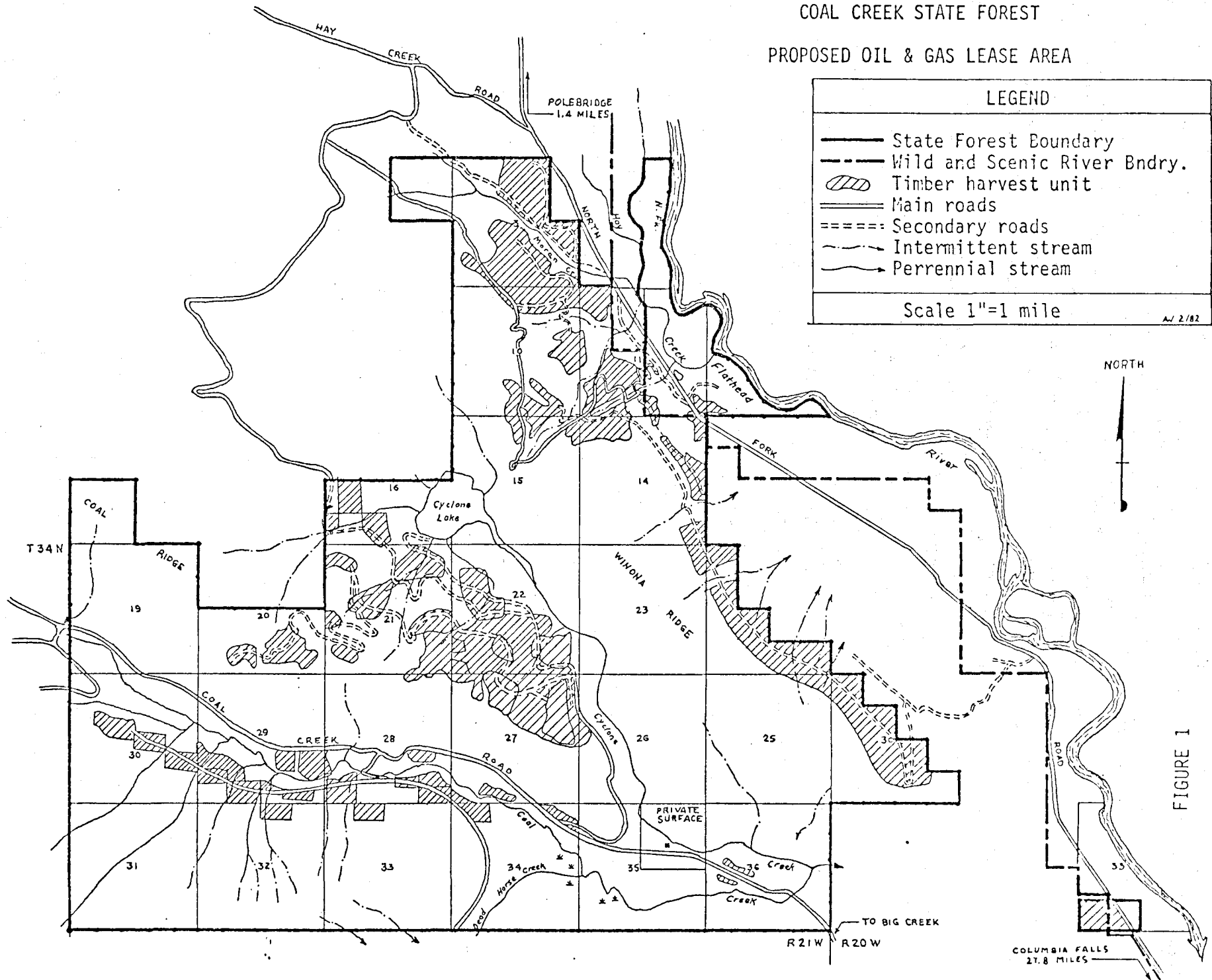


FIGURE 1

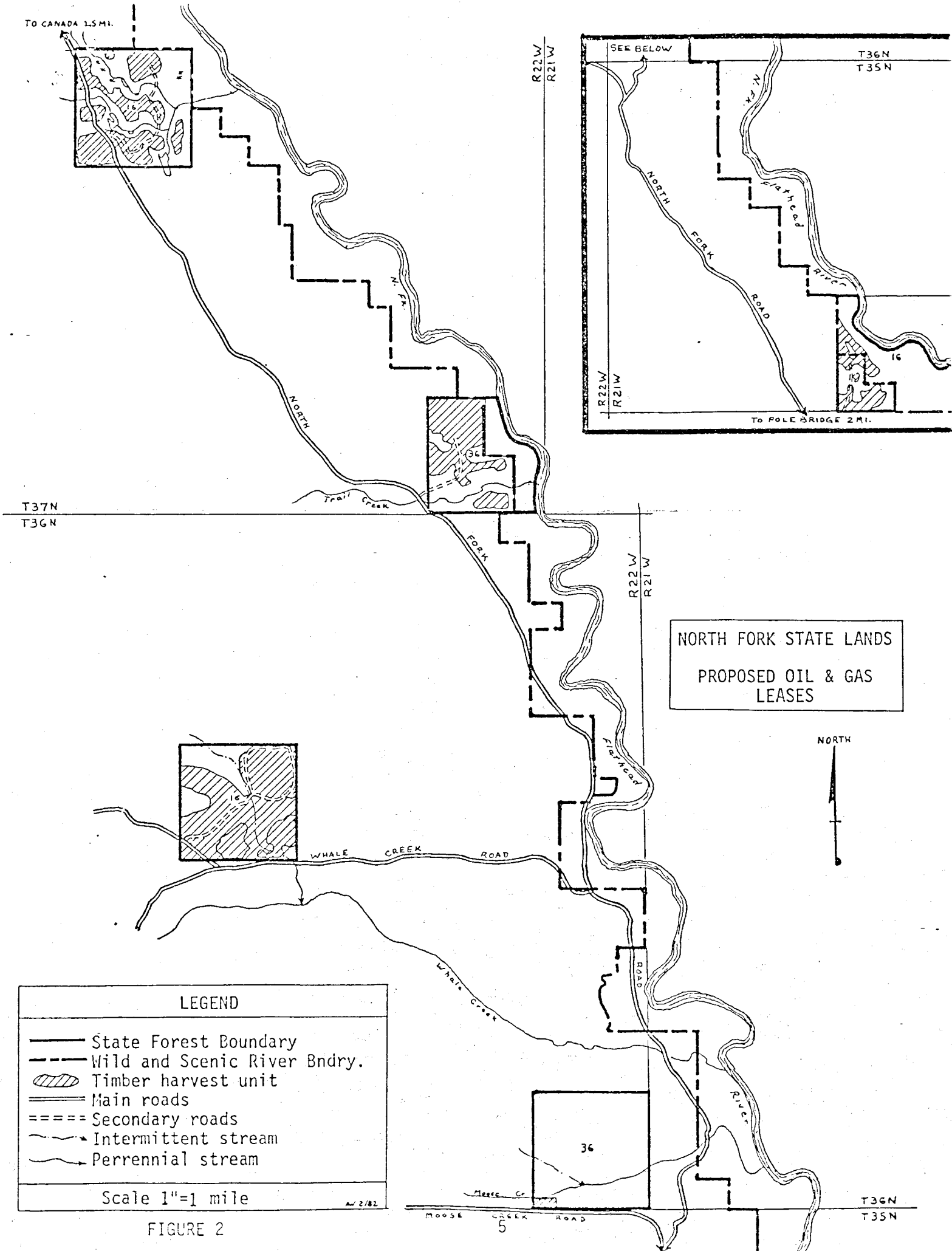


FIGURE 2

SEQUENCE OF OIL AND GAS OPERATIONS

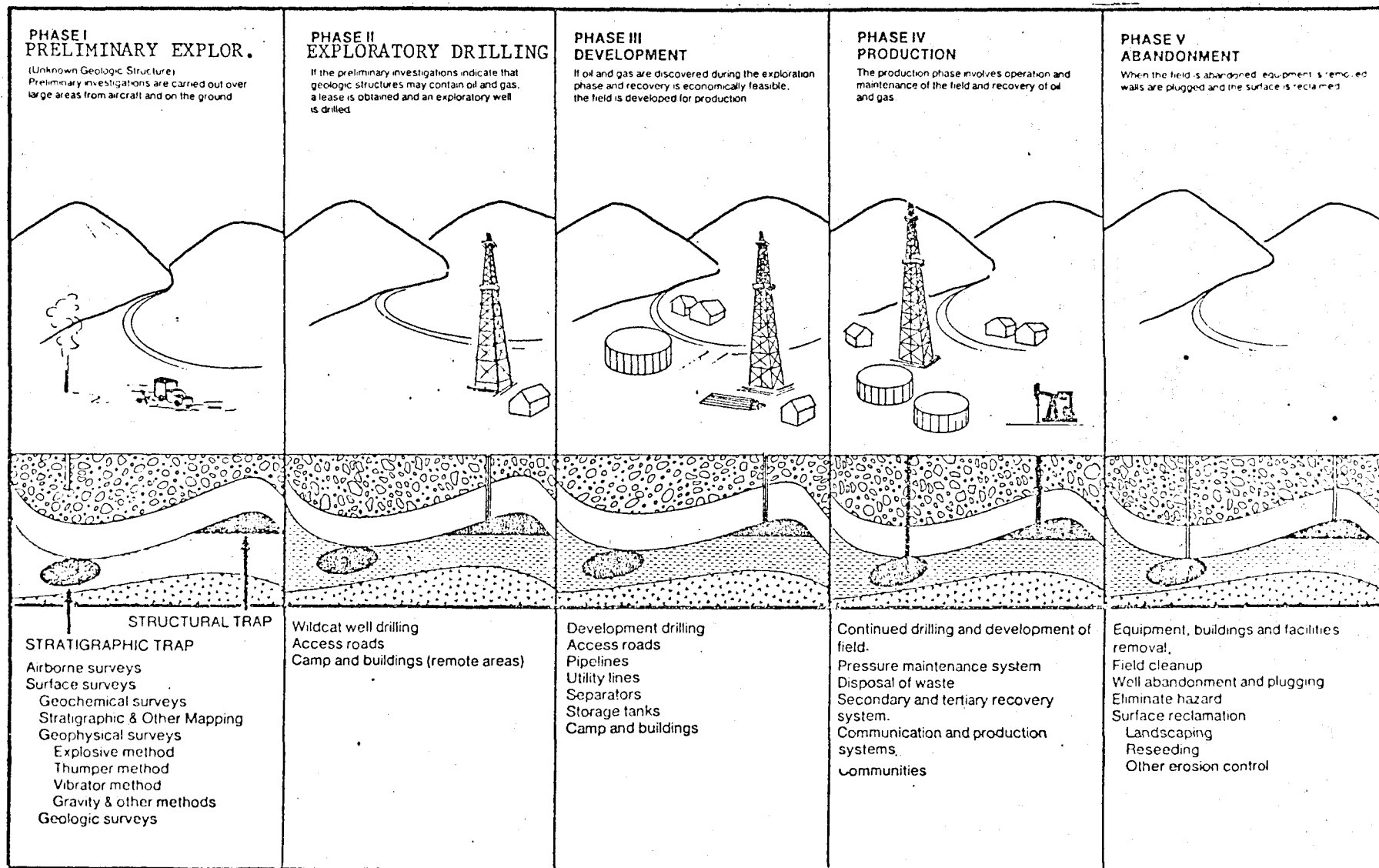


FIGURE 3

SOURCE: U. S. Department of Interior, Bureau of Land Management, 1972.
Preliminary draft, Upland Oil & Gas Leasing Programmatic
Environmental Impact Statement.

3. Development of Oil and Gas Discovery into Actual Commercial Production, and Construction of Drilling Sites for Production Wells

The possible requirements of this phase are roads, conversion of existing exploratory wells into production wells, construction of storage tanks, flaring and evaporation pits, construction of a collecting pipeline system with a pumping station, gas sweetening plant, upgrading or improving maintenance on existing roads to provide year-around access, construction of small local power generating sites or a power line to serve the field, and establishment of a small, local administrative and service site. It is unlikely that structures beyond the usual pumping stations, storage tanks, and pipelines would be necessary, even if large quantities of oil and gas were discovered.

4. Production

The production phase involves the year-round operation and maintenance of the field and the recovery of oil and gas. This phase could involve continued drilling and further development of the field. Ongoing activities at the field could also include pressure maintenance systems, waste disposal, and secondary and tertiary recovery systems. This phase could last for 20 to 40 years on any site that is developed.

5. Exhaustion and Abandonment of Production Wells

This stage would involve those actions necessary to close down existing wells and related facilities, remove structures, close applicant-constructed roads, and rehabilitate drilling sites, storage tank sites, pipeline rights-of-way, and administrative and service facilities.

The refining and marketing phases of the oil and gas operation would probably not take place on State land.

C. State Leasing Procedures

1. General Lease Sale Procedures

Sales of oil and gas leases on State lands are normally held quarterly and are made by competitive oral bid. Any legally qualified person who wishes to have a tract of land offered for oil and gas leasing must submit a formal application along with a fee as prescribed by the Department of State Lands. In order to allow the necessary time for publishing the notice of the lease sale, applications are to be filed with DSL at least forty days before the regularly scheduled date of sale, whenever possible. As required by law, notice of the tracts to be offered for sale on the next sale date is published in the Montana Oil Journal.

Sales are offered by the Commissioner of State Lands², subject to the approval of the State Land Board. The Board normally decides whether to accept lease sale bids at its next regularly scheduled monthly meeting following the sale date.

2 Chief Administrative Officer of the Montana Department of State Lands, the Commissioner of State Lands is appointed by and serves at the pleasure of the Governor.

2. Legal Provisions Governing Lease Sales

The provisions of law which govern the sale of oil and gas leases are found in 77-3-401 MCA. In addition to the statutes, rules and regulations governing the issuance of oil and gas leases on State lands has been promulgated. The current rules and regulations were adopted by the State Land Board on September 15, 1975, and became effective on November 3, 1975. They were later amended in December, 1981.

3. Terms of State Leases

When the State Land Board issues a lease, the lessee is granted the right to explore, drill for, develop, and remove all oil and gas under the leased lands for a primary period of ten years (77-3-421 MCA). The rationale for not leasing these various phases separately (splitting the leases) is that, where development rights are not part of the original lease, bidders would not offer to pay as high a price. The lease's value would be less because bidders for an "exploration lease" would have no assurance that, if oil or gas were discovered, they would also receive the "development lease." Lease splitting would be, therefore, contradictory to the trust principle of securing the "...largest measure of legitimate and reasonable advantage to the State" (see Section IV. A. Legal Considerations).

Oil and gas leases on State land are subject to the following:

- (1) Terms described in the lease itself, including any special conditions that may be added by the State Land Board,
- (2) Rules and regulations governing the issuance of oil and gas leases on State lands, and
- (3) Rules and regulations of the Montana Board of Oil and Gas Conservation (82-11-111 MCA).³

The lease provisions for oil and gas on State lands are similar to those required by the Bureau of Land Management on federal lands.

4. Continuance of Leases

The continuance of such leases is contingent upon the lessee's fulfilling all obligations set out in the lease. Briefly, those obligations include:

- (1) Complying with all rules and regulations of the Board of Oil and Gas Conservation relative to exploring and drilling for oil and gas and preventing waste (82-11-123, 124 MCA), and allowing inspectors of the Board of Oil and Gas Conservation to conduct necessary inspections.

3 Copies of such rules and regulations are available from the Oil and Gas Conservation Division, Department of Natural Resources and Conservation, 25 South Ewing, Helena, Montana 59601 (phone 406-440-2611).

- (2) Allowing inspections by DSL personnel and carrying out their instructions relative to the terms and conditions of individual leases.
- (3) Using the highest degree of care and proper safeguards to prevent pollution of earth, air, or water by hydrocarbons or other pollutants,
- (4) Stockpiling any topsoil removed in the drilling operation, restoring the surface contours following the completion of drilling, and reseedling,
- (5) Drilling, upon completion of a commercially productive oil and gas well, such additional wells to the depth of the formation found commercially productive or to such a depth as may be necessary to economically test, develop, and operate the deposits discovered, and
- (6) Making payments to DSL in the form of lease rentals, royalties, and, where applicable, delay drilling penalties.

III. AFFECTED ENVIRONMENT

A. History

The lands constituting the 14,978-acre Coal Creek State Forest were granted to the State from 1892 to 1909 in accordance with provisions of the Enabling Act (see IV., A. Legal Considerations). The discovery of coal near the mouth of Coal Creek in the 1880's was apparently one of the primary reasons the State selected this area for ownership. However, only a minor amount of coal was discovered and removed. Coal has not been commercially produced from this State land in the past forty years.

Large fires occurred on Coal Creek State Forest in 1910, 1919, 1922 and 1926. Approximately one half of the forest was burned in these fires; this area has since revegetated naturally.

In 1925, the State Legislature formally designated the State-owned lands in the Coal Creek drainage as Coal Creek State Forest. However, forest development activities, in the form of roads and timber sales, were not initiated until the early 1950's, when a road was constructed up Coal Creek to provide access to U.S. Forest Service lands. The NE $\frac{1}{4}$ Section 35, T34N, R21W was sold in 1912; however, the State retained mineral rights to this tract.

Further road development has been largely in response to insect outbreaks in order to salvage affected timber. An extensive spruce bark beetle epidemic in the 1950's and another in the 1960's resulted in two major timber sales which developed the Coal Creek Valley and Cyclone Basin road systems. A mountain pine beetle epidemic occurred between 1976 and 1981 resulting in expansion of the Cyclone Basin and North Coal Ridge road systems and development of the northeast slopes and benches adjacent to Winona Ridge. The scattered sections were also developed during the mountain pine beetle attacks, with the exception of Section 36, T36N, R22W which only had minor post salvage in the southwest corner from the existing Moose Creek Road. Road systems developed in conjunction with these sales are generally low standard roads with alignment and grade suitable for log trucks, but not for oversize semi-tractor trailer loads. Major components of these systems are shown in figures 1 and 2.

The Flathead River was one of 27 rivers designated for study under Section 5(a) of the Wild and Scenic Rivers Act of 1968 (P.L. 90-542) for inclusion in the National Wild and Scenic Rivers System. The study of the river began in July 1970.

Rivers must meet certain criteria established by the Wild and Scenic Rivers Act in order to be considered for inclusion in the Wild and Scenic Rivers System. Criteria include a determination of (1) free-flowing status (2) the presence of high quality water, and (3) the fact that the river, with its immediate environment, possesses outstandingly remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural or other similar values. On the basis of study findings, it was concluded that the 219.0 miles of the river designated for study met these criteria and, therefore, qualified for inclusion in the

National Wild and Scenic Rivers System...Public Law 94-486 (An Act to Amend the Wild and Scenic Rivers Act) was signed into law October 12, 1976. This law added the three forks of the Flathead River to the National Wild and Scenic Rivers System (USDA Forest Service, 1980b).

Under this designation, the portion of the North Fork passing through State land was classified as a "scenic" river. The basic requirements for this classification include "those rivers or sections of rivers that are free of impoundments, with shorelines or watersheds still largely undeveloped, but accessible in places by roads" (USDA Forest Service, 1977).

This designation implies certain definitive management constraints for development along shorelines and in view of the river. A detailed discussion of the scenic river plan can be found in the Flathead Wild and Scenic River Management Plan. Those areas within the designated Scenic River corridor along the North Fork of the Flathead River on Forest Service lands have been leased with a required No Surface Occupancy stipulation for oil and gas related activities. A Memorandum of Understanding between the DSL and the Flathead National Forest, concerning the management of State land within and adjacent to the scenic river corridor, was signed on October 18, 1982 (see Appendix C).

B. Climate

Coal Creek State Forest is primarily affected by Pacific maritime weather systems which characteristically result in large winter accumulations of snow leading to high stream flows in the spring. Precipitation occurs throughout the year, although there are great variations by season and elevation. The higher elevations on the west side of the forest receive more precipitation than do the lower elevations along the eastern boundary.

Year-around weather stations have not been established in the State Forest; consequently, no precise annual meteorological data are available. However, a general conception of its precipitation regimes may be gained from the following data, reported from Polebridge, located at 3,600 feet elevation and approximately 2.5 miles north of the State Forest (USDA Forest Service, 1973).

Mean yearly precipitation at Polebridge is 23.6 inches. Mean monthly precipitation ranges from a low of 1.17 inches in July to a high of 2.91 inches during January. Snowfall is high, with the mean yearly figure being 122.4 inches. Over 90 percent of the snowfall and 50 percent of the precipitation occurs during the five-month period of November through March. The frost-free season at low elevations in the State Forest has been estimated at no longer than 30 to 40 days.

C. Natural Environment

1. Air Quality

The air quality of the proposed lease area is generally good, lying over 25 miles from a major population center. Air quality is presently affected periodically by dust from roads, resulting from logging and recreation vehicular traffic, and by smoke from slash disposal and wildfires.

The proposed lease area lies from less than one mile and up to about ten miles from Glacier National Park, a mandatory federal Class I area as defined in Section 161 of the Clean Air Act as amended August, 1977.

A 1976 EPA study concluded that there was no long-range transport of pollutants due to oil and gas operations. However, there is the possibility of ambient air quality changes within the periphery areas of the Class I area if development takes place in close proximity to Glacier National Park. Odors caused by hydrogen sulfide and hydrocarbon gases may be periodically noticeable within the Park.

2. Hydrology and Water Quality

Coal Creek State Forest lies in the North Fork of the Flathead River drainage. The major drainage of the State Forest is Coal Creek, an 82.3 square mile watershed which arises from the Whitefish Range and flows east to the North Fork. Cyclone Creek, drainage area 13.1 square miles, is a major tributary of Coal Creek and flows through a large portion of the State Forest. Cyclone Lake lies near the midpoint of Cyclone Creek. It has approximately 150 acres of surface area and is about 25 feet deep at its deepest point. Deadhorse Creek, drainage area 9.7 square miles, flows across a short reach of the State Forest before joining Coal Creek. The majority of the remainder of the State Forest is drained directly to the North Fork. A small portion on the northeast portion of the Forest is drained by Moran Creek, a tributary of Hay Creek.

State Forest land makes up 22% of the Coal Creek watershed, 54% of the Cyclone Creek watershed, 10% of the Deadhorse Creek watershed and 9% of the Moran Creek watershed. Most of the remainder of these watersheds are administered by the Flathead National Forest, with the exception of small private holdings near the North Fork of the Flathead River.

The five scattered North Fork sections are all located in close proximity to the North Fork of the Flathead River. Each section lies in a different tributary watershed of the North Fork.

The waters of the North Fork of the Flathead and its tributaries are generally of high quality. The high suspended sediment and turbidity levels during peak flows are virtually the only parameters which would presently limit the use of the water for traditional beneficial purposes. Due to the lack of baseline (pre-logging) data, it has not been determined what percentage of the suspended sediment and turbidity is due to natural conditions and what percent has been caused by management activities. It has been suggested in various studies in the Flathead area that logging operations have caused damage to stream channels and water quality (Delk 1972, Snyder 1977, and Weber 1977).

The Department of Health and Environmental Sciences has given the North Fork and its tributaries a Water Use Classification of B-1. The water quality standards accompanying the B-1 classification require that the waters remain suitable for bathing, swimming, recreation and growth and propagation of salmonid fishes, among other uses and specific criteria.

Several water quality studies have been conducted in the North Fork area in recent years. They include the Flathead River Basin Environmental Impact Study, a five year study scheduled for completion June 30, 1983; Knapton 1978; Flathead 208 1977; and Montana Department of Natural Resources and Conservation 1977. These reports summarize and interpret the chemical, physical and biological parameters collected by Flathead 208, Montana Department of Fish, Wildlife and Parks, the U.S. Geological Survey and other agencies. The studies were initiated principally to collect baseline data so that the water quality impacts of impending future development within the North Fork basin can be assessed.

The studies show generally good water quality in the North Fork drainage, and indicated the following relationships:

- 1) Peak runoff periods correspond with depressed pH, lower conductance, high turbidity and increased suspended sediment.
- 2) 90% of the annual sediment load is carried in April, May and June.
- 3) There is a positive correlation between suspended sediment concentration and the concentration of phosphorus, iron, aluminum and acidity.
- 4) The physical changes from altered sediment yields are known to some extent, i.e. covering spawning gravels, reducing benthic habitat, etc. The impact of altering P, Fe, Al and pH is not clear.
- 5) There is an apparent correlation between acidity and total iron and total aluminum.
- 6) The lakes within the tributary drainages provide a dampening effect on flow and suspended sediment concentration and act as sinks for the various chemical constituents.

During the summer of 1978 and 1979, the Montana Division of Forestry monitored the water quality of Cyclone Creek near its confluence with Coal Creek. A limited number of chemical and physical tests were performed. The relationships between flow, suspended sediment and conductance reported for the North Fork studies also held true for Cyclone Creek. No in-depth chemical analysis was completed. The sediment production rate for Cyclone Creek was low. Late summer water temperatures were quite high, probably due to the storage provided by Cyclone Lake and the lack of streamside vegetation along tributaries on the west side of Cyclone Lake.

3. Geology

Coal Creek State Forest lies in the Whitefish Mountains which form a portion of the Overthrust belt geologic zone. Mountain building by past geologic processes of uplifting, folding and faulting have fractured, move and transformed the bedrock into geological structures which may retain oil and gas. The bedrock geology of the Coal Creek State Forest, including formations and fault locations, was mapped by Johns (1970). The primary bedrock formations within the lease area are described on the following page.

<u>AGE</u>	<u>FORMATION</u>
(1) Tertiary	Kishenehn formation - silty sandstone and siltstones weakly consolidated with localized coal seams such as the coal banks of Coal Creek.
(2) Precambrian	Roosville Formation--green-gray, red-brown, and red-purple coarse-grained argillite.
(3) Precambrian	Phillips Formation--grayish-red and red sandstone quartzite and argillite. Crossbedding and ripple marks are commonly found.
(4) Precambrian	Kintla Formation--green-gray, grayish-red, and brown fine grained argillite, sandstone, and quartzite.
(5) Precambrian	Upper Piegan - banded - green-grayish green argillite, calcareous argillite and minor limestone.

4. Soils

A landsystem inventory of soils, landforms, vegetation and geology has been completed for the Coal Creek State Forest and scattered sections in the North Fork of the Flathead River drainage (Ottersberg 1980). Soil mapping unit descriptions are available with interpretations including potentials for erosion, sediment delivery, and vegetative recovery. Soil properties and landform characteristics are keyed with suitability ratings for road construction, building sites, timber harvest, and other activities.

The mountainous topography of the Coal Creek State Forest features glacial scoured breaklands, rocky residual ridges, cirque basins, avalanche chutes and glaciated valleys. Well-drained coarse, soils with 45-85 percent angular cobbles and gravels occur along the convex mountain ridges and upper glacial trough walls. Glacial till, outwash deposits and alluvium form the soils on the mid and lower slope positions in the major drainages of Coal Creek and Cyclone Creek. The glacial soils are mainly very gravelly silt loam and fine sandy loam textures with 35-65 percent gravels and cobbles in the subsoil. Topsoils are commonly volcanic ash influenced silt loams of greater fertility and moisture retention than the subsoils. Retaining the productive topsoil is important for regeneration and growth of timber.

Overland flow is rare on undisturbed soils which normally have a thick, porous duff surface. Disturbed soils have moderate to high erosion potential on slopes over 20 percent.

5. Fire, Insects, and Disease

A fire-insect cycle has been the predominant force in lodgepole pine forest type development in the North Fork drainage. This 100-150 year cycle has been replayed since the earliest forests of the area. Even-aged lodgepole stands are begun by catastrophic wildfires and grow to

maturity in about 80 years. At this stage, the trees are highly susceptible to mountain pine beetle attack, and infestations build to epidemic levels killing extensive acreages of trees. Dead trees create a heavy fuel loading, preparing the site for another catastrophic wildfire, thus restarting the cycle. Fires in the early decades of this century initiated the stands currently on the forest, and the beetle epidemic starting in 1976 is the present step in the cycle. Man has substituted timber salvage for the wildfire event in many areas, thus reducing the danger; however, inaccessible areas will have a high fuel loading for several years and large fires will be a continuing hazard.

Wetter forest types have a different fire regime, but are still affected by fire history. Fire cycles in these areas are from 200 - 400 years depending on stand type and moisture conditions.

Due to the old age and poor condition of virgin stands, insect and disease problems have been major determining factors in planning forest management activities. Spruce bark beetle and mountain pine beetle infestations have been responsible for development and harvesting activities for most of the forest stands. Until stands are converted from old growth to younger more vigorous stands, insect and disease management will influence harvest practices.

6. Vegetation

North Fork State Forest lands are predominantly forested except for small areas of south facing slopes, small grassy parks and meadows, and open grassy ridges. The entire area was inventoried in 1977 as part of a State-wide inventory program. Predominant forest types on the Coal Creek Forest are subalpine fir - spruce--5,148 acres; lodgepole pine--3,669 acres; Douglas fir--2,269 acres; and larch--1,530 acres. Other minor types include grand fir, ponderosa pine, spruce and whitebark pine. Total estimated sawtimber volume on the Coal Creek Forest is 109 million board feet (Scribner) (Montana Department of State Lands 1981).

Forest habitat types (Pfister, et. al. 1977) have been determined for recent timber sales and on an extensive basis by the Forest Service (USDA Forest Service 1974) for the Coal Creek Forest. Habitat types generally fall into the cool and moist types characteristic of Northwest Montana. Almost all the North Fork State lands are in the *Abies Lasiocarpa* (ABLA) series with the exception of some very dry south aspect slopes above the Coal Creek Road in the PSME/SYAL h.t. ABLA types and phases cover a wide range and include the following elevational and moisture regimes:

River terraces and benches - North Fork basin	ABLA/CLUN, VACA
Wet, toe slope seepage areas - Coal Creek	ABLA/OPHO
Lower elevation moist areas - North Fork, Coal Creek, Cyclone	ABLA/CLUN, CLUN
Higher, moist areas - North Fork and East Slopes	ABLA/CLUN, MEFE
Higher, moist and cooler areas - Upper Slopes	ABLA/MEFE
Higher, dry and cool areas - West and South Slopes	ABLA/CLUN, XETE
	ABLA/XETE
Very high elevations - Upper Coal Ridge	ABLA/LUHI

Yield capability for most sites is in the moderate to high range except for very high or dry types where productivity falls off because of environmental severity.

7. Wildlife

The wildlife resource supported by the North Fork environment is very diverse. Native mammals, which may be residents or occasional users of proposed lease parcels include elk, moose, white-tail deer, mule deer, black and grizzly bears, mountain lion, bobcat, lynx, fisher-pine marten, wolverine, Northern Rocky Mountain wolf, coyote, snowshoe hare, beaver, muskrat, river otter, pine squirrels and other small mammals. Bird species include the blue, spruce and ruffed grouse, woodpeckers, jays, numerous small song birds and raptors. Uncommon raptors, like the bald eagle and osprey, are more numerous here than throughout most other parts of their natural range. The rare peregrine falcon is also said to be occasionally seen (Singer 1975). Of the above species, the following are currently classified as threatened or endangered under the Endangered Species Act of 1973:

- Grizzly bear (threatened)
- Northern Rocky Mountain wolf (endangered)
- Bald eagle (endangered)
- Peregrine falcon (endangered)

The Act prohibits actions on federal lands which would destroy or adversely modify habitat which is considered critical to affected species, or which can be expected to encourage the decline, or prevent the reasonable expansion of, populations of these species (USFS Oil and Gas Guide 1979). Actions on State land may not be covered by the Act. However, in keeping with the State Multiple Use Concept (77-1-203 MCA) the Department of State Lands has historically cooperated with the Montana Department of Fish, Wildlife and Parks and the U. S. Forest Service on resource management decisions affecting these and other species of wildlife, particularly big game animals.

Habitat requirements and management recommendations for individual species or species groups are given below:

a. Grizzly bear

Extensive research and planning concerning grizzly bears has been undertaken during recent years. The University of Montana Border Grizzly Project (BGP) is a cooperative American/Canadian research effort undertaken in 1975 to collect data and aid in management of grizzlies in the Rocky Mountains of Montana, Idaho, Washington and parts of Canada. The project was initiated in response to pressures on grizzly habitat created by energy development, subdivisions, timber management, and other land uses. It is jointly funded by State, federal and provincial governments. BGP studies have centered on identifying habitat which is important for feeding, travel, denning, security, the effects of human disturbances on bear distributions and habitat utilization, bear behavior, and population dynamics. Many projects have been completed, and many are still in progress.

A Grizzly Bear Recovery Plan, commissioned by the U. S. Department of Interior under the Endangered Species Act, was drafted in 1980 and approved by Interior's U. S. Fish and Wildlife Service in 1982. Its goal is the eventual removal of the grizzly bear from "threatened" status through management which will reestablish or maintain populations at a targeted level within potential habitat or occupied habitat. The Recovery Plan is basically a statement of job responsibilities for agencies assisting in the recovery effort. The Department of State Lands is cited as a lead or cooperating agency for many of the recommended actions.

All State lands in the North Fork are within occupied grizzly bear range (US Fish and Wildlife Service 1982). In 1975, the BGP identified about twenty "habitat components", or land units, which consist of topographic features, nonforested plant communities, forested habitat types, and logging associated entities. Their relative importance for producing bear foods was assigned, and observations on seasonal utilization of these by bears was also recorded (Mealey 1977). More recent studies of actual habitat utilization by radio-tracked grizzlies in the North Fork have suggested some differences in the relative importance of certain habitat components from what was predicted by the initial vegetational studies. In particular, some forested habitats in the Whitefish Range appear to be disproportionately important relative to open areas, when compared to known habitat utilization in other geographic portions of the grizzly's range. The following are general descriptions of habitat components and their use:

1. During spring and early summer, south facing sidehill parks and snowchutes/shrubfields at upper elevations, and stream bottoms, flood plains and meadows at lower elevations, are important feeding areas, because they offer the first available succulent vegetation when bears come out of their dens.
2. Forested and nonforested areas (such as burns) which support good crops of berry-producing shrubs (particularly Vaccinium spp.) are very important from about July 1 through mid-September. These sites are often within the ABLA/LUHI/VASC, ABLA/XETE/VAGL, and ABLA/CLUN/MEFE habitat types.
3. Subalpine ridgetops and timbered creek bottoms are used as travel routes from spring through late fall. Ridgetops may also be used as feeding areas for whitebark pine nuts and roots of certain forbs from later summer through fall.
4. Low elevation creek bottoms, benches, and flood plains are again important feeding areas in the late fall, after the berry production season and prior to denning (mid September to November 1.)
5. Utilization of disturbed areas such as timber harvest units and roadways varies considerably between individual bears, and possibly between sexes. In general, utilization of such areas is limited by the distance to travelled roads, and the degree of proximate cover within or adjacent to the disturbance.

6. Grizzlies usually seek den sites in mid-November, and these are often located in timbered or alpine basins above 6,000 feet. Dens are usually located where high snow accumulation occurs just below ridgetops or rock outcrops. Denning may take place on any aspect.

The above is a generalized pattern of habitat use. Actual tracking of radio-collared bears has shown that individual bears often show a strong preference for a particular habitat component, and may utilize it for most or even all of the feeding season. For example, some bears never leave the North Fork flood plain, except to den. Others may spend their entire active period above 5,000 feet. In addition, weather and berry crops appear to alter the generalized use pattern in a given year.

Up to now, most man-caused disturbance effects to grizzly habitat in the North Fork have been associated with forest management. Grizzly research has provided guidelines for forest management activities in occupied habitat, particularly those associated with timber harvesting and site preparation. History and current research suggest that grizzly bears and timber management may be compatible, if development, silvicultural treatments and harvesting activities are planned and executed with consideration for grizzly habitat requirements. On a particular site, this is accomplished by manipulating the location and size of harvest units, deferring treatment of travel and security areas, limiting scarification disturbance of desirable plant foods or burning to enhance the production of certain plants, placing restrictions on seasons of operation, and closing roads after treatments are completed.

However, one study demonstrated how logging displaced three grizzlies from a portion of their home range during the period of activity. It is not known what, if any, physical or behavioral stress is placed on bears as a result of such displacement (Mace and Jonkel, 1980). The fact that alternative feeding, security, or denning areas may have to be sought and utilized for an unknown duration, however, makes the cumulative effects of several concurrent disturbance activities (timber, recreation, subdivision, oil and gas, etc.) a higher concern than the effects of any individual activity. Bear biologists warn that unnatural dispersion and non-utilization of preferred forage areas could have adverse effects on breeding, nutrition, and den survival. Presently, it is unknown what level of cumulative effects a population can withstand before it starts to decline. For this reason, the BGP recommends that even appropriate land uses within grizzly habitat be carefully coordinated, in order to prevent high levels of activity from occurring at the same time within a given influence zone. Because of the mixed land ownership pattern, coordination efforts require inter-agency planning and public/private cooperation. In May 1981, an interdisciplinary working group, the Flathead Basin Regional Grizzly Committee, was formed in response to this need. The Department of State Lands is represented on this Committee, which is composed of federal, state, county and private resource managers and officials. The group will meet at least once a year to exchange information, coordinate management activities, and recommend research needs.

b. Northern Rocky Mountain Wolf

The Northern Rocky Mountain wolf (Canis lupus irremotus), which is a recognized subspecies of the gray wolf, was listed in 1975 as an endangered species by the U.S. Secretary of the Interior. Based on standardized field reports of sightings and sign collected since 1972 by the Wolf Ecology Project at the University of Montana, a remnant population is known to exist in Northwestern Montana. Wolves are generally associated with areas high in big game populations and low in human-related activities. Reports have occasionally come from the North Fork area, where in 1980 a wolf was trapped and radio-collared by the Wolf Ecology Project. Nearly all recent sightings or track reports have been of single wolves or pairs. The lack of evidence for resident pack activity indicates a low population, and suggests that many of these wolves are immigrants from Canada.

A Recovery Plan, commissioned by the Interior Department under the Endangered Species Act, was completed in 1980 and approved by Interior's U.S. Fish and Wildlife Service. The gist of this plan is to pursue the reestablishment of self-sustaining wolf populations in remote areas where conflicts with people and livestock can be minimized, and to promote a higher level of public tolerance for wolves which are observed outside the reestablishment areas. The ultimate goal is to "de-list" the species as endangered or threatened, within its occupied range. For both biological and political reasons, biologists generally favor the natural influx of Canadian wolves to bring about the desired recovery in Northern Montana. There is evidence that this process is already occurring, particularly along the East Front of the Rocky Mountains. Currently, many biologists also favor "down-listing" the wolf to threatened rather than endangered status, because this would permit control actions of problem animals. This is expected to be necessary for a successful recovery program. A program which includes limited control and compensation for livestock depredations has been successful in Alberta during recent years, where resident wolf populations co-exist with the livestock industry.

The U.S. Forest Service, as a cooperating agency in the recovery effort, has delineated essential wolf habitat on the Flathead National Forest. Essential habitat consists of areas where natural wolf recovery could take place, based on the habitat requirements of the species, and where management practices for protecting wolf habitat are expected to be feasible and effective. Five of the parcels of State land being considered for oil and gas leasing are contained within essential wolf habitat (scattered lands north of Polebridge.)

Unlike grizzlies, wolves are not closely associated with particular vegetational types or landforms. In Northwestern Montana, however, their ranges closely coincide due to their mutual requirement for remoteness from man's activities. Historic conflicts with human interests, particularly livestock, prompted extermination efforts which nearly eliminated the Northern Rocky Mountain wolf from its natural range. Remnant populations therefore occur in relatively remote areas which also support a year-round prey base. Primary prey species include ungulates, beaver, hares, and small rodents. Winter ranges and parturition areas of ungulates (elk, deer, moose) are therefore also important components of wolf habitat.

c. Bald Eagle

(Most of the following material was taken from Appendix G of the 1980 Environmental Assessment, Oil and Gas Leasing, Flathead National Forest.) The bald eagle uses most of major lake and river systems of Northwestern Montana, including the North Fork of the Flathead River, either for nesting, for feeding during the migration season, or for wintering. Perhaps the largest concentration of bald eagles in the lower 48 states occurs in Northwestern Montana during the fall, because of their attraction to migratory fish in the lakes and rivers of the area. The essential habitat designated by the U. S. Forest Service for this endangered species includes the entire flood plain of the North Fork.

d. Peregrine Falcon

(Also from 1980 Flathead National Forest Environmental Assessment.) The peregrine falcon (endangered) is generally associated with larger valleys that contain cliffs suitable for nesting. If they utilize areas in or near proposed lease parcels, it would be during spring and autumn migration periods and for nesting on a very limited basis.

e. Elk, Moose and Deer

Elk, moose, whitetail deer and mule deer are common in the North Fork. However, due to the frequently harsh winters and the relative scarcity of winter range, the area is one of low productivity and survival for elk, whitetail and mule deer. The Department of Fish, Wildlife and Parks indicates that winter range for these species occurs on only 1.2 to 4.1 percent of Hunting District 110, which consists of the west side of the North Fork drainage and the Stillwater drainage east of Highway 93. Normal winter range usually amounts to 10 to 12 percent of spring - fall - summer ranges. Moose are less affected by deep snow than elk or deer, which enables them to utilize larger, less defined portions of the area as winter range.

A significant portion of the North Fork's elk and mule deer winter range occurs on the Coal Creek State Forest, specifically, on the south and southwest aspects of Winona Ridge and Coal Ridge. Most of the flood plain of the North Fork from Big Creek to the Canadian border is considered winter range for elk and whitetail deer. Many parcels of State land occur within, or immediately adjacent to this flood plain. All State lands in the North Fork are considered to be winter range for moose, although winter range considerations for moose may be less critical than for deer and elk due to the greater availability of moose winter range in the area as a whole. (See Appendix C for further comments.)

f. Other Species

The habitat requirements of the other mammals and birds in the area are diverse. Some species are more sensitive than others to man-caused disturbances. Protecting the necessary vegetative food components, prey populations and cover for these species is not necessarily incompatible with oil and gas activities that are carefully planned and limited in scope.

8. Fisheries

The North Fork of the Flathead River is a very important component of the high quality fisheries resource of the Flathead River Basin. The rivers and lakes of the Flathead provide habitat for good populations of native and introduced game fish, as well as several non-game species. In particular, the spawning and rearing habitat of the North Fork's tributaries is critical to adfluvial populations of native west slope cutthroat trout and bull trout (adfluvial refers to fish which spend their adult lives in a lake but which migrate into tributaries to spawn). These adfluvial populations are wild and self-sustaining.

The construction of Hungry Horse Dam on the South Fork Flathead River blocked an estimated 60 percent of the original spawning runs of cutthroat and bull trout from Flathead Lake, thereby increasing the importance of the North and Middle Forks (U.S. Fish & Wildlife Service 1977). The Department of Fish, Wildlife and Parks (DFWP) estimates that 55 percent of the recruitment for Flathead Lake now comes from the North Fork. Adfluvial stocks of fish spawn and rear two to three years in up-river tributaries, then emigrate downstream to the lake where they utilize the abundant food resources to grow to maturity before migrating upstream as adults to spawn. To protect spawners, DFWP has closed four tributaries to the North Fork to all fishing. Fisherman use of the main North Fork is also higher than either of the other forks and has increased steadily in recent years (based on DFWP postal card surveys of anglers). The importance of this high quality fishery is apparent.

Several important tributaries of the North Fork flow through State lands. Coal Creek (closed to all fishing) provides important spawning and a rearing habitat for adfluvial bull trout and cutthroat trout. Cyclone Creek, a tributary of Coal Creek, provides spawning and rearing habitat for adfluvial cutthroat. Cyclone Lake, drained by Cyclone Creek, supports a self-sustaining fishery for cutthroat, and is also inhabited by bull trout, grayling and mountain whitefish. Another tributary to Coal Creek, Dead Horse Creek, contains relatively high densities of young cutthroat.

Trail creek (closed to all fishing) is a very important bull trout spawning and rearing area, and it is also used extensively by adfluvial cutthroat.

Moran Creek supports cutthroat throughout, and juvenile bull trout in its lower reach.

Moose Creek has high densities of cutthroat in all areas surveyed in DFWP studies, and is probably used by adfluvial fish of the same species.

9. Visual Resource

The visual resource on the North Fork State lands has been altered from a primitive state by timber management practices including road development, clearcutting and other harvest practices. Human or industrial development has been limited to only a few cabins. Portions of scattered sections and the eastern faces of the Coal Creek forest either

lie within, or are visible from, the Flathead Wild and Scenic River corridor. These same locations are also visible from a number of points within Glacier National Park. Portions of the forest are completely undeveloped and present primitive views from roads or trails. These include Winona Ridge, Coal Ridge, South Coal Ridge, and the immediate vicinity of Cyclone Lake.

Current management direction is to maintain the area in a wildland state presenting a forested, mountain appearance. Restocking of harvested areas, maintenance of wildlife visual cover, minimizing visual impacts of road construction and retaining scenic views are all a part of this direction.

D. Social/Economic Environment

Coal Creek State Forest is used principally by local residents for a wide variety of activities including sightseeing, nature study, hiking, hunting, fishing, berry picking, picknicking, camping, pleasure driving, snowmobiling, and firewood cutting. Ice fishing on Cyclone Lake is a popular form of recreation. Developed campsites are not present on the forest. River floating on the North Fork is increasing due to designation as a scenic river.

Timber sales, thinning operations, timber salvage, and post and pole sales provide local employment, generate personal income, and furnish a source of raw materials for further processing by the local wood products industry. All monies received by the State from the sale of forest products are deposited in permanent funds, the interest from which is used for the support of public schools, State institutions, or other State entities to which the revenue has been dedicated. From forest product sales to date, in excess of \$1,608,000 has been provided to the various permanent funds involved.

In addition, four grazing leases, one cabin site lease, and an occasional special-purpose lease and permit have produced a small amount of income from the forest. The monies received from such revenues are deposited in special interest and income funds and distributed as provided for by State law.

Access to the North Fork drainage is primarily by one unpaved road (Montana Forest Highway Route 61/Flathead County Route 486) commonly referred to as the North Fork Road. (Fig. 1 and 2) This road is the main feeder route for forest management activities in most side drainages on State and Federal land, as well as an alternate route to Glacier Park via the Camas Creek Road. Back country access is also provided into Glacier at Polebridge. Local residents use the road and limited Canadian border traffic is also present.

E. Cultural Resource

Extensive Cultural Resource studies have not been conducted in the North Fork area. A study was made in 1970 of the three forks of the Flathead River in conjunction with the Wild and Scenic River Proposal. Results of this study were published in Archaeology in Montana Volume 12, number 2-3, April-September, 1971. No prehistoric sites were discovered on State lands by this survey.

The Historic Preservation Office of the Montana Historical Society conducted a cultural resource site file search, and did not identify any sites in this area which have been determined to be cultural sites.⁴

Most evidence of past cultures in this vicinity can be found along main water courses and travel routes. Evidence of prehistoric Indian travels have been found in and around the Flathead Valley, but the North Fork does not appear to have been a main use area.

More recent sites include gold, oil and coal prospects from the 1890-1900's period, which began the recorded history of the area; however, no significant discoveries or developments were made.

IV. DECISION CRITERIA

A. Legal Considerations

The Congress of the United States by the Enabling Act (25 Stat. 676) approved February 22, 1889, granted Sections 16 and 36 in every township within Montana to the State for common school support. The Enabling Act and subsequent acts also granted acreage for other educational and State activities and further provided that all lands so granted could be disposed of only at public auction after proper advertising. In accordance with the Enabling Act, land comprising the Coal Creek State Forest (including scattered tracts) was obtained under the following grants:

- (1) Common Schools,
- (2) State Agricultural College,
- (3) School of Mines,
- (4) Deaf and Blind Asylum,
- (5) State Reform School,
- (6) State Normal School (Eastern Montana College and Western Montana College), and
- (7) Public Buildings.

As provided by law, State lands which were granted by the federal government are trust lands given for the support of schools and other public institutions. As such, these State lands are not public lands in the same sense that federal lands are. The beneficiaries of the trust are schools and institutions which belong to the people of Montana--not the people themselves.

4 Letter to Pat Howe dated June 20, 1983, copy in Appendix C.

The State Land Board, through the Montana Constitution, is given the authority to direct, control, lease, exchange, and sell school lands. (Land classified as State Forest, however, may not be sold.) Although decisions involving school lands (including the sale of oil and gas leases) are made by the Commissioner of State Lands, all such decisions are ultimately subject to the approval of the Board.⁵

State lands designated as State Forest are managed cooperatively by the Forestry Division of the Department of State Lands and the State Land Board. Major actions concerning the management of State Forests, such as timber sales, and easement and lease requests, are submitted with recommendations by the DSL to the State Land Board for the latter's consent or denial. In the case of the proposed oil and gas leases on State Forest land, the Department of State Lands will recommend to the State Land Board, through the Commissioner, whether or not to approve the lease sale.

The statutory principles which generally guide the actions of the State Land Board are:

(1) The School Trust Doctrine (77-1-202 MCA)

"...the board shall administer this trust to secure the largest measure of legitimate and reasonable advantage to the State."

(2) The Multiple-Use Concept (77-1-203 MCA)

"The Board shall manage these lands under the multiple-use concept defined as: '...the management of all the various resources of the State lands so that they are utilized in that combination best meeting the needs of the people and the beneficiaries of the trust, making the most judicious use of the land for some or all of those resources ... without impairment of the productivity of the land, with consideration being given to the relative values of the various resources."

(3) Resource Development (77-1-601 MCA)

"It is in the best interest and to the greatest advantage of the State of Montana to seek the highest development of State-owned lands in order that they might be placed to their highest and best use and thereby derive greater revenue for the support of the common schools, the university system and other institutions benefiting therefrom and that in so doing, the economy of the local community ... is benefited."

Coal Creek State Forest (including scattered tracts) contains a substantial area of highly productive, commercial timberland. The sale of oil and gas leases could ultimately result in losses in forestry revenue from land clearing (for roads, pipelines, and well platforms), from possible long-term degradation of production due to hydrocarbon pollution of air, water, or soil, or from less-intensive forest land management caused by the splitting of forest land units. Consequently, the State Land Board must weigh the possible loss of State forestry revenue and the damage to long term environmental amenities against the possible short term rental and royalty income.

⁵ Resolution No. 273-6, Minutes of the State Land board meeting of February 20, 1973.

B. Management Consideration

The Northwestern Land Office in Kalispell oversees the day-to-day management of the Coal Creek State Forest. The overall management direction applied to this forest is specified by State law, State Land Board decisions and the Department of State Lands.

Historically, forest product management has been the major factor influencing decision making on the Coal Creek State Forest. Originally, the State chose this land parcel because of a coal discovery near the North Fork River, however, the quality and extent of the coal deposit was low, and production was never realized on State lands.⁶

All development since has been for timber harvesting purposes, and current management is geared for producing forest product income within State law guidelines. Many location and site factors have been presented in this review, and have influenced the management direction as currently applied. Major management implications are presented here solely as a point of reference.

Forest Product Production - Sites will be managed for maximum income to the school trust under multiple use management. This means that high quality sites will be intensively managed to produce timber as well as other amenities including watershed, wildlife habitat and domestic forage as sites allow. Primary emphasis has been toward sanitation and salvage of over-mature old growth timber or insect infestations. These methods will continue to dominate the harvest activities until stands are converted to vigorous second growth. Timber stand improvement projects vary according to funding from year to year and include thinnings, improvement cuttings, and seeding and planting.

Site Protection - The North Fork contains outstanding wildlife and fish habitat which will be protected according to current guidelines. Methods such as road closures, operations scheduling to reduce conflicts, riparian zone management, harvest treatment modification and non-development have been used to preserve or protect habitat. Wildfire protection is provided by Glacier View Ranger District by cooperative agreement, and prescribed fire is used as a management tool for slash disposal, site preparation and habitat improvement.

Transportation - Limited future development is planned beyond the existing road system for timber management. Portions of this system have been and will be closed by gates or physical barriers to limit vehicle use and prevent wildlife/human conflicts. The Wild and Scenic River Corridor has remained undeveloped and will be managed in the future under the guidelines of the Memorandum of Understanding with the Flathead National Forest (Appendix C). No permanent recreation sites have been developed with the exception of a parking area near Cyclone Lake, and none are planned for in the future. It is doubtful that existing road systems are adequate for any gas and oil operations except seismic exploration.

⁶ For history of the area see: USDA Forest Service, Flathead National Forest, Cumulative Effects, Glacier View Ranger District, February 1981, pp. 2-4.

C. Protective Stipulations

The controlling factor in evaluating management options involving trust lands is the potential monetary return over the long term. If a short term return is selected, such as lease rentals, stipulations will be necessary to protect the other surface resources to ensure a monetary return over the long term. Therefore, central to the decision regarding the sale of oil and gas leases on the tracts in question is the ability of the proposed lease stipulations to ensure the integrity of the existing forest resource.

Nine protective stipulations have been identified as necessary to ensure the long term protection of surface resources, should the short term monetary return from leasing be determined in the best interest of the school trust. These stipulations (listed in Appendix A) were developed with the intent that they all be applied equally to the entire lease area. This procedure will eliminate the need for an in-depth, site-specific environmental analysis on each and every tract, at the leasing stage, when specific development related information necessary to conduct such an analysis is not available. Once a required annual operating plan is submitted, however, the DSL may then conduct an in-depth environmental analysis on a site-specific basis prior to any actual surface disturbances, if the proposed actions require such an analysis.

If the DSL extends the 30-day review period (stipulation #1) in order to complete a detailed environmental analysis, it must take into consideration Rule 10 of the Rules and Regulations Governing the Issuance of Oil and Gas Leases, promulgated by the DSL. Rule 10 provides for delay drilling penalties and requires that drilling operations be prosecuted with due diligence. Department imposed delays to complete an environmental analysis do not infer similar delays in the time requirements contained in Rule 10.

V. ENVIRONMENTAL CONSEQUENCES OF LEASING

A. Overview

The following analysis was based on the knowledge that the action of leasing can directly lead to full development of an oil or gas field, since legally a Department of State Lands' lease includes the right to both explore and to develop. Therefore, the various immediate, cumulative, and secondary impacts on the physical and biological environment and on the human population, resulting from the initial action of exploration were analyzed, as well as impacts from potential development of the oil and gas resources. Since the action of development is dependent upon approval of an annual operating plan, as provided in the attached stipulations to the leases, the potential activities were analyzed in respect to each of the components of the affected environment.

B. Natural Environment

1. Air Quality

The major air quality impact resulting from oil and gas exploration would be increased particulate levels in the vicinity of unpaved roads and near stationary equipment. This impact, however, would be slight and would occur only during times of actual use or operation,

with unpaved roads making the major contribution. Particulate concentrations should not exceed the 24 hour State ambient standard, and should closely approximate that typically resulting from logging operations.

During the production phase, however, other air quality impacts can be expected. A study by the Environmental Protection Agency (EPA) shows that emissions from oil and gas production can result in increased levels of hydrocarbons and hydrogen sulfide (EPA 1976). The study indicates that most of the emissions result from leaks and the lack of proper maintenance of pressurized facilities. However, emissions should be well within State ambient standards, and there is no indication of long range transport of pollutants.

In the case of fire or leaks, some air pollution is inevitable. However, proper safety measures should minimize the possibility of these occurrences, and the required emergency action plan (stipulation #1(d) should limit the adverse effects).

Because of its close proximity to the lease area, the air quality of Glacier National Park (a mandatory federal Class I area) could be adversely impacted should significant development occur. The extent of any impacts from a proposed development activity would be examined through the Prevention of Significant Deterioration (PSD) permitting process. The Montana Department of Health and Environmental Sciences, Air Quality Bureau, has the responsibility for the permit process, and the authority to deny development if it is determined that particulate or sulphur dioxide increments would be exceeded.

2. Hydrology and Water Quality

Water quality impacts from this proposed action are highly dependent on the extent and level of exploration and development. The Flathead River Basin is characterized by large quantities of high quality water. This resource is currently being threatened as a result of the development of homesites, logging and proposed mining and oil and gas activities. Any adverse impacts associated with oil and gas activities on the lease area may constitute only a minor impact to the Flathead River system. However, if all regional existing and potential development activities are considered cumulatively, the water quality of the Flathead system appears to be threatened.

All stages of oil and gas exploration and development can affect water quality. Sedimentation of surface water can result from activities that disturb soils, such as road construction and drill site construction. Where runoff from disturbed areas is allowed to drain into streams and wetlands, sedimentation will occur, resulting in water quality degradation.

Surface water can be contaminated by release of fluids from mud pits and evaporation ponds and oil spills. The leaks may result from over-fill or failure of ponds and pits or failure of other apparatus. The results could be mineralized water or oily residue flowing into streams or wetlands, affecting aquatic ecosystems for large distances.

Groundwater supply and quality can be affected by detonation of explosives for seismic exploration, improper disposal of saline water produced with oil, infiltration from evaporation ponds and mud pits, and improper casing and abandonment procedures. Contamination of groundwater may render local groundwater sources unfit for domestic use and may adversely affect local groundwater fed surface drainage.

Significant adverse water quality impacts from this proposed action are not imperative. State laws and the proposed lease conditions provide the necessary controls and stipulations to minimize water quality impacts.

Streambank disturbance activities such as road and pipeline crossings are under the jurisdiction of the Natural Streambed and Land Preservation Act (75-7-101 MCA). The Montana Water Quality Act (75-5-101 MCA) provides for classification and standards for water quality. The Montana Pollution Discharge Elimination System (MPDES) provides the mechanism for authorizing and controlling point source discharges. The Montana Groundwater Quality Standards and Groundwater Pollution Control Regulations (MGWPCS) provide the mechanism for protection of groundwater quality. Montana Water Law (85-2-101 MCA) requires permits for water use.

The rules of the Oil and Gas Conservation Division have requirements to protect water quality. The rules include limitations on location of seismic shot holes, plugging of seismic shot holes, casing requirements, construction requirements for storage pits and evaporation ponds, report of oil leaks, disposal of salt water, plugging of wells and reclamation.

The 1983 Montana legislature authorized the Flathead Basin Commission. The Commission's purpose is "to protect the existing high quality of the Flathead Lake aquatic environment; ... and the natural resources and the environment of the Flathead basin." The duties of the Commission include monitoring the existing condition of natural resources in the basin and encouraging cooperation and coordination between land and water management agencies within the basin. This Commission will hopefully be effective in limiting the cumulative impacts of all types of development on the basin.

The proposed conditions of the lease provide for additional water quality considerations. Through review of the Annual Operating Plan, sedimentation can be minimized by limiting and controlling surface disturbance activities. Restricting activities on steep slopes, unstable slopes and riparian areas will be essential in limiting sedimentation. For non-point source pollution, Flathead 208 guidelines will be followed, where applicable. Wells, springs, stream channels, lakes and rivers are protected by restricting activities in defined zones along surface waters. Unless otherwise approved in the Annual Operating Plan, all oil and gas activities, with the exception of road creek crossings, shall be restricted to at least 300 feet from all streams, wells, and springs, at least 500 feet from all reservoirs and lakes, and at least one-quarter mile from all rivers. Protection plans for soil and water and emergency action plans for fire, oil spills, salt water spills and drilling mud spills are required.

3. Geology

Bedrock within the lease area is mainly competent with the low dip angle of the surface bedrock generally to the northeast at 19 to 29 degrees. Extensive excavation can reduce bedrock stability, especially on slopes over 60 percent. No significant bedrock related problems are expected with proper location and design of roads and drill sites.

4. Soils

Certain soil types within the lease area are sensitive to oil and gas exploration and development activities. Soil disturbance associated with road construction, drill sites and development activities will result in various degrees of erosion and short term loss of vegetation. Excessive erosion of productive topsoil could result in reduced long term timber productivity. Site productivity can be largely retained by controlling erosion and stockpiling topsoil for reclamation of disturbed areas such as drill sites.

Road construction and development will be located to avoid potential unstable soils, avalanche chutes and breakland slopes. Slope stability depends on extent of excavation and properties of bedrock and soils. Mass slope failures are quite limited in extent and occur in areas of bedrock weakness such as fault zones and very fractured or jointed bedrock. Strongly dipping bedrock may act as a failure plane for the soil mantle, especially in areas of shallow soils and shallow groundwater.

Exploration trucks should not require special road design. However, large drilling equipment may require a wide road turning radius which could cause potential slope stability problems, depending on the extent of road cuts and fills. Road locations and overland equipment operation on soils of low bearing capacity or shallow groundwater will have a specific season of use and may require special road design. Landtype suitability for management activities are based on erosion rates, slope stability and sensitivity to use.

The following table shows the relationship of the various landtype-soil units mapped on the lease area (Ottersberg 1980) and the management considerations associated with each. The landtype mapping system used is identical to that used by the Forest Service.

<u>LANDTYPE-SOIL UNITS</u>	<u>CONSIDERATIONS FOR MANAGEMENT</u>
Landtype 10 & 12	<u>Alluvial soils and organic bogs.</u> Soils within this landtype have shallow groundwater and some surface water including the 100 year floodplain. No surface use other than specially designed roads will be allowed as approved in the annual operating plan.
Landtype 21	<u>Thin friable glacial soils</u> mainly in cirque basins. Access to these areas is very limited due to steep slopes, unstable soils, and snow avalanche hazard. Snowfree period is mainly July to October.
Landtype 31	<u>Mass failure area</u> - unstable soils and surficial bedrock of limited area. No surface use.
Landtype 55, 57	<u>Shallow residual soils</u> and glacial scoured rockland areas occur on steep slopes with marginally stable soils. Scoured rocklands have very shallow or no soil, are typically steep and have limited or no revegetation potential in acceptable time periods. No surface use, unless activities approved by site in the annual operating plan.

Landtypes 71, 72,
74, 75, 77
(Slopes greater than 60%)

Breakland landtypes are subject to slow vegetation and high potential slope instability when excavated for road construction. Surface soils are often highly erodable when exposed. Avalanche chutes form limited areas within these units.

No surface use unless approved through the annual operating plan, based on specific site of planned activity.

Landtypes 73, 76
(Slopes greater than 60%)

Breakland landtypes, specially engineered roads may be acceptable depending on location.

Landtypes 25, 26,
27, 28
(Slopes less than 60%)

Glacial till and outwash deposits, special design of roads and drill pads will be required on slopes greater than 40%. Limited areas of sensitive soils may require relocation of roads.

Specific landtype properties will affect and govern road location and project sites. If exploration is all that occurs, impacts to the soil resource should not be significant. However, if a discovery of oil and gas suitable for development is made, more lasting effects on the soil resource and vegetation are expected and can be mitigated through administration of lease stipulations.

5. Fire, Insects and Disease

Fire effects are expected to be minor due to the normal constraints imposed on woods operators by the Montana Forest Fire Regulations.⁷ Wildfires could be started due to seismic blasting above ground or by equipment operations in forested areas. Slash from road or drill site construction will cause temporary wildfire hazards until disposal is complete. Regulations require precautions to be taken by crews working in the woods including tool availability, fire training and patrolling of work sites. Restriction of activities may be necessary during a severe fire season, and these would be equally applied to all woods operators through normal procedures.

Insect populations may be affected by improper harvest timing or location of slash accumulations, allowing bark beetles or other pest species to build above endemic levels. These problems can be minimized by evaluation of the annual operating plan for proper slash management. Techniques could include prompt removal of sawtimber, burial or burning of slash, or restriction of cutting during critical periods. Any evaluation of the annual operating plan must consider seasons, present insect levels, and potential effect of the planned operation. Due to the extent of clearing size and type of operation, effects are expected to be minor.

⁷ Violation of any Montana forestry law or any rule promulgated by the Montana Department of State Lands, Division of Forestry, under authority of Section 76-13-109 MCA, is an offense punishable by fine or imprisonment, or both.

6. Vegetation

Seismic exploration will have little effect on vegetation, provided existing roads are used. Detonation of surface charges could cause temporary loss of vegetation in small areas.

Exploratory or development drilling could remove considerable acreages from forest production due to road improvement needs and drill site requirements. A typical drill site covers 4 to 8 acres in the development stage, with a sidehill location requiring extra cut and fill for leveling. This could add another 2 to 3 acres on a steep slope. Existing roads have inadequate width, alignment and curve radius to permit hauling by oversized trucks. The minimum improvements for hauling to be possible will consume some usable growing space. For example, on a 60% sideslope, widening from a 14 foot to a 16 foot standard will require one half acre per mile in cut and fill. Curves present an even greater problem, since improvement from a 50 to 100 foot radius on many existing sites would be impossible without relocation of the road, thus removing the existing, as well as new, road from forest production. The wider curve would also require higher engineering standards (more cut, fill and drainage) for construction on mountain terrain.

Rehabilitation could reduce these impacts by site preparation, fertilization and seeding or planting to re-establish tree cover, especially on drill sites covering large acreages. Such efforts would remove sites from production only temporarily while operations are active, then restore the majority of the area to original status.

Other impacts to vegetation in the lease area could result from toxic fumes, spillage of toxic materials, oil spills, and leaks, or accidental fire. Vegetative growth could also be reduced as a result of heavy dust and vehicle emissions.

The major impact on vegetation would be the direct destruction of plant species by construction activities. The degree of impact from oil and gas activities will generally vary with the intensity of development and with topography, soils, climate, and the specific plant species.

7. Wildlife

The diverse wildlife resource of the North Fork, which includes many species that are rare or absent elsewhere, is evidence that human disturbances to this point have been generally compatible with wildlife and habitat requirements.

In contrast with the present types and levels of forest uses, oil and gas leasing has the potential to cause serious long-term impacts to the wildlife resource. These impacts are dependent, however, on which oil and gas activity is being considered. For instance, short-term seismic exploration from existing roads or helicopters should not be expected to create any significant lasting effects. By contrast, exploratory drilling, development wells, and oil and gas

production that could include pipelines or even on-site processing pose increasingly serious threats to the wildlife resource. Beyond the seismic exploration stage, some long-term or permanent destruction of habitat and alteration in habitat use is inevitable.

Potential impacts and/or recommended measures for individual species or species groups are given below.

a. Grizzly Bear

In a subjective analysis of the oil and gas operations in the Pincher Creek region (Southern Alberta), Barrett and Bruns (Schallenger 1977) said that road development appears to have the most significant impact. Roads and associated industrial developments can consume habitat itself, and also increase the likelihood of incidental human disturbances or even direct mortality through legal and illegal hunting. Heavy traffic on all-weather roads may hinder the daily and seasonal movements of all wildlife, including bears. The overall effect of industrial activity on big game species in the Pincher Creek area has been detrimental, as particularly evidenced by a pronounced decline in the number of grizzlies (Schallenger 1977).

Approving the construction or reconstruction of roads, or use of existing roads, should be conditioned upon mitigating these types of impacts. The location and density of roads are important factors. Also, vehicle traffic should be controlled, with restrictions on use by the general public. Roads should be closed during all periods when they are not needed for approved activities, and temporary roads which are not required for other management purposes should be obliterated and reclaimed when any approved oil and gas activity is completed.

Noise disturbances in general, such as helicopter use, blasting, drilling, and construction activity, should be expected to disrupt habitat utilization unless strictly controlled through the timing and placement of such activities. Of particular concern are the effects of disturbances on the utilization of the limited spring - early summer and late fall forage areas, and denning habitat. Helicopters are known to frighten and disperse grizzly bears, although the degree to which this occurs may be related to amount of cover available. Helicopter and snowmobile activity has caused grizzlies to abandon their dens, although the amount of disturbance that will be tolerated is not known. It is known that grizzlies in captivity will produce cubs successfully only if completely shielded from noise and visual disturbance for the normal denning period and for an additional several months following birth. (In the wild, these processes would occur within the period November 15 - May 15).

In spite of their general avoidance of human activities, grizzlies are opportunistic feeders and can be attracted to inhabited areas by garbage or stored food in buildings. This inevitably results in bear/human conflicts and often the killing of problem bears.

The best solution to this problem is to prevent it, by prohibiting camps or settlements in occupied habitat and strict enforcement of garbage removal from work sites. Oil and gas employees should be thoroughly briefed on grizzly bear behavior, necessary precautions to reduce the risk of interactions with bears, and the lawful penalties of illegally killing a grizzly. Companies and their employees should also be made aware of the proper procedures for contacting wildlife authorities to deal with problem animals.

All leases should contain stipulations sufficient to prohibit surface uses or restrict the season of operation in areas which contain grizzly habitat components, or where grizzly bear activity has been documented. Stipulations should also be sufficient to control the total level of activity in a given area of influence, by denying, altering or deferring proposed actions which would produce an unacceptable level of cumulative effects.

b. Northern Rocky Mountain Wolf

Maintaining a prey base and limited interactions with humans are the primary objectives for wolf management and natural recovery within essential habitat. Ungulate winter ranges are an important habitat component from approximately December 1 to May 15. Ungulate parturition areas are important from May 1 to June 15. Riparian zones, due to the abundance and diversity of potential prey species that they support, have year-round importance. Wolf denning sites, if identified, would be important from February 1 to July 31. As with grizzly bears, limited road development and use are again primary concerns. Seasonal closures and eventual obliteration of unnecessary roads are recommended, to reduce disruptions of travel and the possibility of illegal shooting. Again, lease stipulations sufficient to deny, alter, or defer proposed activities on oil and gas leases are necessary to mitigate the impacts of individual projects and control the total level of development, which could contribute to adverse cumulative effects.

c. Bald Eagle

Bald eagles are generally associated with rivers and lakes where they feed on fish, carrion, and other foods. The greatest effect associated with oil and gas activities upon the bald eagles is the potential to preclude occupancy of their habitat (nest sites, feeding sites, winter roosts, concentration areas, etc.) because of oil and gas associated disturbance activities. Bald eagles are sensitive to human disturbance, especially at nest sites, and abandonment could occur. Blasting, helicopter operations, heavy equipment use, vehicle traffic and human presence could cause disruptions in the normal use of all habitat. Protection of nesting, feeding, roosting and concentration areas by prohibiting surface use or restricting the seasons of operation is recommended to mitigate impacts to this species.

d. Peregrine Falcon

The possible adverse effects of oil and gas activity on peregrine falcons are similar to those for bald eagles, and similar protection measures, particularly for nesting sites, are appropriate if such sites are identified.

e. Elk, Moose, and Deer

Oil and gas activity could adversely affect populations of these species by occupying winter range, by inducing movements and additional stress during the critical winter period when these animals need to conserve energy to survive, and by road development and increased human use of the area which would decrease the effectiveness of available habitat, and increase hunting pressure and poaching. Approval of oil and gas activities should be conditioned upon prohibiting surface use of critical winter range, placing restrictions on the timing of operations, limiting roading and the road use, and closing roads seasonally or permanently. (See Appendix C for further comments.)

f. Other Species

Few, if any, species will benefit from increased development and human presence. The mitigation measures previously recommended for particular species would generally benefit the total wildlife resource.

Summary of Wildlife Effects

Recommended protection measures that would be invoked through the attached lease stipulations, could reduce adverse effects of individual activities. In the event that significant developable reserves were discovered, however, the application of mitigation measures may not be sufficient, due to cumulative effects. There is also some doubt as to whether the types of restrictions on operating seasons and surface use that are needed to mitigate wildlife impacts are even feasible at the development and production level. This problem is compounded by the fact that the standard terms of State oil and gas leases not only guarantee the lessee the right to extract the resource, but require a level of development and production that is commensurate with the size of the underground reserve and the State's proportionate share based on surface ownership.

Also, one must keep in mind that the long-term maximization of monetary returns to the school trust is a governing principle for decisions made by the Board of Land Commissioners and State Lands managers. It is possible, then, that wildlife considerations would have to be significantly compromised in situations where valuable oil and gas activities conflict with wildlife. These compromises would probably be enacted through decisions made on Annual Operating Plans.

Obviously, some species would be affected more than others by a given amount of disturbance. Grizzly bears and wolves, because of their general noncompatibility with human activities, have the potential to be most affected. The fact that most of the North Fork is in federal ownership, however, somewhat reduces the potential for serious effects, as actions on these lands are definitely subject to compliance with the Endangered Species Act.

In summary, the long-term effects of oil and gas activities on wildlife will be directly related to the level of development, density of disturbances, and the duration of operations. Information regarding these factors is not available at the leasing stage.

8. Fisheries

The greatest potential impact to the North Fork fishery from oil and gas exploration and development is increases in sediments from road construction or other surface disturbances. All trout in this system lay eggs in gravel. Bull trout (fall spawners) have eggs in gravel from September to April. Cutthroat (spring spawners) have eggs in gravel from May through July. Generally, when fine sediments exceed 20% composition of the gravel spawning bed material, some mortality of eggs and fry is expected.

Substrate samples collected from Coal Creek in 1980-81 by DFWP and the U.S. Forest Service suggest that any significant increase in fine sediments in the lower reach of this stream would be detrimental to bull trout spawning gravels, as the present sediment content is close to 20%. Past timber harvesting in the Coak Creek drainage is suspected of having contributed to present sediment levels by increasing water yields and peak flows during spring run-off. This probably caused some channel instability and erosion. Roading, which sometimes involved inadequate or poorly placed crossings, has also contributed to sedimentation. DFWP is continuing to monitor the effects of sediment on bull trout spawning success in Coal Creek. (Personal conversation with Pat Graham, DFWP, Kalispell, 6/16/83).

The protection of riparian vegetation is another major concern for maintaining the present quality of the North Fork fisheries. Riparian vegetation stabilizes stream banks, reduces transport of water-suspended sediments into streams, moderates water temperatures through shading and canopy, and provides habitat for insects and other invertebrates which fish feed on. Deciduous bank growths provide organic nutrients to streams for larval insect choppers, shredders, and net feeders.

Pollution of fish-bearing waters through accidental introduction of toxic substances is another concern. Oil spills or leaks from mud pits could have disastrous effects on fish populations and production. Contamination of ground water-fed surface drainage through improper well development and waste disposal methods could also have very detrimental effects. Roads to be constructed or used to haul oil or toxic chemicals should be evaluated for their proximity to fish-bearing waters, and the possibility that accidental spills could contaminate fish habitat.

Serious impacts to the fisheries resource are probably preventable at all levels of exploration, development and production. As noted in the water quality discussion, State laws and the proposed lease stipulations provide the necessary controls to minimize water quality damage. The timing of in-stream disturbances necessary for construction of road or pipeline crossings can be controlled by conditioned approval of Annual Operating Plans, in order to prevent damage to spawning habitat. The possibility for accidental spills of oil or other toxic chemicals should be closely considered in evaluating operating plans for road construction, road use, well siting, and pipeline siting. Accidental pollution of fish-bearing waters is probably preventable if lessees abide by State laws and the conditions of the lease.

Significant human activity in the vicinity of closed fishing streams increases the chances for illegal taking of spawning fish. This impact may not be significant, however, if oil and gas employees are not housed within the lease area. Also, Department of Fish, Wildlife and Parks enforcement of fishing laws would no doubt be increased near activity centers.

Lease stipulations sufficient to control the timing, placement and methods of oil and gas exploration, development, and production are necessary to protect the fisheries resource. More detailed fisheries data, which may be needed to evaluate specific proposed activities, will be available from DFWP in the form of completed and forthcoming annual reports of fisheries studies in this area. (See Appendix C for further comment.)

9. Visual Resource

Expected effects on the visual resource could include improvement or expansion of the existing road system resulting in larger, more visible cut and fill slopes, curves and relocations; the presence of heavy industrial equipment or structures on previously natural sites; and dust and vegetation coating from road use. These effects could be visible from various locations within both Glacier National Park and the Wild and Scenic Corridor.

These effects could be minimized using several techniques:

Road Construction - Road locations could take advantage of natural terrain features and vegetation for screening effects, as well as construction to the minimum standard to allow access. Use of existing road systems when possible would limit expansion and the accompanying visual effects.

Industrial Equipment - Drill sites should be cleared to the minimum extent possible, leaving timber and brush for screening effects around and within the site. Selection of nearly level sites or terracing could be used to reduce the cut and fill necessary for site leveling. All drill and pumping rigs, storage sheds, or other large equipment should be painted in flat earth and forest tones to allow blending with natural screening.

Dust Coating - Dust coating is a temporary effect of construction and hauling which can be minimized by watering of roads on dry sites or permanent dust sealing of heavily used roads.

C. Social/Economic Environment

The social and economic ramifications of exploration and development in Coal Creek State Forest, along with the changes which are already occurring in the area, are expected to produce both beneficial and adverse impacts. These impacts would probably be minor during exploration, but would become more significant if a development phase results. The magnitude of the impacts would, of course, depend on the size of the reserves and the extent of any development activities.

Direct benefits would accrue to the State and residents of Flathead County in the form of increased jobs, increased local tax base, and income to the various State trust funds involved. Increased human and economic activity would also create greater pressure on, and demand for, housing, recreational facilities, and public services.

Initially, rather than live in the immediate North Fork vicinity, most of the increased population would probably choose to reside in or near Columbia Falls where services and amenities are more available. From all indications, however, the present lifestyles of the North Fork area residents would nonetheless be significantly altered should development take place.

The concern of the North Fork residents for preserving their way of life is understandable and acknowledged. Any development there would bring changes in an area where electricity is available only through the use of individual generators, and telephone service is limited. The addition of telephone and power lines from Columbia Falls, and the anticipated increase in human activity and vehicular traffic would change the present primitive character of this area toward that of a residential/resort area.

The owner of private land within the proposed lease area may be subjected to some undesirable impacts. Should the owner not allow exploration or development activity on his land, directional drilling under the private land from State surface might make it possible to recover any oil or gas without disturbing the private surface or taking any of this land out of its present use. Nevertheless, increased human activity resulting from any nearby drilling operation would result in noise and dust, and reduce the solitude of the site.

Hunting success for big game species may gradually decline with increased human pressures and the reduction of game populations. Fishing in these drainages could also deteriorate through increased pressures and possible degradation of water quality.

Any development or industrial activities will have an adverse effect on the natural qualities of the area, including scenery, open space, and solitude. The quality of such activities as camping, backpacking, and scenery viewing will be diminished for those who value solitude.

State land development cannot be considered independent of social and economic effects, since oil and gas activities will probably affect a much larger surrounding area of which Coal Creek State Forest is only a small part. The full range of probable consequences from limited exploration to a major oil and gas discovery is well documented by experiences in other locations.⁸

D. Cultural Resource

In accordance with the procedures outlined in the Montana Antiquities Act (Title 22, Chapter 3, Part 4), comments were obtained from the historic preservation officer concerning the location of any heritage properties or paleontological remains on State lands within the lease area. No specific sites were identified.

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8. Refer to pp. 24-28 and Appendix C of the Flathead National Forest Environmental Assessment for Oil and Gas Leasing, 1980, and the USDA Forest Service Region 1 Oil and Gas Guide for a detailed discussion of possible consequences.

However, the potential exists for the discovery of artifacts, especially during road, drill site or other earthmoving operations. According to the Act, if heritage properties or paleontological remains are found within the lease area, a plan must be developed to avoid or mitigate damage to them. The DSL may require the lessee to prepare such a plan in consultation with the historic preservation officer and the preservation review board.

Stipulation 7 (Appendix A) ensures that this process will be followed and requires the lessee to complete any necessary plans. An evaluation will be done to assess the extent of any discovery, and to determine whether the proposed plan provides adequate mitigative measures to protect the cultural resource discovered. Measures could include modification of the project, recovery of the property or remains by evacuation or other means, or a combination of both. However, despite such precautions, the loss of minor onground sites could occur.

VI. CONCLUSIONS

This Preliminary Environmental Review (PER) indicates that the action of leasing the Coal Creek tracts for oil and gas exploration, with the attachment of the proposed protective stipulations, does not constitute a major action of State government significantly affecting the quality of the human environment.

The probability of oil and gas exploration or development activities actually occurring upon the tracts of State-owned lands offered for lease sale is highly speculative. Information detailing proposed drilling or potential development programs by the applicant is not available at the leasing stage. In addition, because of the competitive nature of the lease sale, there is no guarantee that the lease applicant will be the successful bidder for the tracts. It would therefore be inappropriate to conduct an EIS at a point in the process where the information necessary to determine specific environmental effects to the tracts' resources is lacking. An EIS, if determined necessary, can better occur once the lessee has been identified, and exploration or development plans are submitted for approval.

The Department recognizes the sensitive nature of the environment comprising the State-owned tracts, and has used the resource information contained in this Preliminary Environmental Review to develop a post leasing project review and approval process to ensure appropriate consideration and protection of these valuable trust resources into the future. The requirement for specific plan submittal and approval prior to the initiation of exploration and development activities, will benefit the protection of trust resources by assuring that these decisions are made when the most complete project related information is available. The Department has reserved the right to prohibit surface activity on all or portions of the lease tracts until such time as it has had the opportunity to review specific proposed exploration or development related plans. Because of the recent rapid advances in the technology of oil and gas exploration and development, and the wide range of exploration and development activities possible on the Coal Creek State Forest tracts, an attempt to define all areas of prohibited occupancy or restricted activity prior to a review of a specific plan of operations would be inappropriate, and quite likely result in an unduly restrictive set of lease stipulations. This would probably result in a reduced opportunity for additional sustained financial contributions to the School Trust Fund through the oil and gas leasing program. As a result of the nature of trust lands, the primary goal of management must be to produce a sustained monetary return to support the purpose for which the land was granted by Congress.

Therefore, the conclusion of this analysis is that: (1) preparation of an Environmental Impact Statement for the proposed Coal Creek State Forest oil and gas lease sale is unnecessary and inappropriate prior to the identification of the successful lessee, and the submittal of a plan of operations, and (2) attachment of the proposed protective stipulations to the oil and gas leases will provide for the appropriate consideration and protection of other tract resources consistent with the purpose for which the land was granted by Congress.

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VIII. LIST OF PREPARERS AND AGENCIES CONSULTED

A. Preparers

Artley, Donald; Chief, Planning Bureau, Forestry Division, Department of State Lands.

Collins, Jeffery; Soil Scientist, Forest Management Bureau, Forestry Division, Department of State Lands

Driear, Ralph; Environmental Administrator, Department of State Lands.

Gragg, James; Area Manager, Northwestern Land Office, Field Operations Division, Department of State Lands.

Howe, Patricia; Assistant Environmental Coordinator, Department of State Lands.

Klug, Paul; Thinning Specialist, Northwestern Land Office, Field Operations Division, Department of State Lands.

Kuechmann, James; Supervisor, Special Uses Section, Forest Management Bureau, Forestry Division, Department of State Lands.

Samdahl, Rod; Geologist, Lands Division, Department of State Lands.

Schultz, Bill; Forest Hydrologist, Forest Management Bureau, Forestry Division, Department of State Lands.

Wolf, Allen; Forester, Stillwater State Forest, Northwestern Land Office, Field Operations Division, Department of State Lands.

Woodgerd, David; Legal Counsel, Department of State Lands.

B. Agencies Consulted

Border Grizzly Project, School of Forestry, University of Montana

Environmental Protection Agency (EPA)

Flathead National Forest

Montana Department of Fish, Wildlife and Parks.

U.S. Forest Service, Region 1, Minerals and Geology Staff

APPENDIX A

STIPULATIONS

1. If the lessee intends to conduct any activities on the leased premises, it shall submit to the Department of State Lands two copies of an Annual Operating Plan or Amendment to an existing Operating Plan, describing its proposed activities for the coming year. No activities shall occur on the tract until an Annual Operating Plan or Amendments have been approved in writing by the Commissioner of State Lands or his designated representative. A separate Plan or Amendment shall be submitted for each year's activities that are planned. The Plan or Amendment shall include the following:
 - a) A complete description of each activity planned, locations of each activity, scheduled starting date, and expected duration of each.
 - b) Maps (1:24,000 scale or larger) showing use and/or reconstruction of existing access routes, the location of proposed new road construction, seismic shot holes, drill sites, pipelines, utilities and other uses and improvements.
 - c) Drawings showing road construction plans including width, drainage, cut/fill slopes and other details, as well as detailed topographic drawings showing drill site development and layout, and water supply and disposal system.
 - d) Plans, to include resource protection measures for drilling, waste disposal, sanitation, wildfire prevention, soil erosion and air and water pollution; emergency actions covering oil, salt water, and drilling mud spills, as well as oil and forest fires; and land reclamation procedures.
 - e) Other information necessary for the Department to assess probable impacts upon surface and other resources.

The Department shall review the Plan or Amendment and notify the lessee within 30 days whether the Plan or Amendment is approved or disapproved. The Department may extend the 30-day review period by an additional 90 days if weather conditions prevent adequate access to the site, or by an additional 300 days if the Department determines that a detailed environmental analysis is necessary. The lessee shall be notified in writing of the extension within the original 30-day review period.

The Department shall not approve the Plan until the lessee has met reasonable requirements to prevent soil erosion, air and water pollution, and to prevent unacceptable impacts to vegetation, wildlife, wildlife habitat, fisheries, visual qualities and other resources and to reclaim any land disturbed by the activities. No work will be conducted without written approval of the Operating Plan.

2. Surface activity may be denied on all or portions of any tract if the Commissioner determines in writing, after an opportunity for an informal hearing with the lessee, that the proposed surface activity will be detrimental to trust resources and is therefore not in the best interests of the School Trust.

3. The Department reserves the right to restrict surface activity during certain time periods, in order to prevent accelerated erosion, extreme wildfire risk, disruption of seasonal wildlife use, or other adverse resource impacts.
4. No waste water, oil or other substance shall be discharged into any water course or spread upon the land. Unless otherwise approved in an Annual Operating Plan, all oil and gas activities, with the exception of road creek crossings, shall be restricted to at least 300 feet from all streams, wells and springs, at least 500 feet from all reservoirs and lakes, and at least one-quarter ($\frac{1}{4}$) mile from all rivers. All pits shall be impermeable and shall be located at least 500 feet from stream channels, wells, springs or lakes and one-quarter ($\frac{1}{4}$) mile from all rivers. Upon completion of drilling activities, all pit liners and pit contents shall be removed from the tract prior to reclamation.
5. Food storage at any work site within the lease area will be strictly controlled. All garbage will be removed daily from the work sites and disposed of at public land fills or collection points.
6. Human habitation for seismic, drilling, or maintenance crews and other personnel associated with oil and gas activity, including camps, cook shacks, and mobile homes will be strictly controlled within the lease area.
7. The lease tract may contain items of archeologic, historic, or paleontological value and may require special protection to prevent damage to these resources. If such resources are found during any phase of exploration or development activity, the resource shall be protected and the Department notified immediately. Approval of the Annual Operating Plan may require the completion of a Cultural Resources Survey by the lessee to determine if cultural resources are present and to develop specific mitigation measures.
8. No oil refinery, gas processing facility, or gas sweetening plant shall be built within the lease area without the written approval of the Board of Land Commissioners.
9. (Special stipulation for T.34N, R.21W, S2,10, and 11, T.35N, R.21W, S16, and T.37N, R22W, S36) No surface occupancy will be allowed in those portions of the lease tract that are located within the federally designated Scenic River Corridor of the North Fork of the Flathead River.

APPENDIX B

COAL CREEK STATE FOREST TRACTS, FLATHEAD COUNTY, MONTANA

	<u>TWP.</u>	<u>RGE.</u>	<u>SEC.</u>	<u>DESCRIPTION</u>	<u>ACRES</u>
1.	34N	21W	1	Lot 6	.90
2.	34N	21W	2	Lots 2, 3, 6, 9, 12, 13, 15	176.85
3.	34N	21W	3	Lots 2, 3, 4, SW $\frac{1}{4}$ NE $\frac{1}{4}$, S $\frac{1}{2}$ NW $\frac{1}{4}$, S $\frac{1}{2}$	562.13
4.	34N	21W	4	Lots 1, 2, S $\frac{1}{2}$ NE $\frac{1}{4}$	161.24
5.	34N	21W	10	All	640.00
6.	34N	21W	11	Lots 1, 2, 3, 4, 5, 6, 7, 8 NE $\frac{1}{4}$ NE $\frac{1}{4}$, SE $\frac{1}{4}$ NW $\frac{1}{4}$, W $\frac{1}{2}$ NW $\frac{1}{4}$, SW $\frac{1}{4}$ S $\frac{1}{2}$ SE $\frac{1}{4}$	611.02
7.	34N	21W	12	Lots 3, 4, 9, 10, 11, 13, SW $\frac{1}{4}$ SW $\frac{1}{4}$	191.63
8.	34N	21W	14	All	640.00
9.	34N	21W	15	Lots 1, 2, 3, 4, E $\frac{1}{2}$, N $\frac{1}{2}$ NW $\frac{1}{4}$, SE $\frac{1}{4}$ NW $\frac{1}{4}$, NE $\frac{1}{4}$ SW $\frac{1}{4}$	602.34
10.	34N	21W	16	Lots 1, 2, SW $\frac{1}{4}$, W $\frac{1}{2}$ SE $\frac{1}{4}$	282.48
11.	34N	21W	18	Lots 1, 2, E $\frac{1}{2}$ SW $\frac{1}{4}$	151.20
12.	34N	21W	19	Lots 1, 2, 3, 4, E $\frac{1}{2}$, E $\frac{1}{2}$ W $\frac{1}{2}$	626.84
13.	34N	21W	20	S $\frac{1}{2}$	320.00
14.	34N	21W	21	Lot 1, W $\frac{1}{2}$ NE $\frac{1}{4}$, SE $\frac{1}{4}$ NE $\frac{1}{4}$, W $\frac{1}{2}$, SE $\frac{1}{4}$	638.10
15.	34N	21W	22	Lot 1, E $\frac{1}{2}$, E $\frac{1}{4}$ NW $\frac{1}{4}$, SW $\frac{1}{4}$, SW $\frac{1}{4}$ NW $\frac{1}{4}$	636.34
16.	34N	21W	23	All	640.00
17.	34N	21W	24	W $\frac{1}{2}$ NW $\frac{1}{4}$, SW $\frac{1}{4}$, S $\frac{1}{2}$ SE $\frac{1}{4}$	320.00
18.	34N	21W	25	All	640.00
19.	34N	21W	26	All	640.00
20.	34N	21W	27	All	640.00
21.	34N	21W	28	All	640.00
22.	34N	21W	29	All	640.00
23.	34N	21W	30	Lots 1, 2, 3, 4, E $\frac{1}{2}$, E $\frac{1}{2}$ W $\frac{1}{2}$	629.76
24.	34N	21W	31	Lots 1, 2, 3, 4, E $\frac{1}{2}$, E $\frac{1}{2}$ W $\frac{1}{2}$	630.80
25.	34N	21W	32	All	640.00

26.	34N	21W	33	A11	640.00
27.	34N	21W	34	A11	640.00
28.	34N	21W	35	A11	640.00
29.	34N	21W	36	A11	640.00
30.	35N	21W	16	Lots 2, 3, 6, 7, 10, 11, SW $\frac{1}{4}$	318.66
31.	36N	22W	16	A11	640.00
32.	36N	22W	36	A11	640.00
33.	37N	22W	16	A11	640.00
34.	37N	22W	36	Lots 2, 3, 6, 7, W $\frac{1}{2}$, W $\frac{1}{2}$ SE $\frac{1}{4}$	505.08

APPENDIX C

CORRESPONDENCE

MEMORANDUM OF UNDERSTANDING FLATHEAD WILD AND SCENIC RIVER

WHEREAS, Public Law 94-486, October 12, 1976, amended Public Law 9-542 ("The Wild and Scenic River Act"), October 2, 1968 designating the Flathead River as part of the National Wild and Scenic River System; and

WHEREAS, the Flathead Wild and Scenic River Management Zone managed by the Forest Service, United States Department of Agriculture contains approximately 1,100 acres of state school trust land, classified as timber land, managed by the Montana Department of State Lands under the supervision of the Board of Land Commissioners; and

WHEREAS, the purpose of state school trust land is to provide income for support of Montana's Schools (Enabling Act, Section 10, Constitution of Montana, Article X) under the multiple-use management concept (77-1-203-MCA); and

WHEREAS, the Forest Service and the National Park Service have management responsibilities for federal lands within the classified Flathead Wild and Scenic River; and

WHEREAS, the above parties have previously agreed to develop a memorandum of understanding to attempt to provide for coordinated management of Flathead Wild and Scenic River resources.

NOW, THEREFORE, IT IS MUTUALLY AGREED AS FOLLOWS:

- I. The parties agree that within the designated River Corridor the Montana Department of State Lands shall:
 1. Recognize the Forest Service role in the management of the Flathead Wild and Scenic River System, but shall retain complete management jurisdiction of State lands.
 2. Review Department of State Lands management plans or projects with the designated Forest Service Ranger District prior to action.
 3. Recognize that management activities may be evident in the foreground area as viewed from the river itself and to the extent possible, blend such activities into the landscape in a manner so as not to draw attention to the activity.
 4. Meet with appropriate Forest Service representatives to attempt to solve problems concerning adverse impacts upon State lands.

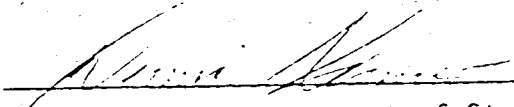
5. Comply with State laws and objectives governing resource management activities and endeavor to minimize impacts to the resource to the extent possible, consistent with income production objectives.
6. Meet with the Forest Service and other interested agencies to review existing problems and activities in the river corridor as the need arises.

II. It is mutually agreed that outside the designated river corridor (North Fork Flathead River) and within the area viewed by the river user the Montana Department of State Lands will consider visual quality on a project basis if consistent with School Trust Land management objectives.

III. The Forest Service recognizes the management authority and objectives of the Montana Department of State Lands and agrees to consult the Department concerning action in the river corridor which may affect State land. It is recognized that recreational use of State land is unauthorized and may be prohibited.

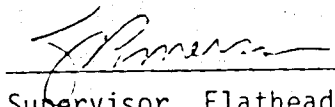
BE IT FURTHER RESOLVED, that the Montana Department of State Lands and the Forest Service agree to periodically review this memorandum and make mutually agreed upon revisions. Either party may terminate its participation under this Memorandum of Understanding by giving at least 90 days prior written notice.

DATE 10/19/82



Commissioner, Department of State Lands

DATE 10/19/82



Supervisor, Flathead National Forest



MONTANA HISTORICAL SOCIETY

HISTORIC PRESERVATION OFFICE

225 NORTH ROBERTS STREET • (406) 449-4584 • HELENA, MONTANA 59601

June 20, 1983

Patricia J. Howe
Land Management Bureau
Land Administration Division
Dept. of State Lands
1625 11th Avenue
Helena, MT 59620

Dear Pat:

RE: Oil and Gas leases, Coal Creek State Forest, Flathead County

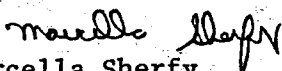
I conducted a cultural resource file search for those tracts of land specified in your letter of 6/16/83. No sites are recorded within the land where lease applications are pending.

One prehistoric trail 24FH511, is reported to lie just south of the 640-A tract in S.16, T37N, R22W (shown as tract #33 on the list you submitted). The only locational information I have on the trail is that it is in S.21, T36N, R33W. Any access afforded to tract #3 should stick to established roadways to avoid impacting trail remnants.

Evidence of prehistoric occupation in the general area along the North Fork of the Flathead include the following manifestations: concentrations of chipped stone tools and waste flakes, hearth features, and scarred trees. These same types of sites are expected to occur within the Coal Creek State Forest as well, but no systematic inventories have been conducted which would identify such remains.

Thank you for consulting with me.

Sincerely,


Marcella Sherfy
Deputy SHPO

DV:md

MONTANA

DEPARTMENT OF

FISH, WILDLIFE AND PARKS



Region One
P.O. Box 67
Kalispell, MT 59901
February 18, 1982

Jim Gragg, Area Supervisor
Department of State Lands
P.O. Box 490
Kalispell, Montana 59901

Attn: Paul Klug

Dear Paul:

I have enclosed a map showing winter range for elk, mule deer and white-tailed deer in the North Fork that you can use in addressing the oil and gas lease applications on State Lands. I did not include moose because all State Lands in the North Fork are wintering sites for moose.

In mapping these winter ranges for SCORP (Statewide Comprehensive Outdoor Recreation Plan, published by the Department in 1978), mule deer winter range occurred on only 1.2 percent of the total area in Hunting District 110 (see enclosed map). White-tailed deer utilize about 2.3 percent of the hunting district, and elk about 4.1 percent in normal winters. Normal winter range usually amounts to about 10 to 12 percent of the spring-summer-fall ranges.

I would say that the listing of wildlife species of concern in the 1976 FEIS should still be acceptable. Documentation of a wolf in the North Fork may have occurred since 1976 and could be an addition to the threatened and endangered species of the area. We have bighorn sheep on the west side of the upper Whitefish Range and in the Ten Lakes Scenic Area, but I don't know that they have gotten into the North Fork drainage in the U.S. We do get occasional reports of mountain goats on some of the peaks along the main upper Whitefish Range.

Respectfully,

James Cross
H. James Cross
Wildlife Biologist

HJC/mjw
Enclosure: 1

MONTANA

DEPARTMENT OF

FISH, WILDLIFE AND PARKS



Region One
P.O. Box 67
Kalispell, MT 59901
February 17, 1982

Jim Gragg
Area Supervisor
Department of State Lands
P.O. Box 490
Kalispell, MT 59901

Dear Mr. Gragg:

Enclosed is the Fisheries Division of the Montana Department of Fish, Wildlife and Parks (DFWP) comments and concerns regarding the lease of state lands for oil and gas exploration and development. The Department is presently studying the fishery resources of the entire upper Flathead Basin under a contract with the Environmental Protection Agency (EPA). This study was initiated in 1979 and fieldwork was completed this past field season. Annual reports on the information collected were presented in Graham et al. (1980) and Fraley et al. (1981). An annual report containing the information collected in 1982 is presently being prepared and will be available sometime after April, 1982. These EPA funded studies have illustrated the importance of North Fork tributary streams in providing spawning and rearing habitat for adfluvial cutthroat and bull trout. Adfluvial stocks of fish spawn and rear two to three years in up-river tributaries, emigrate downstream to Flathead Lake where they utilize the abundant food resources to grow to maturity before migrating upstream as adults to spawn. The adfluvial westslope cutthroat grow to 350 to 400 mm and the adfluvial bull trout reach lengths up to 800 mm.

Bull trout are an important trophy sport fish and cutthroat trout provide a good summer and fall fishery in the Flathead River system.

The state currently owns land in several tributary drainages in the North Fork including Coal, Cyclone, Dead Horse, Moran, Moose, and Trail creeks. The potential impacts of oil and gas exploration upon the fish resource are:

- 1) Disturbances in the riparian vegetation zone and streambanks from exploration or development.
- 2) Increased production of sediment from disturbed sites, such as roads and the transport and deposition of this sediment in the stream channels.

- 3) An increased opportunity for people employed by the leasee to take fish illegally from drainages closed to fishing (Coal and Trail).
- 3) The degradation of water quality caused by spills and/or subsurface water flow through waste disposal sites.

Populations of bull and cutthroat trout in the drainage are wild and self-sustaining. A brief description of the fishery resource by tributary drainage follows. Detailed information is available from the DFWP's files.

Coal Creek

Coal Creek drains approximately 211.5 km² and is 25.5 km in length. Tributaries to Coal Creek include Cyclone, Dead Horse, South Fork Coal, and Mathias creeks. Coal Creek provides important spawning and rearing areas for adfluvial bull and cutthroat trout. Cyclone Creek provides spawning and rearing habitat for adfluvial cutthroat trout. Relatively high densities (>10.0 fish per 100 m² surface area) of age I+ westslope cutthroat trout were observed in Cyclone and Dead Horse creeks identify these creeks as critical for this species.

Cyclone Lake, a 58.7 hectare lake, is relatively shallow (maximum depth of 6.7 meters) and supports a self-sustaining fishery for westslope cutthroat trout. Bull trout, grayling, and mountain whitefish also inhabit the lake.

Moran Creek

Moran Creek supports westslope cutthroat trout throughout the creek. The creek also contains juvenile bull trout in the lower portion (reach). This lower reach contains a relatively high density of cutthroat making it a critical area.

Moose Creek

Moose Creek has high densities of cutthroat trout in all areas surveyed. It is probable adfluvial cutthroat trout are using Moose Creek since outmigrating juveniles trapped and tagged in Moose Creek were recaptured in a trap in the North Fork of the Flathead River near Polebridge.

Trail Creek

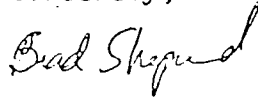
Trail Creek is a very important bull trout spawning and rearing area. Adfluvial cutthroat trout also use Trail Creek extensively.

The value of these streams in providing spawning and rearing for the fishery in the Flathead Drainage requires that special precautions

Page Three

be taken in any forms of exploration or development. Consideration should also be given to excluding exploration and development from sensitive areas such as flood plains, riparian zones, and zones where disturbance of soils or pollution would have direct impact on water quality.

Sincerely,

A handwritten signature in cursive script that reads "Brad Shepard".

Brad Shepard
Fisheries Biologist

BS/ct