III. RESOURCE CONSIDERATIONS

The objective of resource monitoring is to quantify and display the progression and final effects of undermining upon surface resources of National Forest lands.

The surface and subsurface resources to be considered have been categorized into four resource groups. They are:

A. Recreation and Visual Resources.
B. Vegetation (which includes Range, Wildlife Habitat, and Timber).
C. Geology and Hydrology.
D. Other.

The basic data requirements with which these resources will be inventoried and monitored is included with each resource group.

A. Recreation and Visual Resources

Potential effects of mining on recreation and visual resources shall be evaluated - including an inventory to establish a comparison baseline - prior to any mining activity. The recreational uses and scenic values of the area will determine the nature and extent of monitoring requirements.

It is expected that monitoring of Recreation Resources would include defining of changes in areas of use by recreationists, i.e., fishing, hunting, camping, hiking, etc., as may be affected by mining activities (i.e., coal hauling, mining).

For Visual Resources, a monitoring program would most generally be visual inspections on a programmed frequency. This would include a photographic record and map at a scale compatible for registration

with other data map record layers as well as a written record. It would address such items as the visual change in mine facilities, roads, streams, slopes and escarpments (i.e., rockfalls), slope failures, excessively eroded areas, etc.

B. Vegetation

The effect of undermining upon vegetation is still largely unknown. Range analyses, timber surveys, and wildlife habitat studies will be conducted in areas expected to be affected by mining. The intensity and frequency of these investigations will be determined on a site-by-site basis. Data will be summarized annually, and used to define change.

This monitoring program would rely upon existing data, supplemented where necessary with data from other sources and from field inventories obtained prior to mining. These data would form the base upon which the monitoring program data would be compared for definition of change.

In situations where mining effects become substantial, the mining company would be required to participate in formulation and implementation of mitigation measures.

C. Geology and Hydrology

The geologic structure and stratigraphic nature of an area has a major determining effect upon the ground water regimen, upon the mining, conservation of the resource, mode of subsidence, and surface features such as topography, soils, and slope stability.

Without adequate geologic data--both from surface exposures and drilling and mining--resource conservation planning cannot be done. Also, any impacts to surface resources cannot be identified or mitigated without a knowledge of the geology.

To fulfill the requirements of this monitoring plan, the following is required to establish baseline data.

1. A geologic map at the same scale as other data map layers showing lease location, faults, folds, joint systems, geologic formations, seeps, springs, and other data which are essential for proper identification of the existing geologic and hydrologic conditions. The map would be updated as new information becomes available.

2. A narrative description of each of the above items, giving sufficient detail for evaluation. Existing seeps and springs on the lease area and adjacent areas, which would be affected by undermining, will be inventoried. In most cases, estimates of quantity would be adequate. However, representative springs (springs having current use for wildlife, range, or for municipal use) which are important for the management of the surface resource will be sampled and tested for quality, and flows determined.

The responsibility for these data would be that of the mining company. The Forest Service and the U.S. Geological Survey would, however, cooperate in the designation of hydrologic monitoring requirements for each site, and would provide those data which may have been obtained from previous studies.

D. Other

Surface structures, such as power transmission lines, pipelines, oil and gas wells, roads, dams and reservoirs, and other physical improvements could be affected by mining. Mine planning must consider these features, and data must be obtained prior to mining that will identify possible impacts. Those structures that are identified which might be damaged should be photographed before and after mining, together with the documented inspections which establish their condition prior to, during, and after mining.

The mining company would have responsibility for this information. There are, however, considerable data available on these structures which could be made available by the Forest Service, U.S. Geological Survey, State, and County.