

## CHAPTER VI

### ALTERNATIVES TO THE PROPOSED ACTION

#### Reject Mining Plan

Rejection of the Wyodak mining plan would result in no environmental impact on the leased lands not already mined and they would continue in their present condition or be modified by the surface owner to meet other uses as may be determined. Wyodak Resources Development Corp. 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.

Wyodak Resources Development Corp. may also continue mining operations on its 200 acres of privately owned coal adjacent to its existing south pit 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 9 years. This would result in a small mine on privately owned coal 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 Wyodak 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 would have 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 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" in Chapter VIII, Part I.

#### Different rate of production

Wyodak Resources Development Corp. is currently supplying 700,000 tons of coal per year to the onsite Neil Simpson power plant of Black Hills Power and Light Company and offsite power plants in Osage, Wyoming, and Lead and Rapid City, South Dakota. The proposed new power plant expansion will require a total yearly production rate of 2.5 million tons in 1977 at which time the proposed plant will be in operation and will use the additional coal produced. Another power plant scheduled for completion in 1982 will burn the production resulting from an increase to five million tons in 1982.

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, resulting 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 Wyodak's federal leases.

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 Wyodak's leases.

#### 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 is 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 non-fatal accidents due to roof and coal falls, fires, explosions, and problems related to dust inhalation (black lung disease).

On Wyodak's federal leasehold the coalbed averages 84 feet in thickness. Assuming that a 10-foot section 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 6 percent of the available coal in place. This rate compares to a present recovery of approximately 95 percent of the available coal in place at Wyodak.

### In-situ production

Techniques for the economical burning of coal in-situ and 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 a coalbed methane aquifer, 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.

### Alternate reclamation objectives

Instead of creating a lake in the reclaimed area, an alternative is to backfill the pit area and grade it to the approximate original contour. This grading would be very difficult, if not impossible, because mining at the Wyodak site involves the removal of large amounts of coal (84 feet thick including a 16-inch parting) compared to an average of 30 feet of overburden. Returning to original contour would require hauling large amounts of material from other sources to fill the open pit. Returning only the overburden to the mined pit would leave a large depression which could create a marshy area of little value. Other reclamation alternatives and their impacts are discussed in Chapter VIII, Part I.

### Different utilization

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.

#### 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 Wyodak mine to the three power plants in Wyoming and South Dakota 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 pipeline and in-line support facilities along the right-of-way to the power plants; the consumption of large volumes of water for slurry preparation and pipeline transportation, about 240 gallons of water per ton of coal; 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 power plants; 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; and the possibility of pipeline spillage and rupture which could degrade local areas.

## Highway transportation instead of railway 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.

At the present time, about 554,000 tons per year are supplied by rail to the three power plants in Wyoming and South Dakota. If this yearly tonnage were hauled to the power plants by truck from the mines, it would require about 18,470 30-ton truckloads (77 per working day), 15,830 35-ton truckloads (66 per working day) or 5,540 100-ton truckloads (23 per working day).

County, state, and federal roads would have to be redesigned and rebuilt to withstand the stress of constant coal loaded truck traffic. The large number of trucks would create increased noise, pollution from truck emissions, increased safety hazards for the public, and the possibility of increased spillage of the transported coal. The consumption of diesel fuel would also be considerably greater by truck than the 0.002 gallons per ton-mile attainable by rail haulage.