

## CHAPTER V

### PROBABLE ADVERSE ENVIRONMENTAL EFFECTS WHICH CANNOT BE AVOIDED

#### Air Quality

Impacts on air quality resulting from construction activities cannot be avoided. Air quality will be temporarily affected during the two-year construction period by dust from haul roads, access roads, fill areas, cut areas, borrow areas, and clinker pits (3,700 acres) during windy periods. Emissions resulting from construction activities will result in localized lowering of air quality.

Long-term unavoidable impacts will result from loading and hauling of up to 23 loaded coal trains per day by 1990. Frequent accidental fires, 10 to 50 per year, along the right-of-way will cause temporary air pollution. Despite the use of all available maintenance to reduce emissions on diesel locomotives, a certain level of emission will occur. Based on the 1990 coal exportation level (93 million tons), the amount of unavoidable diesel emission per year is: 513 tons of particulates, 1,170 tons of sulfur dioxide, 7,597 tons of nitrogen oxides, 2,669 tons of carbon monoxide, and 1,930 tons of hydrocarbons.

The projected train emissions take place in the Casper and adjacent Wyoming Intrastate Air Quality Control Regions. Table 1 compares projected unavoidable train emissions with the 1970 quantities for the two combined air quality control regions.

Table 1

Cumulative Unavoidable Train Emissions Versus 1970 Total Emissions  
 Casper and Adjacent Wyoming Intrastate Air Quality Regions  
 (Tons/Year)

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Type	1970 Base	1980		1985		1990	
		Increase*	Percent Increase	Increase*	Percent Increase	Increase*	Percent Increase
Particulates	120,649	120,915	0.2%	121,033	0.3%	121,162	0.4%
Sulfur Dioxide	63,389	63,995	1.0%	64,264	1.4%	64,559	1.8%
Nitrogen Oxides	93,264	97,201	4.2%	98,943	6.1%	100,861	8.1%
Carbon Monoxide	323,614	324,997	0.4%	325,609	0.6%	326,283	0.8%
Hydrocarbons	67,362	68,362	1.5%	68,805	2.1%	69,292	2.9%

\*Base plus train emissions.

## Topography

Permanent alterations of topography associated with construction of the railroad bed embankments and moving of 15,000,000 cubic yards of materials will be unavoidable. Other topographic impacts will occur from the excavation and removal of 1,050,000 cubic yards of clinker, gravel, and crushed limestone from pits and quarries to provide ballast materials for the railroad. Extraction of an unknown amount of fill materials from borrow areas, construction and realignment of access roads, roadbed crossings and alteration of drainage systems will occur.

Removal of prominent points of land and creation of steep slopes where none existed before adversely changes the topographic shape. Creation of elevated embankments in low areas could cause changes in drainage patterns and create unavoidable impacts on them. Some alteration of stream channels for construction of bridges and placement of culverts will occur. These changes cannot be avoided and would be adverse to the extent that the drainage pattern is changed to the point where increased stream erosion occurs.

## Soils

The major significant unavoidable adverse impact will be the loss of soil productivity on 1,100 acres of the right-of-way which will be covered by the railroad roadbed, ballast slopes, and associated structures and facilities.

Topsoil or upper soil layers containing plant nutrients and microorganisms will be destroyed or disturbed on the entire 2,400 acres within the proposed right-of-way. This disruption will result in increased soil erosion, sediment yield, loss of soil moisture, and decrease in moisture infiltration and percolation during the anticipated two-year construction period.

Some increase in erosion and sedimentation during the construction period is unavoidable, especially during high wind periods and intensive rain storm occurrences. Alteration of some drainage channels during construction and resulting impact on depletion of soil moisture and increased sedimentation will be unavoidable during the construction period. Some permanent alterations will probably be made, resulting in a long-term impact on sedimentation and lost soil moisture.

Soil compaction, topsoil disturbance, and other off-site construction activities cannot be avoided. This will cover approximately 1,500 acres outside of the right-of-way. If the suggested mitigation measures are followed, this impact should be limited to just the construction period of two years. However, 550 acres will be lost permanently to structures, access roads, and clinker pits in addition to the 1,100 acres lost within the right-of-way.

## Mineral Resources

Temporary denial of 161 million tons of strippable coal located under the proposed rail line cannot be avoided. Although not a physical loss, this deferral might be an additional economic loss as it may be more expensive to mine the coal at a later time than if it was mined in conjunction with the surrounding mine operations.

## Water Resources

The short-term consumptive use of 185 to 1,075 acre-feet of water during construction of the railroad over a two-year period will be unavoidable.

Some oils, chemicals, sanitary wastes, and herbicides will enter ground and surface waters even though adequate stipulations are included in granted easements and permits.

Construction of embankments and drainage structures at stream crossings will temporarily cause increased turbidity when perennial or seasonal flows are present. Some pollution of surface waters will also occur from accidental spills of coal, toxic oils, chemicals, and similar cargo into streams and drainages.

## Vegetation

The permanent loss of vegetation on 1,100 acres which will be occupied by right-of-way facilities (main rail line, sidings, ballast) will be unavoidable for the life of the project. The acreage permanently lost off the right-of-way, a total of 550 acres by 1990, will be unavoidable. Included in this acreage are 141 acres of vegetation lost to community expansion due to population increase.

The remaining 1,300 acres in the right-of-way and 950 acres adjacent to the right-of-way which will be disturbed will be revegetated; however, the short-term loss of this vegetation for a period of two to four years cannot be avoided. Even though revegetated, a return to present native composition will not occur for a period of from 20 to 50 years. Some deep cuts and fills may never be successfully revegetated, adding to the permanent vegetative loss.

Damage to vegetation from use of herbicides in maintenance operations, accidental fires (10 to 50 fires burning 200 to 300 acres each year), and off-site vehicle travel cannot be avoided.

Diversion of small drainages through major adjacent structures will cause some unavoidable loss of vegetation downstream because of a reduction in soil moisture normally provided by flood irrigation.

### Archeological and Paleontological Values

If sites and values exist in the area of railroad construction, they will be destroyed. Increased population and recreational use and their impact on these values cannot be avoided. Even if sites are found during construction activities and examined and excavated, they will be eliminated from any further study in the future. The information that could have been provided by these potential sites in the future through the use of more refined examination techniques will be unavoidably lost.

## Aesthetics

There will be considerable interruption in the landform in many areas, both in the excavation and embankment for the railroad bed and in the borrow and waste areas, which cannot be avoided. There will be an immediate short-term adverse impact, at least on vegetative texture, in all areas where soil is disturbed. This contrast will be reduced over time; however, it will take 20 to 50 years to return to the present composition. Some of the deeper excavations along the route will be very difficult, if not impossible, to entirely revegetate and will remain a contrast in both color and texture.

Although there are a number of existing intrusions along the proposed route, the railroad will provide one additional intrusion to the natural landscape. Where the railroad is in view of Highway 59, the adverse effect on many people is unavoidable. Furthermore, during construction of the railroad, it will be impossible to avoid visual intrusions created by construction camps, staging areas, storage areas, and additional facilities needed to support construction crews. Some people will find these unavoidable aesthetic impacts displeasing and objectionable.

## Wildlife and Fish

The permanent loss of 1,650 acres of big sagebrush and grass habitat will be adverse and unavoidable. This acreage will be lost to permanent facilities such as housing, track, clinker pits, access roads, etc.

Destruction of additional habitat, mostly sagebrush and grass type, from an estimated 10 to 50 fires and 200 to 3,000 acres per year burned cannot be avoided. Riparian habitat will be destroyed during construction of the railroad, especially at Box Creek and Porcupine Creek.

Approximately 25 percent or 975 acres of crucial antelope winter range will be disturbed. The total unavoidable, adverse impact will be an estimated loss of 75 antelope from the base population and loss or serious impairment of 3,900 acres of antelope habitat.

Twelve hundred acres of deer habitat will be lost or significantly disturbed. An estimated 10 to 20 deer per year will be lost from this area due to habitat disturbance, fences, and collisions with trains.

The noise associated with train operations (up to 46 per day by 1990) will force animals away from the vicinity of the right-of-way. This will cause impacts from overuse on additional, indeterminable amounts of habitat.

Freedom of access across the right-of-way for animals will be restricted. This will change migration patterns and place more pressure on certain areas of habitat. This, in the long-term, could further reduce the carrying capacity of the habitat.

The loss of 3,900 acres of sage grouse habitat cannot be avoided. Even though part of the area will be reclaimed, sagebrush will have been eliminated. Herbicide treatment of the right-of-way will prevent reinvasion of sagebrush. Direct loss will probably be in the range of 35 to 50 birds

from the base population. Total loss cannot be estimated as it is not known how many mating or nesting areas may be destroyed by the route.

## Recreation

The major unavoidable adverse impacts on recreation involve restriction of freedom of access and loss of wildlife populations. Access across the right-of-way will be restricted to major road crossings. Operation of the railroad, especially the noise, will disrupt the solitude of the area for the recreationist while he is using the area. Increased population, controlled access, loss of wildlife habitat, and reduced game populations will result in fewer recreational opportunities.

## Agriculture

### Livestock forage

A permanent loss of grazing on the 2,400 acres of right-of-way (369 animal unit months-AUMs) cannot be avoided. Construction activity (access roads, clinker pits, construction camps) will cause a temporary loss of 950 acres (146 AUMs) adjacent to the right-of-way. Even though this area is reclaimed, full productivity will not be reestablished. Therefore, a long-term loss of an annual 73 AUMs will occur. An estimated 550 acres (85 AUMs) outside of the right-of-way will be permanently lost (access roads, housing, clinker pits).

The permanent loss of natural irrigation by small drainages severed by the railroad grade will lower the grazing capacity of some areas downstream from the grade. This adverse impact cannot be quantified.

Accelerated runoff and siltation that occurs between the start of construction and reestablishment of vegetation on the denuded areas cannot be avoided. Loss of free access use by livestock cannot be avoided. Installation of cattle passes converts free access to defined physical access and will result in overuse on some vegetation and less than proper use levels on other vegetation, depending on the location in a pasture.

Fires that may occur along the rail line (10 to 50 with 200 to 3,000 acres burned per year) will consume valuable livestock forage. This forage (31 to 462 AUMs) will be lost for a minimum period of two years until the area has been revegetated.

The noise of train operations (46 per day by 1990) will disturb cows and ewes during calving and lambing. Pastures adjacent to the rail line probably cannot be used for calving and lambing.

There will be an irreversible change in the normal operation of livestock enterprises as adjustments are made in the operation due to the severance of ranch units.

There will be a short-term loss of replaceable facilities destroyed by the rail line construction. The total effects of these losses are not quantifiable at the present time (April 1974).

### Farming

There will be a permanent loss of production from 160 acres of cropland along the railroad right-of-way. During construction there could be a loss of production on approximately 60 additional acres. This will result in a loss of approximately 300 tons of hay for each of two years and a permanent loss of 216 tons of hay production.

There will be some cropland severed in parcels too small for economical management or unirrigable due to economic considerations. Six fields in the Shawnee Creek drainage have been identified in this category, but the total acreage affected cannot be quantified due to lack of data.

There will be increased maintenance of irrigation structures due to siltation during the construction period.

Some irrigated cropland may not be able to be irrigated during construction due to temporary severance of irrigation systems. The reduction in crop production during this period cannot be quantified.

## Transportation Networks

Regardless of the location of the railroad and its design, it will produce some effects on local transportation that cannot be mitigated. Principally will be its effect on the relatively unrestricted travel across the numerous minor roads in the area. Since grade crossings cannot be provided for every minor road, local resident irritation and added mileage inconvenience will be created from having to cross the railroad at specified locations only.

Drifting of snow on State Highway 59 and on lesser roads due to railroad fills and grade elevation is unavoidable.

The deterioration of the mainline from increased coal train operations cannot be avoided, and the necessity of having to upgrade the mainline is unavoidable.

The increased potential for additional car-train collisions due to operations of 46 trains per day by 1990 cannot be avoided and could result in increased loss of life. (The amount is indeterminable.) Since the line will have a number of grade crossings, this impact may be higher than for a normal railroad.

### Socio-Economic Conditions

Employment, income, population, and capital investment themselves do not pose adverse unavoidable impacts. The discrete effects of these produce unavoidable social and economic impacts. These have been analyzed on a cumulative basis and can be found in Chapters V and VII of Part I of this impact statement.