

CHAPTER 5

UNAVOIDABLE ADVERSE IMPACTS OF THE PROPOSED ACTION

The following adverse impacts of the proposed action would remain after application of the mitigating measures discussed in Chapter 4. Whether certain impacts (such as those related to visual resources or socioeconomics) are adverse is a matter of personal preference. To the long-time resident who cherishes a traditional lifestyle, change probably would be adverse. To new residents, and those interested in economic and urban development, signs of growth would probably be welcome.

Impacts are listed in their general order of significance.

The population increase attributable to the Buckskin Mine would be 843 by 1990, of which about 87% would live in Gillette. One additional policeman and ten additional teachers would be needed to serve these people. The incremental effect of Buckskin-related population increases on other community services (e.g., water, fire protection, health) in Gillette would be insignificant compared to the effect of total regional development.

The population increase due to Buckskin would comprise 6% of the total increase expected in Gillette by 1990. There would be corresponding increased pressure on the housing market and transportation facilities.

The Buckskin project would increase regional earnings by \$14.2 million by 1990 (2.4% of total increase in regional earnings expected by 1990), contributing to local inflationary pressures and reducing the buying power of people on fixed incomes.

Coal train traffic, producing noise and traffic congestion, would amount to 14 unit trains (both ways) per week from the Buckskin Mine by 1990, or 2.3% of regional coal traffic.

The projected increase in the number of registered vehicles in Campbell and Converse counties as a result of Buckskin is 770, or about 3.7% of the total predicted increase for those counties.

Lowering of water levels would occur in the overburden and coal in the vicinity of the Buckskin Mine until mining is completed. The bottom of the coal (bottom of the mine) would be the water discharge point. The cone of depression would extend 1,000 to 1,500 feet in the overburden and 3 miles in the coal. Groundwater levels would be lowered an unquantifiable amount in the vicinity of municipal wells to supply the Buckskin-related population.

Disruption of the shallow groundwater system would eliminate lush foliage along Rawhide Creek and Spring Draw, as well as some point-watering sources both within the mined area and for a distance of probably no more than 3 miles beyond it. These effects may last only

for the life of the mine, or, depending on the relation of the reclaimed surface to the water table in the mined area, be permanent. Loss of point-watering sources would discourage stock and wildlife grazing in the area.

Water in replaced spoils would be higher in total dissolved mineral levels (e.g., calcium, magnesium, and sulfate ions) than in the original aquifers. Such changes may render the water unsuitable for drinking or irrigation.

Gillette's water and sewage treatment needs would be substantial by 1990, but would not be significantly affected by the Buckskin-related population increase.

Erosion and consequently sedimentation within the mine area would be greatly increased. Water erosion of soil from disturbed areas would amount to 10 to 30 tons per acre per year, or an increase of 5 to 25 tons per acre per year over rates from undisturbed land. Leachate from spoil piles and replaced overburden would reduce surface water quality (see Table R4-5 in the regional analysis). Only a small portion of these impacts would be felt beyond the mine areas, unless very heavy storms (e.g., 100-year floods) cause breaching of the catchments and settling ponds.

Ponding of surface and/or groundwater may occur after reclamation in depressions as the overburden settles. The water quality may be too poor for stock or wildlife, particularly if the depressions intercept groundwater as well as collecting surface runoff. If ponding occurs on the reclaimed area due to interception of groundwater by the lowered ground surface, then a lake could form, removing 35 to 40 acres (depending on the degree of settling) from vegetative or agricultural production. Terrestrial wildlife habitat would be exchanged for aquatic, although the water quality in the lake could be too poor to support animal life.

By the end of the mine life, temporary disturbance of soil, vegetation, and wildlife habitat would occur on a total of 1,071 acres, causing loss of soil and vegetative productivity an average of 10 years and loss of wildlife carrying capacity for more than 10 years. By the end of mine life, permanent disturbance would occur on 45 acres where new houses are constructed for the mine-related population. In comparison, total acreage disturbed temporarily and permanently in the region by 1990 would be 59,403 and 3,242 respectively.

Soil productivity on reclaimed areas would be an estimated 94% of present levels. This is because significant amounts (20% to 30%) of the soil material used in reclamation would be of poor quality, due to high salinity or alkalinity, or high clay content. (No better soil material is available to replace the poor quality soil.) Such materi-

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al would inhibit or prevent revegetation, thus increasing erosion rates. Also, a 20% to 40% reduction in quality would occur in stockpiled topsoil due to the loss of seeds, microorganisms, organic matter, nutrients, and roots.

Accidental spillage of oil, gas, or other toxic materials would contaminate small amounts of soil, but such spillage would be localized and of little relative significance. Wind and water erosion would cause the loss of 5% to 10% of available topsoil material. Wind erosion of soil from the Buckskin site would amount to 85 to 110 tons per year, an increase of 70 to 90 tons per year over rates from the undisturbed area. As mentioned before, water erosion of soil would amount to 10 to 30 tons per disturbed acre per year.

The return of agricultural land to production after reclamation depends on the success of revegetation efforts. Assuming that livestock range production can be restored by 94%, a permanent loss of 6% production capability (11 animal unit months (AUMs)) annually would occur over premining levels. An additional permanent impact would be the loss of 8 AUMs annually on the 45 acres where new houses are constructed. An estimated 256 AUMs would be lost annually on the mine site for the life of the mine, for a total loss of 5,120 AUMs.

Vegetation on the Buckskin site presently consists of 65% shrub types and 35% grass types. About 70 different species were identified during Shell Oil's plant survey in the summer of 1976. After reclamation, vegetation is expected to consist of no more than 25% trees and shrubs and 75% grasses, and diversity would be much less (about 15 species, at least until native species invade the reclaimed area—see Chapter 1 for proposed seeding mixture). Lack of vegetative diversity reduces stability of the vegetative community and the variety of wildlife it supports.

Due to the proposed action, 121 acres of cultivated land would be lost. After the 121 acres are reclaimed for grazing, there would be a gain of 19 AUMs annually.

The increased population due to Buckskin (815, or about 4% of total increases in Campbell and Converse counties by 1990) would cause a corresponding increase in dispersed recreation activities (leading to possible adverse impacts to ranching operations), in the use of recreation facilities, and in degree of loss of the "primitive" recreation experience.

Wildlife habitat diversity and habitat interspersions would be greatly reduced. The edge between major habitat types would be reduced by 61.25% from 24.67 miles in the premining habitat to 9.56 miles in the postmining habitat. This would have a resultant negative effect on wildlife diversity in the postmining habitat.

Special habitat features such as small cliffs and rock outcrops would be lost and only partially replaced.

Wildlife populations currently living on the site would be lost. This would be significant locally, but compared to regional populations, the losses from this mine would be insignificant. The possibility of cutting off some preferred winter range for pronghorn south of the mine would exist.

The mine pit, stripped areas, machinery, buildings, and support structures (power lines, railroad spur, and access road) would be visual intrusions in the characteristic landscape until abandonment and revegetation is complete.

The proposed action would result in the mining and consumption of 80 million tons of coal and an amount of sand, gravel, and scoria (clinker) estimated to be over 80,000 cubic yards. In addition, 2.6 million tons of coal, which is mixed with overburden or partings, would be unrecoverable by present mining methods.

Two cultural resource sites would be destroyed by the proposed action, and some information may thereby be lost, even with salvage.

Two other sites, determined eligible for nomination to the National Register and within the railroad spur right-of-way, might be subject to damage.

The approximately 4% increase in population due to Buckskin would contribute correspondingly to unauthorized collection or vandalism of cultural and paleontological resources.

Natural topography would be altered by the mine pit and cuts and fills, and then reclaimed to unnaturally smooth contours. Replaced overburden would be unstable, tending to settle or shift over time, making it unsuitable for construction of permanent buildings. Even though a part of the topographic scene, cannot be restored.

Predicted annual total suspended particulate (TSP) concentrations would not be expected to exceed 15 micrograms per cubic meter beyond 1.5 miles south or north of the mine boundary with even less impact east and west of the mine boundary. Violations of the Wyoming air quality standards would not be predicted. No measurable effect on visibility would be expected outside the proposed mine boundary.

Gaseous pollutants (nitrogen and sulfur oxides and hydrocarbons) from vehicle emissions at the mine would have only a minute effect and be restricted to the immediate area of the mine.