CHAPTER VI

ALTERNATIVES TO THE PROPOSED ACTION

Reject Mining Plan

Rejection of the Carter Oil Company mining plan would result in no environmental impact on the leased lands and they would continue in their present condition or be modified by the surface owner to meet other uses as may be determined. Carter could submit a new mining plan, challenge the rejection, or abandon--at least temporarily--development of the lease. Should the mining plan be rejected, the development of alternate sources of energy or a reduction of energy consumption could be required.

The Carter Oil Company may also begin mining operations on its 40 acres of privately owned coal within the western portion of its federal lease with the same primary and secondary impacts as those evolving from the mining of both federal and private coal. This private coal could sustain production at proposed levels for about 2 1/2 years. This would result in a small mine on privately owned lands leaving the federal coal untouched and would (1) increase extraction costs; (2) result in increased mining problems and costs, if following reclamation, the federally owned coal were later extracted; and (3) result in a loss to the state and county of a long-term tax base and a loss of the state's share of federal royalty revenue distributed in accordance with the Mineral Leasing Act.

In addition, reclamation and enforcement requirements under state laws could be either more or less stringent than those required by the Federal Government thereby affecting the restoration of mined areas.

In the event Carter chose not to mine on privately owned land as a consequence of rejection of a mining plan on the federal leasehold, coal for the power plants they are supplying would have to be obtained from another source.

Approve the Mining Plan After Modification

Some of the impacts identified and discussed in Chapter VII could be avoided if the mining plan were modified to require use of one or more alternatives discussed below. In addition, special stipulations could be added to the plan to mitigate some secondary effects of the mining. Such conditions must be reasonable and, if unacceptable to the lessee, could result in the lessee not developing the area with the resultant impacts discussed under the heading "No New Development of Coal" in Part I, Chapter VIII.

Different rate of production

Carter Oil Company has existing contracts to supply 3.6 million tons of coal per year in 1977 to the Indiana and Michigan Electric Company, escalating to 5 million tons in 1978, and projected further escalation to 12 million tons in 1983.

Any change in production rate, either upward or downward, would alter the rate or intensity of the environmental impacts discussed previously in this statement. If a reduction in proposed production rate were required, it would create a shortage of fuel at the power plants in the area of consumption and result in decreased power production when consumption is increasing unless substitute sources of supply were obtained. A reduction would also prolong mining activity on the leasehold, prolong the time until restoration is completed, lessen employment at the mine, lessen the acreage disturbed at any one time, and lessen annual tax and royalty returns to the state and county from this lease.

If the company were required to increase production above the level proposed, it would increase the intensity and severity of the impacts described elsewhere in the statement, decrease the length of time for mining and reclamation, and increase annual tax and royalty returns from this lease.

Different methods of mining

Underground mining

Substitution of this method of mining would result in less initial disturbance of the land surface, however, unsupported mine roofs between pillars would ultimately collapse because of the lack of structural strength in the thin overburden resulting in a partly subsided land surface degraded by numerous depressions and openings; greater costs because underground mining would be more costly than surface mining; a decrease in mine safety as indicated by the fatal accident rates in 1972 of 0.42 per million tons mined underground compared to 0.07 per million tons for surface mining; and higher incidence of nonfatal accidents due to roof and coal falls, fires, explosions, and problems related to dust inhalation (black lung disease).

On Carter Oil Company's federal leasehold, the two coalbeds average 107 feet in thickness. Assuming that a 10-foot section in each bed could be mined safely by underground methods and that 50 percent of coal in the mined area was left in place to provide support and lessen the probability of surface subsidence, coal extracted would represent about nine percent of the available coal in place. This rate compares to an expected recovery of 90 to 95 percent of the available coal in place using surface mining methods.

In-situ production

Techniques for the economical burning of coal in-situ and the capture of the released volatile gases are still in experimental stages. Present knowledge indicates that energy recovery levels of in-situ production are low and the amount of surface subsidence in areas of thin overburden is highly unpredictable. Impacts associated with in-situ production would include the possibility of destruction of coalbed aquifers, pollution of ground water, and air pollution from escaping gases.

For in-situ production to be a viable alternative technique, methods for increased recovery of volatile gases must be developed. Such increases could then allow in-situ production to compare favorably with the high recovery of coal by surface mining methods.

Auger mining

Auger mining should probably not be considered as a realistic or viable alternative to surface mining because it is not used except under specific conditions. Auger mining is used to recover coal along a highwall of an existing surface mine which has reached its maximum overburden limits. The effective penetration depth is limited to less than 200 feet, and the auger diameter is presently limited to 84 inches. In beds thinner than seven feet, recovery is less than 40 percent, and it would be considerably less for Carter's 107-foot total coal thickness. Auger mining is not applicable on Carter's leasehold to sufficiently supply the quantities of coal demanded.

Different reclamation objectives

A description of alternate land uses and reclamation methods for the disturbed areas along with their attendent impacts are discussed in Chapter VIII, Part I.

Different utilization

Onsite power generation

Transportation and fuel costs for onsite electric power generation would be minimal, and there would be less chance for coal spilling than during transportation to offsite power generation plants. However, a coal-burning electrical power generation plant would have to be constructed, transmission lines would have to be built, and the generating plant would have to be

connected into the existing power distribution network. For a water-cooled plant, large volumes of water and water rights would have to be obtained and pipelines and storage facilities built to supply an onsite steam generating plant. The electrical stations in the area of consumption would lose the supply of coal for which they were designed unless coal of like quality from another mine in the area was substituted for coal from the North Rawhide Mine.

Local environmental impacts that would result from onsite power generation would be degradation of air quality by stack emissions; land-use problems related to ash disposal; noise from the generating station; diversion of the large quantity of water needed from other uses; degradation of scenery by the generating station, transmission lines, and support facilities; dust related to coal handling, processing, and ash disposal; loss of land used by the generating station and support facilities from other uses; and increased employment and related economic benefits. Impacts associated with mining and reclamation would remain the same.

Other offsite markets

To supply coal to other offsite electrical power generating plants would have the effect of transferring transportation and other end-use impacts elsewhere. These impacts have been described heretofore in the statement. The impacts associated with mining and reclamation would remain the same if the proposed production rate was not increased. If increased, the severity and duration of these would also be increased.

Nonenergy uses for the coal

Coal is used by the chemical industry in the manufacture of synthetic materials and has been used as a soil conditioner which, when mixed with top-soil, darkens the soil, absorbs heat, and stimulates plant growth. Some types

of lignite have been used in oil drilling muds, in water treatment, and in wood stains. Coal at the North Rawhide Mine is subbituminous and is not suitable for the latter uses but could be used by the chemical and soil conditioner industries, depending on its properties. If coal production were not increased, the impacts of mining and reclamation would remain the same. If the coal were used exclusively by the chemical and soil conditioner industries, the power plants dependent on the coal would have to locate substitute sources of fuel.

Different methods of coal transport

Pipeline transportation

Transporting coal in a pipeline as a slurry could be required as a possible alternative. An advantage would be less surface pollution by wind-blown coal or coal spilled from railroad cars. The time and capital cost of planning and constructing a pipeline from the North Rawhide Mine to the proposed mainline railroad is unknown. Based on the Black Mesa pipeline, however, the cost would be in excess of $128,000 per mile (Love 1969).

Impacts of this alternative would be: surface disturbance due to construction of the pipelines and in-line support facilities along the right-of-way to the proposed railroad; the additional surface disturbance associated with the construction of water and slurry storage facilities, additional processing facilities at the mine to prepare the coal for transmission as a slurry and the de-watering facilities at the proposed railroad; the influx of workers necessary to construct the pipeline and the resultant socio-economic effects on communities along the right-of-way; the loss of a large tonnage of steel pipe to other uses; the loss of the energy required to construct and run such a coal slurry pipeline to other uses; the possibility of pipeline spillage and rupture

which could degrade local areas; and the construction, at the point of consumption, of facilities to remove wet or frozen coal from railroad cars.

Highway transportation

Substitution of truck haulage for railroad haulage would not cause additional surface disturbance at the proposed mine except in the vicinity of a truck loading facility. The load size of coal trucks for highway transportation would be limited. The maximum gross load limit for trucks on Wyoming highways is 79,900 pounds or 39.95 tons so truck size would have to be in the range of 30 to 35 tons. Above 79,900 pounds a special overload permit is required and a special use tax is assessed.

Existing county roads would have to be redesigned and rebuilt to withstand the stress of constant coal-loaded truck traffic.

The large number of trucks needed would create increased noise, air pollution from truck emissions, increased safety hazards for the public, and increased dust and spillage of transported coal.

Assuming that all proposed coal production would require truck transportation from the mines to loading points on the railroad, about 166,500 30-ton truckloads (695 per working day) or about 143,000 35-ton truckloads (595 per working day) would be necessary to transport the projected 5-million-ton annual production by 1978. This requirement would increase to 343,000 35-ton truckloads (about 1,430 per working day) necessary to transport the projected annual production of 12 million tons per year in 1983. These larger trucks would haul not more than about 500 loads per working day at maximum projected production. Consumption of diesel fuel would be considerably greater by truck than the 0.002 gallons per ton-mile attainable by rail haulage. If 100-ton trucks were used, the two tonnages could be hauled in 50,000 loads (1978 tonnage) or 120,000 loads (1983 tonnage).