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Three-dimensional aspects of mountain life in the valley of the South Fork of the Clearwater River, Idaho

David H. Hickcox
The University of Montana

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THREE-DIMENSIONAL ASPECTS OF MOUNTAIN LIFE
IN THE VALLEY OF THE SOUTH FORK
OF THE CLEARWATER RIVER, IDAHO

By
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B.A., University of Colorado, 1968

Presented in partial fulfillment of the requirements for the degree of
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1973

Approved by:

Chairman, Board of Examiners

Dean, Graduate School

Date

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CHAPTER I

THE VALLEY OF THE SOUTH FORK

This thesis studies a small mountain valley within the conceptual framework of mountain geography. It deals with the 3-dimensional arrangement—with emphasis on the vertical dimension—of people, economic activities, and resources in the valley of the South Fork of the Clearwater River, in Idaho. Studies of mountainous areas in the United States utilizing the concepts of mountain geography have been the exception rather than the rule. Geographers have commonly studied mountain regions in the same way that they have plains areas. Most studies have tended to overlook the vertical dimension, which should receive special consideration in a study of mountain geography.

Methodological Approach

Mountains are strongly 3-dimensional; hence, the approach to the study of mountains should be 3-dimensional. The vertical dimension, lacking in most geographical studies of mountains, may be viewed as the major attribute of mountains. Steep slopes predominate, further emphasizing the vertical component of mountains. Non-steep land occurs only in spottily distributed pockets. Settlement and economic activities tend, therefore, also to be pocketed.

The vertical extent of mountain slopes results in a series of altitudinal zones. This zonation provides a framework by which land use
on the mountain slopes can be analyzed. Each zone has different potentials for man's use. An analysis of mountain slopes in the 3-dimensional framework may shed new light on many of the activities occurring on the mountain slopes.

The steepness of topography and harshness of the environment cause mountain ecosystems to be more fragile than lowland ecosystems. Man's impact on the land can be much greater in mountains than in similar situations on leveler areas. Land is often utilized without regard to these factors.

Exposure of slopes to the sun is of primary importance in mountains. It is an important determinant of settlement patterns. Permanent residents of some valleys almost always live on sunny exposures. Exposure may be a major factor in the location of transportation routes.

This study, while not a plan, presents much information valuable to land planners and managers. The value of the information lies in the way it is presented; that is, in a 3-dimensional approach. Some information in this study is undoubtedly familiar to land managers, yet the manner in which it is presented is not. Putting familiar information in a different and revealing framework may be this study's most important contribution.

The importance of the vertical dimension, dominance of steep slopes, altitudinal zonation, and contrasts of exposure are among the key concepts so important in geographical studies of mountains.
Orientation

The study has three objectives: (1) to illustrate the desirability of utilizing the methodological approach of mountain geography when studying mountainous areas, (2) to analyze land utilization in regard to this approach, and (3) to dispel generally accepted myths about mountain life by objectively describing population distribution and economic activities.

A driving force of this thesis is to demonstrate the need to utilize the viewpoints of mountain geography when studying mountains. Mountains should be viewed in their own perspective, not that of more level areas.

To give the vertical dimension the attention it warrants, land utilization is analyzed from a viewpoint that stresses the vertical dimension. Now, more than ever, mountainous regions are subjected to greater and greater pressures. Not only do mountain areas tend to be heavily forested and contain mineralized belts, they also possess most of the qualities sought after by recreationists. Strict planning of mountain resources is now a necessity in order to meet future demands placed upon them. Planning for future utilization of mountain lands is hampered by a lack of understanding regarding the best allocation of resources. This is in part due to a general oversight of many of mountain geography's viewpoints.

Mountainous areas in the United States are generally characterized by a low density of population, spottily distributed. Mountain inhabitants are often thought of as being backward and unsophisticated. Mountain economies are generally categorized as unimportant. Many of these
portrayals are misconceptions. An objective analysis of population
distribution and economic activities in the South Fork valley tends to
refute the generally accepted myths about mountain life in north central
Idaho and paint a more realistic picture.

A geographic analysis of a region such as the South Fork valley is
not complete unless it provides a perspective on historical changes of
spatial patterns and relationships. No landscape is static; it changes
naturally or by man's action. This thesis is written with a historical
perspective to better explain current patterns and relationships and to
illustrate man's impact on the South Fork valley. Historical development
is not treated separately but integrated into the various sections.

The Study Area

The study area is located in an isolated part of the Clearwater
Mountains in central Idaho County, Idaho (Figure 1). It is a virtual
dead end consisting of the valley of the South Fork of the Clearwater
River from its headwaters to Idaho State Route 13, approximately two
miles south of the village of Harpster. The lower part of the valley,
below Harpster, is traversed by a through road and railroad and was not
included in the study area for this reason. Idaho State Route 14
follows the canyon of the South Fork to Elk City, the area's only town.
Access to most of the area is provided by a network of county and Forest
Service roads.

South Fork Valley

Viewed from a vantage point the area appears as a region of
sprawling ridges having nearly uniform height and broken by steep-walled
Figure 1—Location Map
canyons. Mountain slopes occupy most of the area and, except for the southern portion of the valley where elevations reach almost 9,000 feet, have not been glaciated. Non-steep land is confined to pocketed areas along the South Fork and its tributaries. The most extensive areas of non-steep land are located in the upper reaches of the valley. The change from nearly horizontal land to mountain slopes is abrupt and foothills (areas of 200-1,000 feet local relief) are almost nonexistent.

For many years the South Fork valley was a "going through" or "passing around" area in which few lingered. The Nez Perce Indians, who preferred to live in the warmer valleys to the west, utilized a route across the area to buffalo hunting grounds in Montana. Early explorers, traders, and trappers passed around the region. It was not until gold was discovered near Elk City in 1861 that much attention was paid to the South Fork valley. A mining boom followed but was short-lived as miners rushed off to new bonanzas. Mining activities flourished periodically as mining techniques became more sophisticated and mineral prices rose and fell. Farming and ranching came into existence to meet the needs of the miners. Many disappointed miners became homesteaders. Commercial logging began in the early 1900's and developed into the area's most important industry. Recreation became increasingly important after World War II and, except for hunting, is mainly water oriented.

The South Fork valley is spatially distinct. It is an essentially homogeneous valley, representative of this region. This is reflected not only in the basic physical and economic factors, but also in the attitudes of the valley's residents. A regional consciousness exists. The
people look upon themselves as "South Forkers." They are proud of their
valley and concerned with its future.

**Why Study the South Fork Valley?**

The valley of the South Fork of the Clearwater River was chosen as the study area because it met most of the following criteria: It is a compact and representative area. It is isolated, a virtual dead end. No through highway traverses the valley and it is not served by a rail-road. A small but significant number of people live in the valley. The valley has changed with time. Its history is characteristic of many similar areas. Some of the most common activities of mountainous areas form the basis of the valley's economy. These are timber harvesting, mining, recreation, and ranching. County and federal offices are located close to the study area in Grangeville. The South Fork valley is reasonably close (175 miles) to Missoula and the University of Montana, home of the author. The South Fork valley may be representa-tive of many mountain valleys in northern Idaho and the Columbia Forest Region of the Rocky Mountains.

Studies of the South Fork by historians and scientists are scarce. Most deal with the South Fork only as a part of a much broader area. A few studies focus on the South Fork valley, but they are of a highly specialized nature. Some studies, like Sister Elsensohn's two volumes (1947, 1951) are amateurish, excessively detailed, and not based on field work.
Organization of the Study

The study is organized into three major parts. The present chapter introduces the problem, describes the study area, and discusses the study. Chapter II describes the axis of communication, the basic services of the valley, and focuses on some problems of mountain life. The activities occurring on the valley bottoms are described and analyzed in Chapter III, and those on the mountain slopes in Chapter IV. The last chapter contains the conclusions of the study and examines the outlook for the South Fork valley.

Maps of the South Fork valley were drawn to a scale of 1:250,000. The large size of the study area does not permit mapping on a larger scale. Cross sections were used to illustrate the vertical dimension. Although this is not a new technique, it has been neglected in modern geography. The vertical profile is one of the mountain geographer's most important tools and should be recognized as such. The vertical profiles reveal information that 2-dimensional maps do not. The third dimension must be included in mountain studies and the vertical profile is a means by which to illustrate it.
CHAPTER II

AXIS OF COMMUNICATION AND SERVICES

The predominance of steep slopes and the small amount of spottily distributed non-steep land in the South Fork valley makes construction of roads and utility lines difficult. The wide spacing of small pockets of population pose problems in providing essential services to the valley's inhabitants.

The River: From a Barrier to an Axis of Communication

In much of the Pacific Northwest, rivers were the foci of historical development. Rivers, usually with gentle gradients, offered the best route for early roads and railroads. Level, fertile floodplains and the availability of transportation attracted settlers. Population became concentrated along the rivers, which generally served as regional bonds. Some flowed through gorges so precipitous that they were barriers to regional development. Transportation routes developed on the adjacent mountains (Ullman, 1951, pp. 215-216). The South Fork of the Clearwater River was such a barrier. The river gorge presented an obstacle to travel and routes along the ridge tops developed. It was not until 1932 that a water-level road up the South Fork to Elk City was completed.

The Nez Perce Trail

The first route into the region was developed by Indians crossing the valley to Montana or the upper Salmon River area. The South Fork
gorge with its steep walls, limited level land, and unnavigable river presented a barrier to travel up the valley. Furthermore, the Indians did not like to travel through narrow canyons for fear of ambush. They preferred routes over high land which afforded better protection. The Indians descended to lowlands only if the route was open and offered protection from ambush (Bailey, 1935, p. 63). The continuous ridge tops with accordant summit levels were much more to the Indians' liking than the river gorge.

A route developed which crossed the South Fork valley diagonally in a general northwest to southeast direction (Figure 4, p. 20). The trail followed the ridge tops descending to the valley floor only in the Elk City and Red River areas. Here the valley was wide enough to protect against ambush.

The origins and early use of the trail are not known. It has been established that it was heavily traveled just prior to the white man's entry into the area. The actual motivation for location of the trail on the ridge tops and in the wide, grassy meadows cannot be definitely established. It seems clear that the South Fork gorge was avoided, either from fear of ambush or difficulty of travel. The dense forests of the ridge tops provided an obstacle to travel. There is some evidence that fire was used to clear the way. Most of the fires which predate white men appear to have originated along the line of the Nez Perce Trail. Many "bald" or grassy mountain slopes exist in the area and probably originated from Indian-caused fires (Leiberg, 1900, p. 387).
The Elk City Stage Road

Early visits by white men to the South Fork valley were few and of little note. Trappers and traders may have passed through the area, but they kept no journals and left no traces of their wanderings. Explorers passed around the valley. Lewis and Clark chose a route across the mountains just north of the study area. It was not until the 1860's that white men became significantly interested in the South Fork valley.

In 1861 a group of miners set out from the overcrowded gold fields of Pierce, Idaho, to prospect for gold along the South Fork. Expeditions into unknown areas generally followed existing Indian trails. The white man's need for the easiest route affording adequate security was the same as the Indians' need (Sauer, 1967, p. 53). Hence, the prospectors traveled along the Nez Perce Trail to a point near present-day Elk City. Gold was soon discovered, and a rush was on. Miners traveled to the area via the Nez Perce Trail whether they came from mining camps in Montana or California. The trail was used year-round despite snow accumulation of up to eighteen feet on the ridge tops. All supplies brought to Elk City and the other mining camps in the area were packed over the Nez Perce Trail. Pack trains had at times as many as 500 mules and could transport as much as 100,000 pounds of supplies, most of which was food (Brattain, no date, p. 27).

By the 1880's a wagon road was needed. The developing hard-rock mining industry required large pieces of machinery which could not be packed in by mule. Financed by an appropriation from the state legislature, a wagon road was begun. The road closely followed the Nez Perce Trail, and by 1894 had reached to within one mile of Newsome. In 1895
the road was completed to Elk City and became known as the Elk City Stage Road. The road was narrow but received heavy use. During the various rushes traffic continued day and night. In some places, when wagons met, one would have to be unloaded, lifted to one side, then reloaded. Way stations sprang up along the trail to serve the needs of travelers (Bailey, 1935, pp. 58-62).

The South Fork Trail

Although the road was an improvement over the previously existing trail, the inhabitants of the valley felt the lack of a better road was an impediment to economic development. The road was rough and narrow. It required ascents and descents of thousands of vertical feet. The area's service center had shifted from Lewiston, which was reached by boat or railroad from Stites, to Grangeville, which was located on the opposite side of the river from the trail. Prospectors seeking gold in nearly every gulch and river bar had made the beginnings of a trail up the South Fork gorge. The idea of a water-level route to Elk City and the surrounding mining districts was looked upon as the key to economic boom and enduring prosperity.

Financed by private subscriptions, a water-level trail along the South Fork was completed to Elk City by 1910 (Bailey, 1935, pp. 411-412). This was the first step in changing the South Fork from a barrier to that of an axis of communication.

The South Fork Road

To further the economic development of the valley, efforts began to enlarge the trail to a road. Bailey (1935, p. 409) stated:
In the minds of many this is all that is needed to bring the interior mining district into its own. Ever since the placer days of the sixties, it has been known that vast quantities of gold, silver, and copper ores existed in the South Fork and Salmon River sections. That the dreams of the old-timers is about to be realized seems an assured fact from the mining activities apparent at the time this article is written.

Financed largely by the Forest Service, the road reached Castle Creek, eighteen miles from Grangeville, by 1920, Golden by 1929, and Elk City in 1932 (Elsensohn, 1951, p. 430).

The Axis of Communication

The Elk City Stage Road could not compete with the new road along the South Fork, and it soon fell into a state of disuse. While the South Fork road was constantly improved, the old road received minimal upkeep. The South Fork road has received millions of dollars worth of improvements. The stage road, however, can be traveled in sections only by a four-wheel drive vehicle. Parts of the roadbed have suffered extreme erosion. The Forest Service plans to close large sections of it (Charles Nelson, interview).

In a period of about thirty years, the axis of communication shifted from the ridge tops to the valley floor, and utility lines followed the river route. Figure 4 (p. 20) illustrates this change. Once a barrier to transportation, the river valley is now a vital link in providing access to and from the South Fork region.

The Continuing Problem of Transportation

For many years, a primary concern of the inhabitants of the South Fork valley has been the improvement of the South Fork road. The valley residents view the road as the key to economic prosperity in the valley,
a theme dating back to the first miners. Upon completion to Elk City in 1932, the road was quite narrow and met only basic requirements. It was constricted by precipitous canyon walls and limited level land on the valley floor. Any further widening of the road would require large expenditures due to steep slopes which varied from solid granite to unstable slump areas.

Travel on the road increased sharply with the advent of commercial logging and growing travel by recreationists. During the logging season, the roar of logging trucks resounds through the valley from before dawn to after dusk. Along the unpaved sections of the road, dust hangs over the valley like a low-lying cloud. A potential collision lurks at every bend in the road as unsuspecting drivers travel up the valley. The danger of traveling the road twice a day was a factor in discontinuing the bussing of high school students to Grangeville (Marcum, et al., 1969, p. 38).

By 1969 an average of 270.6 vehicles per day traveled the Elk City road. Truck traffic was heavy and the number of accidents high. From 1965 to 1969, an average of 12,720 loaded trucks traveled down river per year. An average of 58 accidents per year were reported on the South Fork road for the same time period (Idaho County Free Press, May 21, 1970, p. 3). Clearly, traffic had increased to a point where the narrow, one-lane road was unsafe.

Demands to improve the South Fork road came from the valley inhabitants. Banded together, the "South Forkers" had a voice that could be heard in Boise and Washington, D.C. They found that they could literally embarrass the State of Idaho into action. By 1970 the South
Fork road became the number one priority for reconstruction in the state secondary road system (Idaho County Free Press, May 21, 1970, p. 3).

Road building in mountainous areas required engineering skill and environmental safeguards. The concepts of mountain geography are especially applicable. Oversteepening of slopes, damage to fragile mountain ecosystems, susceptibility to landslides, and river constriction are factors which must be considered.

The reconstruction of the South Fork road is a case in point. Initial projects put emphasis on building a wide, paved road regardless of environmental factors. Because of the narrowness of the gorge, slopes were oversteepened and the river constricted (Figure 2). The oversteepening of slopes led to increased erosion which added to the sediment load of the river. Landslides are common and, aside from being dangerous, greatly increase road maintenance costs. During the course of field work, two landslides were encountered, one of which could definitely be attributed to lightning.¹

Reconstruction of the South Fork road undermined serious efforts to restore anadromous fish runs. The constriction of the river increased the velocity of flow. This eliminated rest spots for the fish. Increased sediment load prevented the fish from spawning in the South Fork (U.S. Department of Agriculture, Forest Service, 1971b, p. 13).

Virtually no recreational activity occurs along the reconstructed portion of the road. Sandbars, which received heavy use by swimmers, have been washed away and deep pools, used by both swimmers and ¹The role of lightning as a geomorphic agent may be greatly underrated and deserves study.
Figure 2--Portion of South Fork road that has been reconstructed. The river bank has been rip-rapped and river flow constricted. Widening the road oversteepened the slope above the road. Lack of level land results in zig-zagging of utility lines. Picture taken October 30, 1972, when river was at low flow.
fishermen, obliterated. This part of the valley floor is aesthetically less pleasing than areas where the old road still remains. A comparison of Figures 2 and 3 illustrates the aesthetic differences of the old and new sections of the road.

Because of the problems encountered, there is a question concerning the standard to which the remaining portion of one-lane road should be improved. A modern, paved road is needed to give safe access to the valley, but the problems caused by construction of such a road may result in a compromise regarding width. Aesthetics and protection of the river will be weighed against the need of the valley inhabitants and tourists. The problem of what type of road should be constructed is not yet solved and remains one of the most important issues facing the valley.

Utilities

Telephone and electric power service reached the valley at a relatively early date. Early electric service was provided by generators located in Golden, Fall Creek, Elk City, and other areas. It was not until 1961 that the Washington Water Power Co power lines reached Elk City (Herbert C. Blewett, personal communication). Telephone service was inaugurated at Elk City in 1902, thirty years before the water-level road (Elsensohn, 1947, p. 175). Utility service was more extensive in the early days than it is today, indicating the presence of a larger population scattered about in the various mining camps at that time. Today, settlement is concentrated along the valley floor, and the inhabitants are served from one trunk line. Idaho Telephone Co. provides
Figure 3--Portion of South Fork road that has not been reconstructed. The road blends into the landscape. A series of pools and sandbars attracts fishermen, swimmers, and picnickers.
telephone service to just over 100 customers in the Elk City and Red River areas, and to approximately 20 customers along the river downstream from Elk City (Pacific Northwest Bell Company, 1972, p. 86). Washington Water Power Company provides electrical service on a 52.6 mile, 34,500-volt line to 22 customers in the river gorge, and approximately 550 customers in the Elk City and Red River areas (Cy Secor, interview).

The route of the utility lines is shown in Figure 4. Scale does not allow electric and telephone lines to be shown separately, but the lines closely parallel each other. Figure 4 reveals that the utility lines follow the river. Lines branch out from Elk City to outlying pockets of population. The lines are conspicuously absent from the settlements along the tributaries. People living along the tributaries either have their own generators or, more commonly, propane or kerosene lamps and appliances. A few of the valley residents who live beyond utility lines are semi-hermits. Most are, generally speaking individualists who prefer to live in a particular location regardless of modern conveniences. Subdivisions, especially in Orogrande and Newsome, may provide a future market for utility companies. The subdivisions are geared to attract tourists who will expect, and pay for, utility service.

Electrical service is provided to about five times as many customers as telephone service. A large number of vacation homes have electricity but no telephones. Some valley residents cannot afford telephone service and many feel no need for it.
The location and maintenance of utility lines in the South Fork valley also pose problems. Level land is too discontinuous to be utilized as a route up the valley. In places the lines are located on the hillsides above the river. In the most narrow part of the gorge they are suspended from steel rods drilled horizontally into the rock (Figure 5). Maintenance costs are high. Falling timber, rock slides, flooding, sleet, ice, and snow repeatedly damage the lines. The Forest Service has initiated plans to relocate the lines so they will not be visible from the road (Ed Laven, interview). In several instances, the lines zig-zag across the river in an unsightly manner (Figure 2, p. 16).

Telephone and electric service are provided more as a public service than for profit. The lines generate only about enough income to meet maintenance costs (Cy Secor, interview).

**Government Services**

Minimal government services are available in the South Fork valley itself. Only essential services such as postal service, road maintenance, and district ranger stations are provided. All county offices are located in Grangeville. No law enforcement officers are located in the study area. Other governmental agencies have offices in Grangeville or Lewiston (Table 1). The nearest Bureau of Land Management office is in Coeur d'Alene, and some state services are available only in Boise.

Postal routes are shown in Figure 4 (p. 20). One route serves people living along the Red and Crooked rivers. The Red River route continues to Dixie, a small settlement in the Salmon River drainage. Orogrande receives mail every other day, as on alternate days mail is
Figure 5—Huddleson Bluffs. The utility lines are suspended from horizontal steel poles. A heavy log truck rounds the bend.
delivered to Dixie (Grangeville Postmaster, interview). The valley is served by one post office located in Elk City. Many people who are not served by star routes receive mail there. Others have a mailbox located on one of the star routes. For example, Red River Hot Springs (Figure 4, p. 20) receives its mail at a box located near the Red River Ranger Station. By this method virtually all of the valley's inhabitants are able to receive mail.

TABLE 1
GOVERNMENT AGENCIES

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</tr>
<tr>
<td>Soil Conservation Service</td>
<td>Dept. of Labor</td>
</tr>
<tr>
<td>Selective Service</td>
<td>State Tax Commission</td>
</tr>
<tr>
<td>Nezperce National Forest Hq.</td>
<td></td>
</tr>
</tbody>
</table>

Sources: Pacific Northwest Bell Telephone Company, 1972 Lewiston-Clarkson Telephone Directory, and field observations.

Education

Education poses unique problems in the South Fork valley. School-age children are few in number and some are located many miles from the nearest school, again reflecting the pocketed pattern of settlement. A grade school has existed in Elk City since 1895 (Elsensohn, 1947, p. 166), but the region has never had enough students to justify building a high school. Until 1970 high school students were bussed to Grangeville, a three-hour round trip. Now high school students are required to board either in Grangeville (three students) or Kooskia (eleven students).
They receive a room and board allowance from the school district (Earl Vopat, interview). Out-migration has resulted from families leaving the area to avoid having their children away from home five days a week (Ernie Andersen, interview).

The upper South Fork valley is now served by a recently completed $250,000 elementary school building. Ninety-five students are taught by three teachers and two teacher's aides. Children living outside Elk City are bussed to school. School bus routes change from year to year depending on where school-age children live. In 1972 there were two bus routes to Elk City: one from Red River Ranger Station and one from Golden. A bus route from the Grangeville schools serves the children along the extreme lower South Fork within the study area (Figure 4, p. 20).

The new school in Elk City fulfilled a long existing need for upgraded facilities. The valley inhabitants are justifiably proud of their new school, and it has become the showplace of Elk City. The people feel that this was only the first step in providing first-class education for the South Fork valley. Establishment of a high school at Elk City is a local priority. However, limited future enrollment, high cost, and limited curriculum are primary considerations against establishing a high school there. It is felt by the school board that educational needs of students from the South Fork area can best be met by the high schools in Grangeville and Kooskia (Marcum, et al., 1969, pp. 35-36, 40). Still, the "South Forkers" persist in their demands for a high school.
Use of the River and River Corridor

In terms of categories of land use, the river valley was designated the "communication and river corridor" (Figure 18, p. 79). This is portrayed on the map as a wide, sinuous belt extending the length of the valley. Its width is greater than the valley bottom; it incorporates the lower part of the adjacent valley slopes. This illustrates the outstanding need to consider not only the valley floor but also the adjacent valley walls in any management considerations. The river corridor should be treated as one distinct unit. If recreation is kept in mind when planning road and utility routes, good roads and adequate utility service can lead to high-quality recreation. If timber harvesting is prohibited on the steep and fragile slopes adjacent to the corridor, high-quality recreation can exist in a heavily logged region. Protection of the valley walls and intelligent use of the valley bottom can result in a river corridor that would be safe to travel, could provide for high-quality recreation, and could be the key to the economy of the region.

Hydroelectric Power

In 1910 a dam was constructed across the lower South Fork to provide electricity to settlements on Camas Prairie (a plateau west of the South Fork) and as far downstream as Orofino. The dam's powerhouse had an original capacity of 624 kilowatts which was later boosted to 1,200 kilowatts. The generating capacity could not be further increased to meet rising power demands and the dam became outdated. The power was used as a standby source of electricity for Grangeville, later only for Main Street, and finally just for the hospital. The dam was removed in
1963 in an effort to restore anadromous fish runs (Idaho County Free Press, June 16, 1966, p. 5). If the dam were still in place today, its 1,200 kilowatts would barely meet the needs of Idapine Mills, Grangeville's largest power consumer (Cy Secor, interview). In an age where rivers are continually being dammed, it is gratifying to see a river restored to its original free-flowing state.

There are six potential dam sites on the portion of the South Fork within the study area (U.S. Department of Agriculture, Forest Service, 1971a, p. 23). Although it is not likely that dams will be constructed across the South Fork, the potential should be recognized. Future power demands may, at some time, be so great as to encourage the construction of hydroelectric power facilities here.

**Anadromous Fish**

The construction of the former dam across the South Fork eliminated anadromous fish runs. When the dam was removed in 1963, an attempt was made to reintroduce salmon and steelhead. A coho salmon project failed. Steelhead plants achieved somewhat more success and a limited catch is anticipated in the future. Chinook salmon have been planted, starting in 1971, and Fish and Game Department officials are optimistic about the success of this project (Stephen Hoss, personal communication).

The success of the efforts to reestablish anadromous fish runs is quite important to the Pacific Northwest fish industry. With more and more rivers being dammed (such as the North Fork of the Clearwater), the South Fork may become a vital factor in the fish industry and assume regional importance.
Success of the fish runs is dependent upon not only the absence of dams but also upon the condition of the riverine environment. Since the fish travel upstream during the period of high water, they are adversely affected by increased stream velocity caused by constriction of the river. Clear, rather than turbid, water is necessary for spawning. The efforts of the Fish and Game Department to reintroduce anadromous fish runs called attention to the damage done to the river and were responsible for efforts to improve its condition. If the South Fork is returned more nearly to its original state, it may be the result of the salmon's importance to man, not of man's concern for the environment.

Summary

The South Fork gorge was an obstacle to travel for many years. Early transportation routes developed on the adjacent ridge tops. The opening of a water-level route up the valley shifted the axis of communication to the South Fork gorge. Problems continue to exist with the location of utility lines and improvement of the road.

The pocketed, sparsely distributed population receives only essential services. Utility and postal service are available along the axis of communication and in a few outlying areas. All of the valley children receive an education, but high school students must attend schools outside the valley.

Analysis of the axis of communication and services has illustrated the need to utilize key concepts of mountain geography when studying mountainous regions. Special considerations are required when building roads and utility lines. Essential services are difficult to provide to
a pocketed, sparsely distributed population. Some services are available only in certain locations. The adjustments made to cope with the circumstances are generally not understood by outsiders. This gives rise to the backward image of mountain life.
CHAPTER III

THE VALLEY BOTTOM

The valley bottom assumes an importance that is quite disproportionate to its spatial extent. Here, on pockets of non-steep land, is the greatest concentration of human activity in the South Fork region. This chapter examines the distribution, population, and utilization of these pockets. In Chapter II it was pointed out that the river corridor is the pulse of the region. This is because man's activities are focused on the valley bottom.

Limited Area for Settlement

Over part of its course, the South Fork flows through a narrow, steep-walled canyon (Figure 6). The river occupies much of the valley floor. Nearly horizontal land is scarce and occurs as sinuous strips of floodplain and terraces. Many of these pockets of nearly horizontal land are subject to flooding and are not used for settlement. In some instances, however, parcels of floodplain are deemed so desirable for house sites that levees extend around them. Level land is so valuable to people living along the South Fork that houses are sometimes built on sloping land, and the level land is used for agricultural purposes. In parts of the gorge, bare bedrock forms bold cliffs. Landslides are common and settlement sparse in this area.
Figure 6—View of the South Fork gorge looking east. Level land on the valley bottom is scarce. Grassy expanses are found on adret slopes.
Along many of the South Fork's tributaries occur large meadows in rather broad structural basins. Ringed by smoothly contoured ridges and traversed by gracefully meandering streams, these alluring grassy expanses are the largest parcels of non-steep land in the valley. The smoothness of the extensive meadows contrasts sharply with the bold, rugged walls of the gorge in the lower valley. Since the meadows are valuable agricultural land and portions of them are wet and subject to flooding, only their edges are normally used for settlement. Here occur the largest population densities in the South Fork valley.

Land Ownership

Most of the South Fork valley is federally owned. Administration is shared by the U.S. Forest Service and the Bureau of Land Management. Mineral claims and blocks of private land are scattered nearly throughout the valley. The largest concentrations are in the Elk City vicinity and along the northwest edge of the study area (Figure 7).

Nezperce National Forest

Most of the land in the South Fork valley has been under government administration since the establishment of the Bitterroot Forest Preserve in 1897. The Nezperce National Forest was created in 1908 and given control of the area between the Lochsa and Salmon rivers (Cochrell, 1963, p. 13). Three ranger districts--Clearwater (headquartered in Grangeville), Elk City, and Red River--share administrative responsibility for national forest lands in the South Fork valley.

Areas around Elk City and Buffalo Hump were excluded from the forest in 1904 as mineral eliminations (Cochrell, 1963, p. 13). The Elk
City township is still privately owned except for portions which reverted to the Bureau of Land Management.

**Bureau of Land Management**

The Bureau of Land Management is responsible for much valley bottom land along the American River and the South Fork. This land was part of the Elk City Mineral Exclusion and reverted to BLM control after it was mined. The BLM also controls small parcels of land along the lower South Fork which reverted to public domain when homesteaders and prospectors gave up or died and had no heirs.

**Private Land**

The small blocks of private land appear scattered about the valley as tiny, rectangular pieces of a puzzle. Most of the private land is on the valley bottom. Occasionally parcels of private land extend some distance up the valley walls where ranchers utilize grassy slopes as pasture for their livestock.

**Mining Claims**

Numerous mining claims are scattered across the valley. Only those claims which are of sufficient size to be mapped at the scale used are shown in Figure 7. Some have appreciable vertical extent, denoting a hill or gulch claim on the valley wall. Staking claims became a means by which land could be obtained for uses other than mining.

**Population Distribution**

Population in the South Fork valley is highly concentrated. First, an overwhelming majority of the population is located on the valley floor.
Only eleven permanent households in the study area are located on the mountain slopes. Second, population upon the valley floor is strongly clustered. One hundred twenty-nine, or 75 per cent, of the households are located in or near Elk City. Other concentrations of population exist on the Red River meadows and along the lower South Fork.

**Historical Roots**

The current distribution of population reflects the location of old mining camps and claims. In most instances, these camps and claims represented temporary settlements. Miners lived where the pay dirt was located. Small settlements sprang up nearby to provide services. Miners moved on when their claims played out or when they received news of other bonanzas. However, claims were often sold or retained and passed on to later generations. These and the old mining camps form the basis of much private land in the valley.

Considerable land was homesteaded, either by disappointed miners or newcomers. Although some of the homesteads reverted back to the government when farmers gave up, many parcels still exist. These and the old mining claims and camps constitute all of the private land in the valley today.

**Current Patterns**

Population distribution in the South Fork valley illustrates the tenets of mountain geography set forth in Chapter I. Settlement occurs in spottily distributed pockets concentrated on non-steep land along the South Fork and its tributaries (Figure 8). Except for Elk City, these pockets are small.
Figure 8

POPULATION DISTRIBUTION

- PERMANENT
- TEMPORARY
- SEASONAL RECREATION

NUMBER OF HOUSEHOLDS

SOURCES:
1. Charles Nelson, City Ranger District
2. Eugene Norby, Red River Ranger District
3. Artie Rye, Clearwater Ranger District
4. Field Observations

DAVID H. HICKCOX 1973
Several clusters of population are situated along the Red River meadows. Most of these people are ranchers or work in the sawmills. Several families live at the Red River Ranger Station. Construction workers building a road from Elk City to Dixie also lived in this area during the summer of 1972.

A significant cluster of population is located along the lower South Fork just before it leaves the study area. An elevation below 2,000 feet insures a moderate climate. Pockets of level land adjacent to moderately to steeply sloping grassy slopes provides hay and pasture to support small-scale ranching. Many people living in this section commute to work in Grangeville, ten to twenty miles distant.

The old mining camps have ceased to function as towns. Orogrande has one permanent family which runs a store and lodge. A concentration of recreation homes is located there. Newsome also has one permanent family and several vacation homes. Golden has a larger permanent population than the other old mining camps as a result of its position on the Elk City road. A store-cafe-gas station-rental cabin business is located there and caters to the residents who live along the river and tourists traveling up the valley.

The Importance of Exposure. From the confluence of the American and Red rivers near Elk City to the point where the South Fork leaves the study area, all houses occupied year-round are situated on the north or sunny
side of the river.¹ Peattie, one of the few American mountain geographers, asserted that mountain people having a choice always live in the sunlight (Peattie, 1969, p. 188). This assertion holds true in the South Fork valley. It is significant that recreational houses are located on the ubac side of the river, but not houses occupied the entire year. During the summer when the vacation homes are occupied, the cool and shady locations are desirable. However, a person who lives in the valley the entire year seeks a location that is sunny during the winter months.

It may be argued that since the road was on the adret side, the houses were naturally built there. This could be true, but it is postulated here that the road was built on the north side of the river specifically because it was the sunny side.² The adret side of the river offered the route of least resistance. The forest was not as dense and snowpacks melted earlier. The most direct route up the canyon would have been the south side as the road came from Mt. Idaho, a few miles from the south bank on the edge of Camas Prairie. To reach Elk City the river could have been crossed near the confluence of the American and Red rivers, an easier crossing than in the lower gorge. In all likelihood the road was constructed on the adret side of the river because of the importance of exposure. Those people having a choice probably built their

¹Sunlight is so important to mountain inhabitants around the world that many languages have their own terms for sunny slope and shady slope. The English terms are a little awkward; the author prefers to use the French "adret" for sunny slope and "ubac" for shady slope.

²This generalization appears to apply to several valleys in northern Idaho. In almost every mountain valley investigated, the road was located on the adret side.
homes on the adret exposures. The net result was the location of both the road and settlement on the adret side of the valley.

A Myth Refuted. A common generalization about mountains is that population decreases with altitude. This is not altogether true. While a great proportion of the population is situated along the river on the valley floor, population actually increases with altitude! The 4,000-to 5,000-foot zone is more heavily populated than the lower regions. This is not the case in every mountain valley to be sure, but a combination of physical, economic, and social factors can result in population increasing with a rise in elevation.

Elk City

Elk City was established in May of 1861 near gold discoveries along the Red River. Word of the strike spread like wildfire and people striken with gold fever rushed to Elk City to fulfill their dreams of a bonanza. Four months later, in September, Elk City was a booming mining town with a population of 2,000. The boom was short lived, however, as word of new strikes in the Salmon River area and Montana siphoned off most of the miners.

Elk City's population fluctuated over the years in response to the ups and downs of mining activity. Table 2 lists Elk City's population from 1861 to 1972. Some figures, such as 2,000 people in 1861, are estimates from early observers. Others are based on census reports which include people living near, but not actually in, Elk City. The 1972
figure is based on the number of permanent households in Elk City multiplied by a family coefficient of 2.99.\(^3\)

### TABLE 2

**POPULATION OF ELK CITY, IDAHO, 1861-1972**

<table>
<thead>
<tr>
<th>Year</th>
<th>Population</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>1861</td>
<td>2,000</td>
<td>Wells, Rush to Idaho</td>
</tr>
<tr>
<td>1863</td>
<td>372</td>
<td>&quot;</td>
</tr>
<tr>
<td>1864</td>
<td>198</td>
<td>&quot;</td>
</tr>
<tr>
<td>1885</td>
<td>500</td>
<td>Elsensohn, Pioneer Days in Idaho County, Volume 1</td>
</tr>
<tr>
<td>1888</td>
<td>412</td>
<td>&quot;</td>
</tr>
<tr>
<td>1893</td>
<td>400</td>
<td>&quot;</td>
</tr>
<tr>
<td>1900</td>
<td>252</td>
<td>Twelfth Census of the U.S., 1900</td>
</tr>
<tr>
<td>1910</td>
<td>296</td>
<td>Thirteenth Census of the U.S., 1910</td>
</tr>
<tr>
<td>1920</td>
<td>116</td>
<td>Fourteenth Census of the U.S., 1920</td>
</tr>
<tr>
<td>1930</td>
<td>163</td>
<td>Fifteenth Census of the U.S., 1930</td>
</tr>
<tr>
<td>1940</td>
<td>236</td>
<td>Sixteenth Census of the U.S., 1940</td>
</tr>
<tr>
<td>1950</td>
<td>157</td>
<td>Seventeenth Census of the U.S., 1950</td>
</tr>
<tr>
<td>1972</td>
<td>320</td>
<td>Field Observations</td>
</tr>
</tbody>
</table>

After the initial boom of 1861, Elk City's population dropped sharply. By 1864 the easy gold had been extracted and most of the miners had moved on to new bonanzas. In the late 1890's and early 1900's, hard-rock mining developed, which boosted the population. The decline of population in the 1920's and 1930's can be attributed to the general lack of mining activity. From about 1935 until World War II, large-scale dredging provided a boost to Elk City's population (Elsensohn, 1970).

\(^3\)The United States Census of Population: 1970, General Population Characteristics, Idaho (p. 14-69), determined a family coefficient of 2.99 for an area roughly 1½ times the size of the study area and centered on Elk City. This figure compares with a family coefficient of 3.61 for the state of Idaho and 3.57 for the United States.
Elk City's current population indicates the town's role as the upper South Fork valley's service center.

Of all the old mining camps in the South Fork valley, Elk City is the only one that has survived as a town. Orogrande, Newsome, Fall Creek, and Golden had populations of as much as a few hundred in their heyday, complete with post offices, telephones, and electricity. When the mines played out the towns died. Elk City was in a central position in relation not only to the remaining mines, but also to the developing lumber, agricultural, and recreation industries. Elk City became a modest service center for a small hinterland and it was thus able to continue its existence.

Several new houses, some new business establishments, the new school, and the ranger station give an impression that this is not a dying and decaying mountain settlement living in memory of its past, but a viable community looking to its future. Elk City is the focal point of the South Fork valley. It is the hub from which roads radiate outward to isolated pockets of settlement. Grocery stores, gas stations, cafes, and the like form the core of this exceptional community perched at an elevation of 4,000 feet near the backbone of Idaho.

Figure 9 shows a view of Elk City in 1908. This can be compared with Figure 10, a recent photo taken from nearly the same point. The basic character of the town has greatly changed over the years.

**Population Density**

Determining the population density of mountainous areas poses a dilemma. How should it be calculated? The traditional method of
Figure 9--Elk City in 1908 (photo courtesy Nezperce National Forest, Grangeville).
Figure 10—Elk City in 1972. Old building in extreme left may be the same building in the left of Figure 9.
dividing the number of inhabitants by the total area can produce a population density that is meaningless in geographic analyses of mountains. The "traditional" population density of the study area is 0.83 persons per square mile. This figure, which is characteristic of much of the Mountain West, seems to suggest a sparsely inhabited mountainous area containing a few backward hillbillies, lots of mountain goats, and little else except trees and rocks. Peattie (1969, p. 152) suggested:

The density of mountain population then should be considered as the number of persons divided not by the total area of the mountain zone but by the area of the inhabited portion. The density of population in mountains considered in this manner proves to be very high.

Dividing the number of inhabitants residing on level or only gently sloping land by the total amount of such land gives a more meaningful figure--34 persons per square mile. It should be remembered that Elk City's 320 inhabitants influence the figure considerably. Without Elk City the density would be 12.7 persons per square mile of level or only gently sloping land. The above figures of population density are quite helpful in pointing out that, in what is generally a sparsely inhabited region, pockets of settlement tend to be rather dense.

**Occupational Structure**

The occupations of heads of households in the South Fork valley are listed in Table 3. The heads of households are classified as to whether they live on the valley bottom or upon the mountain slopes. Permanent residents are distinguished from those who work in the valley for only a short period. People who live outside the valley but work in it are included. Those who live in the valley part of the year for
TABLE 3

OCCUPATIONS OF HEADS OF HOUSEHOLDS AND TEMPORARY RESIDENTS, SOUTH FORK VALLEY

<table>
<thead>
<tr>
<th>Occupation</th>
<th>Valley Bottom</th>
<th></th>
<th>Mountain Slope</th>
<th></th>
<th>Other(^a)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Permanent</td>
<td>Temporary</td>
<td>Permanent</td>
<td>Temporary</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lumber &amp; Wood</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Logger</td>
<td>21</td>
<td>-</td>
<td>-</td>
<td>23</td>
<td>25(^b)</td>
<td>69</td>
</tr>
<tr>
<td>Sawmill emp.</td>
<td>49</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>49</td>
</tr>
<tr>
<td>Government</td>
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</tr>
<tr>
<td>U.S.F.S.</td>
<td>24</td>
<td>43</td>
<td>-</td>
<td>2</td>
<td>22</td>
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<tr>
<td>State Highway Dept.</td>
<td>4</td>
<td>-</td>
<td>-</td>
<td>-</td>
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<tr>
<td>Self employed</td>
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</tr>
<tr>
<td>Rancher</td>
<td>11</td>
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<td>1</td>
<td>-</td>
<td>-</td>
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<td>-</td>
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<td>Education</td>
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<td>-</td>
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<td>-</td>
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<td>-</td>
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<td>Commuter</td>
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<td>Truck driver</td>
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<td>-</td>
<td>-</td>
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</tr>
<tr>
<td>Clerk</td>
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</tr>
<tr>
<td>Mechanic</td>
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<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>Mine manager</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
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<tr>
<td>Minister</td>
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<td>-</td>
<td>1</td>
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<tr>
<td>Welfare</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>TOTAL</td>
<td>168</td>
<td>84</td>
<td>11</td>
<td>25</td>
<td>47</td>
<td>335</td>
</tr>
</tbody>
</table>

\(^a\)Worked in the South Fork valley but lived outside it.

\(^b\)This figure is an estimate based on available figures and field observations.

Sources: Ernie Andersen, Red River District Ranger; Charles Nelson, Elk City District Ranger; Jean Nelson, Shearer Lumber Company; Jack Olson, Idapine Mills; Arnie Royce, Clearwater Ranger District; Personal observations and interviews.
recreational purposes are not considered. The table is based on a survey of each household in the South Fork valley. Data were obtained from field observations, interviews, and with assistance from the Forest Service and private corporations.

**Permanent Households**

Table 3 points out that an overwhelming majority of permanent households are situated on the valley bottoms. Population on the mountain slopes is significant only in the extreme lower portion of the valley. Here several people live on the grassy slopes and commute to work in Grangeville.

Employment in the logging and forest products industries is foremost in the valley. Shearer Lumber Co. is the largest single private employer. Its forty-four employees have a monthly average payroll of $40,000.00. The mill engages a logging contractor to cut its logs, accounting for another thirty-five jobs. Three drivers are employed to haul the lumber out of the valley (Jean Nelson, interview).

For the most part, bars, cafes, grocery stores, and the like are family owned. Table 3 lists only the owners of these establishments and not the family members who may work in them.

**Temporary Residents**

Many people worked in the South Fork valley on a temporary basis. These workers fell into three categories: Forest Service employees, construction workers, and loggers. The number of people involved fluctuates within wide limits, both seasonally and yearly. Several road
construction projects considerably increased the total temporary employment in 1972.

**Overall Importance of the Forest Products Industries**

A total of 118 permanent and temporary residents are employed by the logging and forest products industries. This represents 37 per cent of the total figure. If the Forest Service is included in this figure, then almost 60 per cent (59.9) of the valley's permanent and temporary residents are dependent in some way on the forests for their livelihood. This helps to explain the large number of people living on a small amount of level land. The level land is not sufficient by itself to support such a population, requiring the "South Forkers" to look to the mountain slopes for sustenance.

**Role of the U.S. Forest Service**

The U.S. Forest Service plays a major role in the South Fork valley. Its impact on the economy is multi-faceted. The Forest Service employs several valley residents on a full- or part-time basis. It also generates employment indirectly through contracts. It regulates timber sales, grazing permits, mining, and much of the recreational development and road construction. Almost one million dollars is spent annually in the administration of its land in the South Fork valley.

Table 4 lists employment, value of contracts let annually, and approximate budget for fiscal year 1973. It illustrates the direct impact the Forest Service has on the local economy.
TABLE 4
FOREST SERVICE EMPLOYMENT AND EXPENDITURES

<table>
<thead>
<tr>
<th>Ranger District</th>
<th>Employees</th>
<th>Estimated value of contracts let annually</th>
<th>Estimated budget, FY 73</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Permanent</td>
<td>Summer</td>
<td></td>
</tr>
<tr>
<td>Elk City</td>
<td>13</td>
<td>21</td>
<td>$200,000</td>
</tr>
<tr>
<td>Red River</td>
<td>11</td>
<td>23</td>
<td>70,000(^b)</td>
</tr>
<tr>
<td>Clearwater</td>
<td>11(^c)</td>
<td>23(^c)</td>
<td>200,000</td>
</tr>
<tr>
<td>TOTAL</td>
<td>35</td>
<td>67</td>
<td>$470,000</td>
</tr>
</tbody>
</table>

\(^a\)Contracts let are for thinning, planting, dozer piling, brush work, and road construction.

\(^b\)Figure is for portion of district located in study area.

\(^c\)The Clearwater Ranger Station is located outside the study area in Grangeville. Only one of its summer employees and none of its permanent employees lived in the study area.

Sources: Ernie Andersen, Red River District Ranger; Charles Nelson, Elk City District Ranger; Arnie Royce, Clearwater Ranger District.

Of the Nezperce National Forest's total annual revenue, 25 percent is given to Idaho County under the revenue-sharing program. In 1970 this amounted to $342,120.46 (U.S. Department of Agriculture, Forest Service, 1971a, p. 10). Idaho County is quite dependent on this income to provide essential services to the South Fork valley and to other parts of the county.

Nearly every sector of the valley's economy is affected, in one way or another, by the Forest Service. The livelihood of the valley residents is essentially dependent upon it. This leads to conflicts between the Forest Service and the valley's inhabitants, an independent and conservative lot. Ill will is easily generated.
The tastefully landscaped ranger stations, with their carefully tended lawns and freshly painted houses, contrast sharply with most of the other buildings of the valley, many of which are haphazardly located and sometimes delapidated. This contrast illustrates the division between the Forest Service and the valley's inhabitants. The relationship might be compared to a landlord-tenant one. The personalities and attitudes of the district ranger and his staff can assume an important role in this relationship. The Forest Service does not always recognize this fact and failure to do so can lead to serious problems.

**Land Use and Environmental Impacts**

Land use on the valley bottoms is intensive. The scarcity and spottiness of level land requires man to focus his energies on a small area. Careful organization of space is necessary to compensate for this lack of level land. Land utilization is intricately related to the mountain slopes and many land uses would not exist in their present form if it were not for the adjacent mountains.

Every piece of level land in the South Fork valley has, at one time, been used for ranching, farming, or mining. Picturesque log cabins and outbuildings in various states of disrepair attest to the dreams of people long departed. Deer and elk graze in abandoned pastures where cattle once dotted the landscape and sourdoughs panned for gold.

**Placer Mining**

With the exception of high-level placer pits and strips along steep, narrow tributaries, placer mining occurred on the valley bottom
The placer miners were harsh to the land. In their lust for gold, they stripped the land of soil and left huge piles of sterile gravel. Large dredges, left in place when gold prices fell, are crumbling monuments to the spell which gold casts on man. Placer mining in the South Fork valley occurred in four distinct stages: (1) the initial gold rushes, (2) the Chinese years, (3) early dredging, and (4) modern dredging.

**The Initial Gold Rushes.** The initial rushes for gold took place in the 1860's. This is the period that matches the romantic notions of the "Old West." Saloons, dance halls, vigilantes, stagecoach robberies, and hangings were all a part of daily life during this period.

On the average, half the miners worked their own claims and the other half worked for wages on claims owned by others. Few became wealthy. Some were able to save money, but these men were the exception rather than the rule. Placer mining in the 1860's was a tenuous proposition. The cost of living was extremely high. Miners had to clear trees, brush, and overburden from their claims and pay high prices for labor, mercury, and sluices (Wells, 1961, pp. 18, 37). Due to high water, the miners often had to wait until July to mine their claims. It is no surprise then, that many miners left the South Fork valley when word was received of new strikes in Montana.

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4Flour and butter sold in Elk City for $1.00 per pound and bread for $1.50 a loaf (Brattain, no date, pp. 27, 33).
The Chinese Years. The period from about 1870 to 1890 was a time when the population of Elk City was almost entirely Chinese. Frugal and hardworking, the Chinese were called by many the best placer miners of all. They worked over diggings abandoned by the white man and were able to make a profit where he had not.

To protect their claims from being jumped by white men, the Chinese would hire a white man, known as a "China herder," to assert ownership of the claim. In 1889 a territorial judge decreed that aliens could not hold mining claims, and the Chinese influence in placer mining came to a quick end (Elsensohn, 1947, pp. 165, 172). The Chinese left their mark on the land. Places such as China Point, Box Sing Creek, China Creek, and Sing Lee Creek recall their role during this period. Some Chinese became local celebrities and were regarded with respect and affection.

Early Dredging. From the 1890's to the early 1900's, much mining was performed by dredging and hydraulic hoses. The early dredges were inefficient, unsophisticated, and not very profitable. Most of the mining during this period was on high-level Tertiary gravels located on the mountain slopes and is discussed in Chapter IV.

Modern Dredging. In the 1930's the development of the small bucket dredge and the dragline plant, together with rising gold prices, ushered in a period of large-scale dredging. Production rose from 153 ounces of gold in 1930 to 17,432 ounces in 1933 (Lorain & Metzger, 1938, p. 8). This type of dredging abruptly halted when the price of gold was frozen during World War II. Attempts to revive dredging were made during the 1950's. Today, two dredges can still be seen where they stopped operation.
Several individual, small-scale attempts at dredging have been made over the past few years and have proven unprofitable. The rich deposits have been worked over and high prices for equipment and stringent mining laws make this type of mining difficult. During the summer of 1972, a part-time dredging activity was operated on a very small tributary of the Red River. The site was observed numerous times but never seen in operation. The Forest Service and state of Idaho are attempting to stop the operation to prevent further stream damage and siltation (Eugene Norby, interview).

Aftermath of Placer Mining

Placer mining severely altered the landscape. Reid (1960, p. 9) calculated the total volume of dredged ground to be 24,263,000 cubic yards. Piles of gravel, devoid of organic material, sometimes stretch for miles.

The South Fork and its tributaries still show the effects of dredging. Silt content is high during the spring runoff period. The watershed is in such a fragile condition that the river will flow muddy for twenty-four hours after a summer thunderstorm.

Dredging completely disrupted the natural habitat of fish in part of the South Fork and its tributaries. This has been a major concern of the Idaho Fish and Game Department which has worked hard to restore recreational fishing and anadromous fish runs. Although fishing in much of the river is good to excellent, the habitat degradation is still quite apparent (Stephen Hoss, personal communication).
Placer mining formed the basis of settlement in the South Fork valley. The rich placers provided the impetus for settlement. Current patterns of population distribution and land ownership can be traced directly to the placer mining days.

Rehabilitation of Dredge Tailings. Placer mining and dredging in the valley bottoms led to the removal of much of the silt in the valley deposits and left in their wake heaps of sterile gravel. What can be done with these gravel piles? Ideally the river should be restored as nearly as possible to its original state, as in the left photo of Figure 11. A few restoration attempts have been made, for example, along portions of Newsome Creek, illustrated in the bottom right photo of Figure 11. This area is unattractive and generally useless. Most dredged areas have not been subjected to any restoration attempts. In Figure 11 the top right photo shows such an area along the Crooked River. Although the author finds dredge tailings to be aesthetically unpleasing, he thinks the undisturbed and partially revegetated tailings, as in the top right photo of Figure 11, to be less undesirable than the leveled area. Soil has developed in some areas, supporting a thick growth of grass. The stream course has been altered so it meanders through the tailings. Pools form at the meanders creating excellent trout habitat. Excavated areas along the river become filled with water that percolates through the gravel. Marsh vegetation is abundant. Surprising though it may

5This area is about one mile from the top photo.

6A similar area along the Crooked River is used as an airstrip by vacation homeowners.
Figure 11—Left, undredged area of Newsome Creek; top right, dredged area of Crooked River; bottom right, "reclaimed" portion of dredged area of Newsome Creek.
seem, so are ducks and moose. The edges are quite suitable for camping, and this area is heavily used by recreationists although no developed campgrounds are located here. Paradoxically, where man has made the least efforts towards restoration of the dredged areas, the most progress has been made. These areas have the potential to relieve the pressure on overcrowded recreational sites with minimal expense. Unfortunately, many dredge tailings are privately owned, and the gravel piles actually have "For Sale" signs on top of them.

**Ranching**

Like other mountain areas, the South Fork valley is difficult for ranching. Non-steep land for hay production is scarce and spottily distributed, and productivity of the mountain-slope rangelands is low. In the upper reaches of the valley, the growing season is just over ninety days. Frost can occur on any given day (Ernie Andersen, personal communication). The valley is not suited for a large variety of crops. Farming is almost nonexistent, but small ranches exist. These are centered on the Elk and Red River meadows (Figure 12).

Lack of non-steep land has hampered development of the ranching industry. The upper Red River meadow is Forest Service land and is available for grazing from about June 1 to September 30. The remaining meadows are owned by several different individuals. It is difficult for a rancher to own enough non-steep land to support a large herd. Some ranchers are able to run over 100 cattle, but most of them own fifty or less. Only a few ranchers winter their cattle in the study area.
Figure 12--Elk City and Elk Meadow. Elk City Ranger Station just out of view to the left. The hayfield has been recently mown and is now used as a pasture.
Of the sixteen valley residents who engage in any type of ranching activities, only seven do so on a full-time basis. Four of the seven combine ranching with outfitting. The other nine supplement their ranch income with revenue from other jobs.

The number of horses in the valley has increased sharply due to the growing popularity of hunting and pleasure riding. Some pastures are now used exclusively by horses. The number of horses should increase in the future at the expense of cattle.

Full-time ranching in the South Fork valley is on a decline. The ranchers face several problems. Grazing permits are being diminished in favor of other uses. In the upper Red River meadow, recreation and use as big-game habitat (the upper part of the meadow is an important elk calving area) have priority over forest grazing in management considerations. Many of the meadows, being the only private land in the area, will probably be subdivided for recreational home lots. The economic gains from subdivision are far greater for the landowner than yearly returns on ranching operations. One ranch will be subdivided soon, and others will probably follow.

Cattle will face competition from horses. As recreational usage increases, demand for the services of outfitters will increase. More land will be grazed exclusively by horses. Some ranchers may abandon their cattle operations in favor of full-time outfitting.

A few ranches may be bought by outsiders who will continue ranching operations as a hobby. Two gentleman ranches are located in the valley. There is little prospect for corporate ranching.
Most of the ranchers are old. With the possible exception of those engaged in outfitting, it is not likely that their offspring will follow in their footsteps.

The best allocation of resources may favor the continuation of ranching and outfitting on all the privately owned meadows. A land-use capability study would probably reveal that only the edges of the meadows are suitable building sites. Large portions of the meadows appear to be poorly drained and some have been developed on peat. This would preclude most land uses except pasture and hay. Ranching is a colorful business that hopefully will continue to play a role, although a minor one, in the South Fork valley's economy. The sight of cattle peacefully grazing in the meadows against a backdrop of dark green forest is long remembered by visitors to the area.

Recreation

Recreation in the South Fork valley is concentrated on the valley bottom and is almost entirely water orientated. Those people engaged in recreation on the mountain slopes often use the campgrounds along the river as a base or "jumping off" point.

Recreation Activities. During the summer months the valley bottoms are heavily utilized by recreationists. Fishing, swimming, and camping are the most popular activities. They are concentrated in the South Fork gorge where deep pools are bordered by large sandbars. Picnic and camping areas occupy the level and shady terraces. During the hot summer months people flock to the South Fork. At times as many as 100
swimmers are crowded onto a single sandbar. Concentrations of recreationists also occur in the upper Red River valley.

The Riverside Campgrounds. The Forest Service has developed several sites for use by recreationists (Figure 18, p. 79). Along the lower South Fork are three small campgrounds and three picnic areas. In addition there are several sites used for camping and swimming which are undeveloped. The upper and middle reaches of the South Fork gorge do not have any developed recreational sites. This is attributed to a lack of non-steep land and desirable swimming holes. Three campgrounds as well as a privately owned hot springs with overnight facilities are located along the upper Red River. Several undeveloped campsites are also located along this stretch of the river. All the valley bottom recreational facilities are located in the montane and subalpine zones. None are located in the subhumid parkland zone due to scarcity of shade and intense summer heat.

The campgrounds on the lower South Fork have a different function than those along the Red River. Many of the campers at the lower (Castle Creek, South Fork, and Meadow Creek) South Fork campgrounds were transitory. They stopped at these areas on their way to destinations further up the valley or in another area altogether. These campgrounds are marked on virtually every Idaho highway map available at gas stations, and they are the only National Forest campgrounds between the Salmon River and the Lochsa River. Many people detoured up the South Fork just to find a campsite for a one night stay. Also, these campgrounds are located in a more spectacular setting than the Red River.
campgrounds and were preferred for that reason. In late July and August, many retired couples from Lewiston came to these areas to escape the summer heat. They preferred the lower campgrounds because they were more accessible.

The South Fork campgrounds have a restful quality that makes them attractive. The forest provides a shield from the hot summer sun. One can sit in cool contentment listening to the wind blowing through the trees and watching the water rush and tumble down the valley. It is this quality of peaceful relaxation that the Forest Service will be hard pressed to maintain.

The Red River campgrounds are attractive for three reasons: easy fishing, the Red River Hot Springs, and the availability of trails suitable for trail bikes. In short, there is something for every member of the family. A typical husband might send his wife and kids off to the hot springs to swim, and, if he had sons with trail bikes, he might send them roaring off over the hills. He would then be free to fish, with a catch almost a certainty. The river is small, not more than ten feet wide in its upper reaches, and continually stocked with ready-to-catch trout. Even the most inexperienced fisherman returned to camp with trout in his creel.

**Provenance of Campers.** The South Fork valley does not have any natural attractions of regional or national significance. It is overshadowed by nearby areas such as the Seven Devils Recreation Area, Hell's Canyon, the Salmon River ("River of No Return"), the Selway River, and the Selway-Bitterroot Wilderness Area. This is reflected in an analysis,
based on observation of license plates, of the home state, and, in the case of Idaho, the home county of the people camping on the valley bottom (Figure 13).

Fifty-two per cent of the 117 camping parties observed during the summer field work were from Idaho. Eighty-nine per cent of these were from northern Idaho. Only one Idaho county south of the study area was represented with more than one party. That was the county in which Boise, the state's largest city, is located. Campers from Idaho came from nearby areas. The dominance of Lewiston, in Nez Perce County, as a source of campers is clear. People from Idaho County, in which the study area is located, generally did not camp in the valley but did fish and swim in the South Fork in great numbers. Almost all of the campers from Idaho had previously visited the South Fork. They return weekend after weekend and year after year. Familiarity with an area and knowing in advance where suitable camping spots are located are important factors with returning campers.

The out-of-state visitors came primarily from Washington (44 per cent) and California (26 per cent). These two states are the most populous states in the Far West. Their recreational facilities are crowded and, in some cases, lack unspoiled characteristics. The South Fork valley is in close proximity to eastern Washington and can be reached in a long day's drive from California. It is suspected that similar areas in Idaho and western Montana receive a similar proportion of visitors from the two states.

The remainder of the out-of-staters had visited the area before and returned because of their fondness for the South Fork valley. The
PROVENANCE OF VALLEY BOTTOM CAMPERS

Figure 13

David H. Hickcox 1973
campers from Montana came to Idaho to visit friends living near the valley.

Motivation for Camping. Aside from the transitory campers, the true objectives of campers in the South Fork valley are difficult to perceive. The "get-away-from-it-all" reason for camping is, in the author's view, a nebulous concept. Sixty-five per cent of the campers had equipment which offers many of the comforts of city living (Appendix A). These include plumbing, range, refrigerator, and even television. In addition, many tenters aspired to this method of camping but were not yet financially prepared to invest in the necessary equipment. With trail bikes roaring, chain saws buzzing, radios blaring, engines running to recharge batteries, babies crying, kids screaming, and wives nagging, the camper has brought the noise and smell of the city with him. A crowded campground has many things in common with a crowded city block.

Why then is camping so popular? It is the opinion of the author, based on his observations, that "materialistic sociability" is the driving force of the majority of campers. Simply stated, this means that camping is an outlet by which new mechanical devices can be purchased, discussed, compared, and tinkered with. People are also gregarious and many friends camp together. Those that don't usually become friends with their camping neighbors.

Camping seems to provide a social outlet that was once found in the city neighborhood. People can no longer satisfy many social needs in the city. Many have found that camping provides some of the desired
outlets. This appears to be a primary objective, subconscious though it may be, of many recreationists in the South Fork valley.

The Forest Service is not very aware of the needs and objectives of the South Fork recreationists. The ideas put forth in this section need further study. The perceptions, values, and attitudes of recreationists need to be understood. Roston (1970, p. 37) stated:

Because value systems, experience and attitudes vary among individuals, there are likely to be considerable variations in perceptions of recreational opportunities, and so of the uses that are made of them. Understanding of the factors which influence perceptions, values, and attitudes, therefore could lead to considerable improvements in methods of forecasting the demands for outdoor recreation.

Studies of recreationists' motivations must consider that there is more to recreation than the on-site experience. Clawson (1963, p. 40) recognized five stages of recreational experience: (1) anticipation, (2) travel to site, (3) on-site experience, (4) travel home, and (5) recollection. Anticipation included choice of activity, choice of site, diffusion of information, perceived quality of recreational experience, and sociological influences. Clearly, recreational studies, such as needed for the South Fork valley, must take these factors into consideration. The motivation of the individual recreationist is the key to understanding demands placed upon the South Fork's recreational resources.

The South Fork valley is admirably suited to roadside recreation. Careful management is needed, however, to insure that high-quality recreational experiences remain available. Recreation can be an important segment of the valley's economy, but only if the valley remains attractive to tourists.
Seasonal Residences. Table 5 lists the seasonal residences in the South Fork valley. The mining claim cabins are, for the most part, used for recreation. The table reveals two main points: (1) the low number of such residences in a region heavily used by recreationists, and (2) their concentration on the valley bottom rather than on the mountain slopes.

**TABLE 5**

<table>
<thead>
<tr>
<th>Type</th>
<th>Valley Bottom</th>
<th>Mtn. Slopes</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recreational</td>
<td>44</td>
<td>2</td>
<td>46</td>
</tr>
<tr>
<td>Mining claim</td>
<td>5</td>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td>Outfitting</td>
<td>2</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>51</strong></td>
<td><strong>6</strong></td>
<td><strong>57</strong></td>
</tr>
</tbody>
</table>

Sources: Charles Nelson, Elk City District Ranger; Arnie Royce, Clearwater Ranger District; field observations.

The low number of recreational residences is attributed to two factors. First, almost all of the mountain slopes are Forest Service land and not available for home sites. Secondly, the level land in the valley bottom is used for agriculture or as house sites for year-round residents. This will change, though, when agricultural land is subdivided.

Table 5 shows that 89 per cent of the residences are located on the valley bottom. This is ascribed to the location of almost all private land along the valley bottom. Many homesteads or mining claims have become sites for recreation cabins. The concentration of recreational cabins along the South Fork and its tributaries is shown in
Figure 8 (p. 35). The location of recreational homes in the old mining settlements on the tributaries of the South Fork is easily discernable.
CHAPTER IV

THE MOUNTAIN SLOPES

The mountains in the South Fork drainage are part of the rather vaguely delimited Clearwater Mountains. The resource potential of these mountains was recognized by the late 1880's. An enthusiastic newspaper reporter wrote in 1888:

And here within a stone's throw of the railways, in easy situation to be got at, there are cedar, red fir and yellow pine enough to boom the world with the cheapest and best lumber to come. It only requires the extension of existing thoroughfares for a distance of about 100 miles to penetrate this region, and open up thereby the avenues of fortune to thousands of people, and supply the people with an indispensable article of commerce.

And considering also that a few miles up to the mountain range, there is a great mineral belt running along side this timber belt, where placers and quartz ledges abound with gold, and which have been gouged at by single-handed miners for 26 years past--taking all these things into consideration, it must soon attract a busy hive of human industry and skill, such as but few localities are now left with such magnificent offerings.

The first railroad that penetrates the Clearwater country will discover these vast timber resources to the world, and what with lumbering and mining and settling of the area, this will become the busiest portion of the northwest. This is no idle conjecture - inasmuch as the three greatest resources of modern civilization - timber, land, and mines - lie here together with, also, the finest wild range the world affords (Idaho County Free Press, March 16, 1888, p. 1).

Landforms

Fenneman, in his Physiography of the Western United States, described the Clearwater Mountains as being:

... not arranged in lines, hence have no trend and no dominating crest, only a multitude of minor crests running in all
directions between the streams of a mature drainage system. Neighboring divides are in general of nearly uniform height. In a wide view so many of these crests fall into nearly the same plane so that the skyline in many cases is almost horizontal though the valleys may be very steep and from 1,000 feet to a mile in depth (p. 183).

This description admirably fits the view presented in Figure 14.

Figure 15 presents four broad categories of landforms into which the valley was divided: floodplain and terraces, foothills, unglaciated mountain slopes, and glaciated mountain slopes. The map shows the pattern of these landform types and vividly illustrates one of the capital traits of the valley: an overwhelming majority of the study area consists of mountain slopes, most of which are steep.

The four categories fall into a rough vertical arrangement (profile, Figure 15). The level areas adjacent to the rivers and streams are the lowest. The small areas of foothills are just above the level areas. Unglaciated mountain slopes rise above the foothills, and glaciated mountain slopes are the highest of all.

The nearly horizontal floodplain and terraces consist of alluvial and fluvio-glacial deposits and provide the areas used for settlement and placer mining, as described in the preceding chapter.

Foothills are of very limited extent and are situated on the edges of some of the large meadows. They have little importance in the overall physiographic picture.

The higher parts of the mountain ridge along the south side of the valley, between Gospel Peak and Buffalo Hump, were glaciated during the last Ice Age. The limits of glaciation in the larger valleys extend down to about 5,500 feet. The remaining mountain slopes were not
Figure 14—General appearance of mountain slopes with accordant summits and deep canyons. An adret slope is at right and clearcuts are spread across the slopes.
LANDFORM TYPES

- Floodplain and Terraces
- Foothills
- Unglaciated Mountain Slopes
- Glaciated Mountain Slopes

Figure 15
glaciated. Elevations commonly attain 7,000 feet and, in some areas, higher. Figure 14 illustrates the nature of the slopes and ridge tops.

There are several types of rocks and deposits that make up the mountains. These are, in order of areal extent, granite of the Idaho batholith, gneisses of the batholith border zones, portions of the Belt or Belt-equivalent series, Columbia Plateau basalts, and glacial deposits (U.S. Geological Survey and Idaho Bureau of Mines and Geology, 1959). The batholithic rocks give the area the characteristics noted by Fenneman. The gneisses of the border zones and the quartzites and schists of the Belt and Belt-equivalent series correspond to the highly mineralized zones. The Columbia Plateau basalts are in contact with the granitic rocks of the batholith along the northwestern boundary of the study area. This is the only area where population on the mountain slopes occurs in significant numbers.

The Forests

A dense forest covers the study area like a dark green carpet broken only by subnival peaks rising above the forest and bedrock cliffs in the gorge below. Visitors to the area speak in terms of a primeval forest, a virgin wilderness. This is far from the truth.

Man's Impact

Bits of evidence suggest that man had a hand in altering the forest character long before he thought of trees in terms of board feet. Leiberg (1900) studied the old Bitterroot Forest Preserve in the 1890's when it was still possible to differentiate between fires caused by
white men and those of an earlier date. He stated that fires which can be attributed to the Indians seem to have originated along the lines of the old Indian trails. Leiberg found evidence that white pine, grand fir, and western larch covered most of the South Fork basin before the Indian-caused fires. He concluded that these fires resulted in "bald" mountain tops, some grassy adret slopes, and a sharp increase in the abundance of lodgepole pine. The first white men to visit the area, the miners, increased the number of fires, Leiberg calculated, by 300 per cent. He found that in the 1890's the forests of the South Fork basin were 82 per cent lodgepole pine.¹ He stated that the fires had caused:

... almost total obliteration of the forest types that essentially belong to the various altitudinal zones, and the substitution therefor [sic] of a uniform, nearly pure, lodgepole pine growth (p. 381).

Leiberg may have erred in attributing the origin of a great many fires to the Indians. The study area is in one of the regions most prone to natural forest fires in the United States. However, his evidence at least suggests that the Indians may have significantly altered the forest composition. His report is quite important, even if in partial error, as he gives a detailed analysis of the forest composition in the 1890's. It provides a basis for comparison with today's forest and gives an insight into possible man-caused changes.

Man's impact on the forest during the twentieth century has considerably changed its composition. Modern fire-fighting techniques have drastically reduced the amount of area burned, thus reducing the amount

¹A sawmill at Elk City in the 1890's was sawing lodgepole not because it was a desirable timber species, but because it was the only tree available (Leiberg, 1900, p. 348).
of lodgepole pine. Ponderosa pine, Douglas fir, and Engelmann spruce are planted in areas that have been burnt or harvested. The forests a visitor sees today are different than the early forests and certainly are not primeval and virgin.

Altitudinal Zonation

It is an unobservant person indeed who does not notice a change in the forest as he drives up the valley. Different species of trees grow at different altitudes and, in some areas, both high and low, there are no trees at all. The forest communities fall into several different vertical belts. This is termed altitudinal zonation, a key concept of mountain geography. It is important to recognize altitudinal zonation because each zone has different potentials and accessibility for man's activities. If the potentials and limitations of each zone are known by the land manager and user, then the best allocation of resources should exhibit itself.

The zones are generally arranged one on top of each other, layer-cake fashion. Local physical conditions create irregularities which disrupt the symmetrical arrangement.

The different altitudinal zones reflect the precipitation and temperature. Precipitation in the valley varies from less than twenty inches to over fifty inches annually. The area receiving the least precipitation, the lower valley, is also the warmest so precipitation there is the least effective. Precipitation is more effective on the higher, cooler mountain slopes. Most of the precipitation there is in the form of snow and accumulations of twenty feet are not uncommon.
Slope exposure also alters zonal patterns. The south- and west-facing slopes receive greater solar energy than the north- and east-facing slopes. Temperatures are higher and the soil dryer on these slopes. Consequently, the vegetation is generally different from that on shady slopes nearby. The numerous ridges and narrow valleys tend to create a zig-zag effect on the zonal patterns. Zones will descend to lower elevation in cool, moist valleys and extend upward on south-facing slopes.

The valley bottom rises through the altitudinal zones. The down-stream part of the valley bottom is in the subhumid parkland zone. Most of the valley bottom, however, is in the montane zone. Elk City is located in the upper montane. All but the uppermost of the large meadows are near the subalpine-montane boundary. The sides bordering the ubac slopes are in the subalpine zone, and the sides bordering the adret slopes are in the montane zone.

Because of the complexities involved, mapping altitudinal zones is difficult. Boundaries zig-zag, zones become inverted or pinch out, and corresponding zones are lower on the ubac side than on the adret side of the valley. Altitudinal zonation is, in reality, more complex than the diagrammatic representation in Figure 16 (p. 77).

Of the seven major zones found in the Northern Rocky Mountains (semiarid steppe, subhumid parkland, montane, subalpine, alpine, subnival, and nival), four occur within the study area: subhumid parkland, montane, subalpine, and subnival. The steppe, alpine, and nival zones are essentially absent.
Land Use in the Various Zones

The mountain slopes play an important role in the valley's economy. There is virtually no part of the mountain slopes which are not used in some way or another. Even a sheer rock cliff is important to a rock climber, constitutes a bold element of the landscape, and gives a visitor the feeling of being in a rough and rugged area.

The Indians used the ridge tops of the South Fork valley for transportation routes. They possibly burned the adret slopes knowing that elk preferred these grassy exposures. Their use of the land was based on a simple and direct relationship with what they called "Earth Mother."

The first white men came to the area searching for underground wealth. They burned and dug, leaving scars on the mountainsides that have yet to heal. They were a robust group, representative of their time and characteristic of a young nation just starting to flex its muscles. Their attitude was that whatever wealth the mountains possessed was free for the taking and that new land was just over the hill.

Nature's healing processes are slow on the mountain slopes. Man must eventually come to the realization that the land and its resources are limited. If man is to continue to use, and benefit from, the mountain slopes, then he should strive for a more harmonious existence with them. The mountain slopes should be utilized in such a manner that their productivity is sustained and the ecological balance not altered to the point of irreparable damage.
The Role of the Multiple-Use Forest

Forest Service management has evolved considerably from the days of "the greatest good, of the greatest number in the long run." Recognizing diversity of the mountain slopes and confronting activities other than timber production, the USFS manages the mountain slopes of the South Fork valley under the concept of multiple-use management. In the Forest Service's words this means: "to coordinate and manage all uses so that each of the various demands can be satisfied to the greatest degree possible" (U.S. Department of Agriculture, Forest Service, 1971a, p. 12). In multiple-use management, each of the following must be taken into consideration: timber production, forest grazing, mining, recreation, watershed, and wildlife. It must be recognized that the economy of the South Fork valley--and of many towns outside the valley--has historically been dependent upon, and will continue to be dependent upon, the mountain slopes. Since all but a small portion of the mountain slopes are national forest land and consequently under multiple-use management, the concept of multiple use should be kept in mind when reading the following sections.

The Bureau of Land Management manages over 19,000 acres of mostly forested land in the Elk City township and several small parcels in the lower South Fork area. Conflict and controversy concerning the proper management agency for the BLM lands in the Elk City township exists between the USFS and BLM. The BLM manages its Elk City land from its Coeur d'Alene office, 230 miles from Elk City. The BLM Area Manager has responsibility for several areas other than the Elk City lands, and is not able to devote full attention to it. The BLM land borders Nezperce
National Forest land administered by the Elk City Ranger District. This results in a duplication of management effort for contiguous and basically similar land. In this particular situation, the Forest Service is in a position to best manage this land as part of the Elk City Ranger District. It is recommended by the author that all BLM lands in the Elk City township be transferred to the Nezperce National Forest.

**Subhumid Parkland Zone**

This zone is the lowest, warmest, and driest area of the South Fork valley. It occurs mainly in the northwest corner of the study area where elevations drop below 2,000 feet (Figure 16). Enclaves occur on adret slopes in the middle section of the valley.

The subhumid parkland has 10-60 per cent tree cover. Patches of prairie alternate with patches of ponderosa and, occasionally, Douglas fir woodland. In some instances trees have been cleared giving forth to broad, grassy expanses. Idaho fescue is the key grass species.

Man's utilization of the subhumid parkland zone differs from that of the forested zones (Figure 17). This is the only area where population on the mountain slopes occurs in significant numbers. The grassy slopes support small-scale farming and ranching. The desirability of the grassy slopes for home sites coupled with easy access to Grangeville attracts commuters and retired people.

Most of the grassy slopes are used for grazing but some of the gently sloping areas are cut for hay. In many instances non-steep land along the river is used to grow hay and the adjacent grassy hillsides used for grazing (Figure 18). Small-scale ranching is able to exist in
ALTITUDINAL ZONATION

NORTH WALL

SUBNIVAL ZONE
SUBALPINE ZONE
MONTANE ZONE
SUBHUMID PARKLAND ZONE

SOUTH WALL

SOURCES: 1. Nezperce National Forest Maps
2. Field Observations

Figure 16

David H. Hickcox, 1973
DIAGRAMATIC ALTITUDINAL ZONATION AND
LAND UTILIZATION OF MOUNTAIN SLOPES,
SOUTH FORK VALLEY

ALTITUDINAL ZONES

DIAGRAM

LAND USE

Aesthetics
Alpinism
Mining
Watershed
Wildlife management
Recreation
Limited forestry
Mining
Timber production
Watershed
Forest grazing
Wildlife management
Mining
Recreation
Rural non-farm settlement
Farm and non-farm rural settlement
Pasture and hay
Winter game range
Transportation and utility routes

David H. Hickcox 1973

Figure 27
Figure 18—Level-to-gently sloping land used to grow irrigated hay with adjacent grassy hillside used for grazing. Utility lines are located on nearly horizontal land whenever feasible.
the narrow portion of the valley only where the adjacent slopes are grassy. Most of the ranchers and farmers involved commute to off-farm jobs in Grangeville. They engage in agricultural activities on a part-time basis only.

The parklands of this zone are not a commercially important source of timber. The scattered trees are utilized to obtain wood for fireplaces, wood stoves, gences, and the like.

The grassy slopes, especially those midway up the valley, are key winter game range (Figure 19). The portions of the subhumid parkland that are within the national forest are managed primarily for this purpose. However, on private land cattle and game often compete for the same forage. Overgrazing results from both livestock and game depending upon the same range. This is the only serious conflict of use in the subhumid parkland zone.

**Montane Zone**

The montane zone is the most important of the zones, both in terms of areal extent and economic significance. It is the economic backbone of the region in that it provides sustenance for most of the human activity on the valley bottom (Figure 17).

This zone is a belt of true forest (over 60 per cent tree cover). Several different climax forest types occur in the montane zone: ponderosa pine, Douglas fir, grand fir, western red cedar, and western hemlock. The montane zone covers more area, proportionally, on the north, or adret, side of the valley than on the south, or ubac, side (Figure 16, p. 77). This illustrates the effect of exposure. The
LAND USE

- DREDGE TAILINGS
- COMMUNICATION AND RIVER CORRIDOR
- IMPROVED PASTURE
- COMMERCIAL FOREST, grazed by livestock
- COMMERCIAL FOREST, largely ungrazed by livestock
- KEY GAME WINTER RANGE
- NONCOMMERCIAL FOREST, mainly watershed and recreation
- ABANDONED MINE
- DEVELOPED RECREATION SITES
- RIVER
- LAKE

Figure 19
montane zone climbs several hundred feet higher on the adret side than on the ubac side.

**Timber Production.** Much of the montane zone is commercial forest, and timber production is the mainstay of the South Fork valley's economy (Figure 18). Two sawmills on the valley bottom, as well as several sawmills outside the study area, are dependent on logs from the montane zone.

The trucking of logs from the cutting areas to the sawmills is shown by flow lines in Figure 20. The sawmills are represented by circles that are proportional to annual sawing capacity. The map vividly portrays the relationship between the forested mountain slopes and the sawmilling centers. Most of the logs are trucked out of the valley to sawmills in Grangeville and Kooskia, which are located on rail lines or spurs.

The most common tree species cut in the montane zone are ponderosa pine and Douglas fir. Western larch, grand fir, lodgepole pine, and small amounts of western red cedar and western white pine are also cut. Clearcutting is the predominant harvesting method. Overstory removal, commercial thinning, selective cutting, shelter wood extraction, and salvage cutting are practiced (Arnie Royce, personal communication). Clearcuts are planted with ponderosa pine or Douglas fir to insure prompt regeneration. The size of clearcuts at one time was as large as 400 acres, but the current trend is towards clearcuts of about 40 acres.

Most of the montane zone is eminently suited for timber production. A network of logging roads has been constructed throughout the montane
LOG FLOW AND SAWMILLS

SAWMILL CAPACITY

IN MILLION BOARD FEET

LOG FLOW

IN MILLION BOARD FEET

SOURCES:
1. Ernie Andersen, Red River Ranger District
2. Charles Nelson, Elk City Ranger District
3. Mike Perce, Clearwater Ranger District

DAVID HINCECOX, 1973

Figure 20
zone. These roads provide access for hunters and berry pickers but also cause damage to the fragile mountain slopes and streams. Many roads are closed after the timber has been cut, creating conflicts with hunters. With certain exceptions, most forms of recreation are water oriented and occur either on the valley floor or in the higher zones. There appears to be little conflict between timber harvesting and recreation in the montane zone. The Forest Service, for the most part, has avoided clear-cutting in areas visible from the valley bottom. No clearcuts are visible to one traveling up the valley until Elk City is reached. Continuing up the valley to Red River Ranger Station and Red River Hot Springs, one sees only a few clearcuts. If the aesthetics of the valley continue to be protected, high-quality recreation on the valley floor and high-quantity timber production on the montane slopes should be compatible.

Mining. The location of gold and other valuable minerals is not related to the altitudinal zones. Minerals may occur in any zone. In the South Fork valley many of the mineral deposits are located in the montane zone. Minerals occur in both gravels and bedrock veins.

Due to high water, the early miners were unable to work their river and stream claims before mid-July. Miners who staked claims on the hill-sides and in gullies ran out of water by mid-July. To solve this problem the miners in Elk City held a meeting in August, 1861. They decided that each miner could hold two of the four classes of placer claims (hill,

\[2\text{When asked if they were hiding the clearcuts from public view or protecting the aesthetics of the valley floor, Forest Service officials good-naturedly replied that it was probably a case of both.}\]
river, creek, and gulch). With this arrangement miners could work their claims from spring thaw to winter freeze-up (Wells, 1961, p. 6). A functional relationship developed between the valley bottom and mountain slopes. The river bottom miner became dependent upon the mountain slopes, and the hill and gulch miner became dependent upon the valley bottom.

Large areas in the montane zone are covered with mineral-rich gravels. These deposits are believed to have been deposited on old erosional surfaces or in structural basins of Tertiary age (Shenon & Reed, 1934, p. 18). The origin of these gravel deposits is not fully understood, and their extent has not been mapped. The richest mineral-bearing gravels appear to be located between the 4,000- and 4,400-foot levels. Most of those that were hydraulically mined are situated at about the 4,200-foot contour (Lorain & Metzger, 1938, p. 35).

Initial mining of these deposits was on a small scale. With limited amounts of water available, the claims were worked with sluices. Ditches were later dug to bring more water to the claims. These ditches, which required considerable capital outlay, sometimes extended for ten miles. Once the ditches were completed, mining was carried out with the use of large hydraulic hoses such as the one pictured in Figure 21. This type of mining required fewer men to operate than sluice operations. Although population of the area dropped, gold production did not. Elk City was one of the long-lasting placer districts in Idaho (Wells, 1961, p. 8).

The largest of the hydraulically mined areas were near Golden, and all were located on the mountainside (Figure 19, p. 81). The photo in
Figure 21--Leggett placer mine about 1903.
Figure 21 illustrates the large size of the pits. Concrete information about the resulting damage to streams could not be found. However, upon viewing these large pits, it is easy to imagine the rather drastic environmental impacts of hydraulic mining.

Most of the hydraulically mined placer pits are located in isolate areas. No reclamation efforts have been made. Only one use has been made of these pits: the one on American Hill near Elk City is used as the community garbage dump! It is ironic that where man dug for wealth, he now dumps his waste.

The gold which the early miners removed from the stream bottoms and mountainsides came from veins in the rocks of the mountain slopes. The veins are predominately in quartzite. They have maximum thicknesses of twenty feet and lengths of 300 feet or more. In the Elk City region, they are arranged radially within two miles of a curving contact of granodiorite and gneiss (Shenon & Reed, 1934, pp. 1, 24). The general alignment of the veins is indicated by the location of abandoned mines in Figure 19 (p. 81).

The existence of these gold-bearing veins was known as early as 1870, but hard-rock mining did not begin in earnest until the 1890's. This type of mining required advanced technology, heavy equipment, and considerable capital outlay. Transportation routes had to be developed before mining machinery could be brought into the region.

Hard-rock mining activity was intense in the 1890's and early 1900's. It reached a low in 1920 (Lorain & Metzger, 1938, p. 7). There was a brief flourish of activity in the 1930's because of higher gold
prices and improved transportation routes (Koschmann & Bergendahl, 1968, p. 131). Some small-scale operations continued to be worked sporadically.

Hard-rock mining scarred the land. It left sterile piles of mine tailings where mines and mills were once located. A few old mine buildings remain in place, picturesque reminders of a romantic period when man struggled with the earth to wrest wealth from it. Visitors to the South Fork valley find the vestiges of mining fascinating. If mine structures were restored and protected, instead of being torn down or allowed to rot, they could serve as tourist attractions.

The total value of the gold mined in the South Fork valley will probably never be accurately known. Table 6 lists the various estimates given by scholars who have researched mining activities. The value of gold mined in Idaho County, which englobes both the districts in the South Fork valley and those in the Salmon River region, have made the county the second largest producer of gold in Idaho (Koschmann & Bergendahl, 1968, p. 130).

Gold dust was the medium of exchange for many years, and it changed hands frequently. Although Wells Fargo would transport gold dust out of the valley, for 25 per cent of its worth, many miners carried their dust out secretly, fearing for their own safety. Indeed, for this reason many miners never revealed the true value of their claims. The Chinese were especially secretive. During the hard-rock mining period, much ore was shipped out of the area to be processed at smelters scattered across the country. It is difficult to place a value on these shipments.

Current labor, equipment, and transportation costs prohibit hard-rock mining at a profit in the South Fork valley. However, the potential
for a renewal of mining operations exists. The price of gold has soared to record levels. On May 14, 1973, the price of gold went over $100.00 an ounce on European markets (The Missoulian, May 15, 1973, p. 1). However, American citizens cannot sell gold at these prices. Since 193 they have been required to sell all gold to the federal government at a set price, currently $42.22 an ounce. Mining costs prohibit making a profit at this price. The Senate has passed a bill which will let Americans sell gold at market prices (Time Magazine, June 4, 1973, p. 1). If the House approves the bill, then there may be a general revival of mining activities in the South Fork valley.

### TABLE 6

<table>
<thead>
<tr>
<th>Source</th>
<th>Estimate</th>
<th>Comment</th>
</tr>
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<tbody>
<tr>
<td>Lindgren</td>
<td>$5 to $10 million</td>
<td>Before 1904, Elk City District only</td>
</tr>
<tr>
<td>Thompson &amp; Ballard</td>
<td>$20 million</td>
<td>Before 1924, Elk City &amp; Newsome districts</td>
</tr>
<tr>
<td>Shenon &amp; Reed</td>
<td>$15 to $25 million</td>
<td>Before 1924, Elk City, Orogrande, Buffalo Hump</td>
</tr>
<tr>
<td>Hickcox</td>
<td>$35.7 million</td>
<td>Production to 1972 Based on $36 an ounce</td>
</tr>
</tbody>
</table>

The soaring price of gold in Europe has not yet led to any mines being reopened. It has stimulated speculation in mining claims, especially placer claims.

The mountain-slope placers contain gold but not in concentrations that are at this time profitable to mine. The future of the high
elevation deposits, however, is not in gold. These deposits, as well as those of the valley bottom, contain commercial quantities of the rare-earth minerals that are essential for space-age alloys. These minerals include niobium, tantalum, ilmenite, zircon, monazite, magnetite, brookite, tutile, sphene, and allanite. Small quantities of arsenic, bismuth, uranium, and garnet also occur (U.S. Geological Survey, 1964, pp. 142, 195-200, and Reid, 1960, p. 12). The high-level Tertiary deposits have more economic potential than do the valley bottom deposits. Reid (1960, p. 1) calculated that these deposits may contain 60 million pounds of titanium oxide, 74 million pounds of zirconium, and 160 million pounds of manzite.

The South Fork valley may experience another wave of mining. To mine the mountain slope deposits will mean stripping a large area of forest cover and washing the gravel hydraulically. The economic gains need to be weighed against long-lasting environmental damage. The prospect of a revival of mountain-slope placer mining is perhaps the greatest dilemma facing the valley.

Forest Grazing. All of the national forest land in the South Fork valley is divided into grazing allotments. A majority of them are located in the montane zone. However, due to steepness of mountain slopes, denseness of timber stands, and abundance of downfall material, only about 25-30 per cent of the forest is suitable for grazing by domestic livestock (Arnie Royce, personal communication). The forest grazing areas, depicted in Figure 19 (p. 81), are primarily timbered with small,
natural grass and meadow openings scattered throughout the area. Stream bottoms, clearcuts, and grassy ridge tops also provide forage.

Fifty area ranchers have permits for grazing 3,754 cattle on national forest and BLM land. Almost all of these ranchers live outside the study area, primarily on Camas Prairie and along the lower South Fork. The number of cattle per permittee ranges from fifteen to 300. Some permittees have more than one permit and graze cattle in several locations.

The grazing permits are allocated to the same rancher year after year at low cost. In the lower portions of the valley, the grazing period generally runs from May 15 to October 15 and, in the upper part, from about June 1 to September 30.

Forest Service records reveal that the number of cattle grazing in the forest has remained remarkably constant since 1911, the date of earliest records. However, the amount of cattle grazing, in terms of animal-unit months, peaked in 1949. Since then, there has been a trend towards shorter periods of grazing due to concern about overgrazing of the range (U.S. Department of Agriculture, Forest Service, 1971a, p. 14).

Conflicts exist in some areas between the use of the forested montane slopes for cattle grazing, on the one hand, and its use by big game and recreational livestock on the other hand. Several prime cattle grazing areas are also key winter range for game. These areas cannot withstand grazing both by cattle in the summer and game in the winter without suffering a decline in the quality of grazing and a reduction in

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^3An animal-unit month is a measure of grazing equivalent to one mature cow grazing for one month.
the overall carrying capacity of the range. In this case the primary use of the land will probably be in favor of game, thereby reducing the amount of grazing available for cattle.

The number of recreational stock (saddle and pack animals) has multiplied several times in the last ten years. Most of this stock belongs to local outfitters who have increased their grazing demands. Grazing by cattle will probably decrease in favor of recreational livestock.

**Seasonal Movement of Cattle.** Twice a year, in late spring and early fall, the cattle are transported to and from the summer grazing areas. Figure 22 depicts, by proportional flow lines, the autumn movement of livestock from their summer ranges to wintering areas. Cattle movement is the reverse in spring. Many cattle are wintered on Camas Prairie. Ranching there is integrated with wheat, barley, and pea growing. Grangeville, population 3,636, is almost totally dependent upon agriculture and the forest products industry. Another important wintering area is in the vicinity of Clearwater located on the slopes above Harpster, within the South Fork drainage but outside the study area. Many cattle are wintered along the lower South Fork near Harpster, Stites and Kooskia. Other wintering locations are Kamiah on the Clearwater River and John Day Creek near the Salmon River. All are in the subhumid parkland or prairie zones, where there is less snow and less winter feeding required.

Portrayed vertically, the movement of livestock is downslope in the fall and upslope in the spring. In some instances the vertical
AUTUMN DOWN-MIGRATION OF CATTLE

SOURCES:
1. Ernie Anderson, Red River Ranger District
2. Charles Nelson, Elk City Ranger District
3. Artie Rusay, Clearwater Ranger District
4. Lawrence Martin, Bureau of Land Management

DAVID M. HICKCOX, 1973

Figure 22
difference between winter and summer grazing is not as great as one would suspect since the Camas Prairie is a plateau whose upland surfac
is over 3,000 feet in elevation.

Recreation. The forested montane slopes are not as heavily used by recreationists as the Forest Service generally believes. Except for hunters, most recreationists utilize other areas. Camping is primarily water oriented and concentrated in the valley bottom and the upper subalpine zone. The montane zone is generally not used for pleasure driving. During the course of field work few berry pickers were encoun
tered, and these were on the valley bottom. The most important functio
of the montane zone, recreationally speaking, is providing a backdrop o
forested slopes. This gives people the feeling of being totally sur-
rounded by a forest.

The montane zone's heaviest recreational usage is by hunters. El
 is the most sought-after game animal, but deer are also hunted. Game migrates through the altitudinal zones, moving to the higher ones in th
summer and the lower ones in the winter. Hunting occurs in both the montane and subalpine zones.

A game checking station is operated in Elk City by the Idaho Fish and Game Department. In 1970, 46 mule deer, 106 white-tailed deer, 384 elk, and 3,018 hunters were checked through the station. Only seven other checking stations in the entire state recorded more hunters (Idah
Fish and Game Department, 1971, pp. 19-20). These figures do not accu-
rately depict hunting in the South Fork valley as some of the game was killed in the areas to the east and was simply transported through the
valley. Data from game management unit #15, which corresponds almost exactly to the study area, are shown in Table 7.

<table>
<thead>
<tr>
<th>TABLE 7</th>
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<tbody>
<tr>
<td>ESTIMATED GAME HARVEST, SOUTH FORK VALLEY, 1969-1972</td>
</tr>
<tr>
<td>Deer</td>
</tr>
<tr>
<td>Elk</td>
</tr>
<tr>
<td>Total</td>
</tr>
</tbody>
</table>

Sources: Idaho Fish & Game Department, 1971, p. 20; Sam McNeill, Regional Game Manager, Idaho Fish & Game Dept.

Upland game bird hunting is of relatively minor importance in the South Fork valley. Most birds are taken by big-game hunters and is incidental to their big-game hunting activities (Idaho Fish & Game Department, 1971, p. 33).

The economic impact of big-game hunters is significant. Non-resident hunters pay a $135.00 fee for a nonresident fish and game license. Several outfitters in the South Fork valley depend for their livelihood upon serving hunting parties. The amount of money spent by hunters is not known, but it is probably considerable. Hunters appear to be a free-spending group. Most of the hunters make their purchases in Grangeville before traveling to the South Fork valley.\(^4\) The stores

\(^4\)During an early "short" hunting season several hunting parties were observed in Grangeville and Elk City. The amount of money spent by these hunting parties is tremendous. One group of five men spent in excess of $50.00 in one grocery store and this was just one of four stores visited by this group.
in Elk City and along the valley do receive part of the hunting dollar, primarily for gas, beer, fresh produce, and magazines.

Conflicts exist between hunters with guides, hunters without guides, and hunters with unlicensed guides. The primary conflict is over camping sites. Hunting competition between these groups is on the increase and intensifies the conflict (U.S. Department of Agriculture, Forest Service, 1971a, p. 20).

The Forest Service estimates that there are probably as many unlicensed guides as there are licensed ones. It is most difficult to stop illegal guiding. Cooperation of the suspect's client is needed and none have been willing to testify (Ed Laven, interview).

Trailers and campers are increasingly used by hunters. Campgrounds are shunned for sites closer to the hunting area. The potential for damage to the environment by sewage disposal, littering, and overuse of sites is acute. Compounding the problem is a lack of sewage disposal sites. Only one exists, and that is located in the lower reaches of the valley, far from the hunting areas.

Settlement. The montane zone is much sought after as a location for vacation homes but, as almost all of the zone is part of the Nezperce National Forest, little opportunity exists for people to buy or build vacation homes. A few homes are located in enclaves of private land scattered about the montane zone.

Subalpine Zone

The subalpine zone is the uppermost forested zone in the South Fork valley (Figure 16, p. 77). Its lower limit is generally 4,800 feet
in the upper valley, 5,400 feet elsewhere. In some areas of the steepest part of the South Fork gorge, the subalpine zone descends considerably lower, and there are forests consisting of a mixture of montane and subalpine species which extend clear down to the valley bottom. This contrasts with the adret side of the valley where one can stand on a subhumid parkland exposure and look across the valley to a subalpine forest. The upper limit of the subalpine zone is the upper timberline. On the south side of the valley, in the region between Gospel Peak and Buffalo Hump, 6,000 to 6,500 feet is the general timberline. On the north side of the valley the forest covers the mountain tops so there is no upper timberline.

The subalpine zone is characterized by the spruce-fir forest. Engelmann spruce, subalpine fir, mountain hemlock, and whitebark pine are the climax forests (in the case of the whitebark pine a parkland). This is the zone of greatest snow accumulation. Two divisions of the subalpine zone are recognized, the upper and lower. Timber harvesting occurs in the forests of the lower subalpine and is generally absent in the upper subalpine where extensive areas of parkland occur. The upper subalpine is attractive to recreationists.

The environment is more harsh and the ecosystems more fragile than in the montane zone. The subalpine is colder and more moist than the lower zones. Towards the top of the zone the trees become gnarled and more widely spaced until finally the upper treeline is encountered.

The subalpine zone is an area of dark green spruce-fir forests, high ridges, and sparkling mountain lakes. During the summer months, the subalpine zone is perhaps the most pleasant to visit. Its coolness
contrasts with the heat of the valley floor. Only the sounds of nature are heard here, no drone of logging trucks. One gets the feeling he is above everyone else and displaced from the din of summer-time activity on the valley floor. The trees are greener and more stately with their conical shape. The sky is bluer, the sun brighter, and the vistas more expansive.

Timber Production. Commercially, Engelmann spruce is the most valuable tree in the subalpine zone. Lodgepole pine is also cut. Considerable logging takes place where these two trees occur. New methods will probably be found to utilize tree species not now considered valuable. As a result, more of the subalpine zone may be logged in the future. Some areas presently cut have been planted with Engelmann spruce. As increasing amounts of the subalpine zone are planted with Engelmann spruce, more land is brought under a high-yield timber production program.

Recreation. The subalpine zone receives considerable use by recreationists. Except for hunting, this use is focused on the small lakes in the glaciated area along the South Fork-Salmon River divide in the southern portion of the study area. Fishing and general enjoyment of a high mountain lake are the main attractions. Moose are found along the chain of lakes. The development of this area will probably cause a moose/people conflict. Moose populations would suffer.

Until recently only a few of the lakes could be reached by roads. The rest were accessible only to the hiker and the horseman. The Forest Service has begun to develop this area to meet the demands of motorized
recreationists. This action is strongly supported by the local population. During a meeting in Grangeville on multiple-use management alternatives, ninety-nine people were in favor of more roads and development, and only one was in favor of making the roadless area wilderness (Idaho County Free Press, April 26, 1972, p. 1).

The best allocation of resources may favor increased recreational development and timber harvesting. The South Fork is bordered by the Selway-Bitterroot Wilderness Area, the Salmon River Breaks Primitive Area, and the Magruder Corridor (a defacto wilderness area). The area in question does not possess outstanding wilderness attributes. More areas suited to motorized recreation are needed to meet the demand for this type of recreation. Instead of putting pressure on areas of significant wilderness characteristics, it seems logical to use the area in the South Fork to meet the increased demand for recreation and timber.

The subalpine zone of the unglaciated north wall appears to be scarcely used by recreationists. No small lakes are located on this side of the valley. The region seems to hold little interest to anyone except hunters. Roads traverse the area and there are sites of historical significance and magnificent panoramas. Views from the ridge tops are among the best in the entire study area, and drives are quite enjoyable. Yet few people use this area. The only people encountered were using the roads as short cuts to other destinations. This part of the subalpine zone has great potential for recreational use if people can be persuaded to recreate away from water.
Watershed. The subalpine zone is the most important of the zones in terms of water supply. From thirty-five to fifty inches of precipitation per year falls in the subalpine zone. Most of it falls as snow and is stored until temperatures rise in the springtime. The thick branches of the subalpine forest shield much of the snow from the sun's rays, thereby preventing melting until a late date. Because of the coolness of the subalpine zone, less water is lost through evaporation and transpiration. As a result, more water is available for runoff. The higher elevation snowpacks, which melt at a later date, help reduce the threat of flooding. The later runoff means that downstream farmers receive the water when they need it most.

Water supply is one of the most important and far-reaching functions of the mountain slopes. The people on the valley bottom are effected by it as are people in the remainder of the Columbia River drainage.

Subnival Zone

This is the highest zone in the South Fork valley. The glaciated area, between Gospel Peak and Buffalo Hump, is the only part of the valley that is in the subnival zone. Bare rock cliffs and talus slopes culminate in mountains almost 9,000 feet in elevation.

Man's use of the subnival zone is quite limited (Figure 17, p. 78). Some mining has occurred. Mountain climbing is the primary recreational activity, but most hiking parties camp in the subalpine zone. Aesthetics is the most important role. This is the region's most spectacular
scenery. The mountain peaks can be seen from miles away and in some locations they dominate the view.

In shady areas below Gospel Peak, Buffalo Hump, and some of the other peaks, patches of snow last the summer in some years. Snow persisting through the summer has an important aesthetic impact for recreationists. The sight of snow on a mountainside in August creates a sharp contrast in the landscape.

Of Mountains and Men

The mountains of the South Fork valley mean different things to different people. How the mountains are perceived and characterized depends largely on the individual. The mountains of the South Fork, subdued and of unassuming beauty, are the economic mainstay of the valley. They not only form the basis of the valley's economy, their omnipresence forms a backdrop for daily life in the valley. Every inhabitant of the valley, by virtue of living there, has some aspect of the mountains molded into his being.
CHAPTER V

THE FUTURE OF THE SOUTH FORK

The South Fork valley should experience modest prosperity over the next few decades. Economic growth will be slow and at times barely discernable. It is likely that all sectors of the economy will exert increased pressure on the land. Protection of landscape beauty, water quality, and soil should be prime considerations in all activities.

The South Fork valley should be viewed in a regional perspective. To the south, east, and north are officially designated or defacto wilderness areas. Timber harvesting is not permitted in these areas. Those sawmills now dependent upon South Fork timber will continue to depend upon logs from the South Fork area. If wood-products firms are to be dependent upon South Fork forests, then it is not in their best interest to misuse the forests. If timber harvesting is excluded from the prime recreational areas, there is little reason why the two activities cannot coexist.

Grazing on national forest land will decrease in favor of recreational stock, recreational activities, and grazing by game. Some grazing areas will be managed exclusively as winter game range. The decrease in grazing allotments may coincide with a decrease in ranching in the upper South Fork valley as ranchers sell or subdivide their private land, turn to outfitting for their livelihood, retire, or die.
The outlook for mining is dependent upon mineral prices and the effectiveness of environmental controls. If the official United States gold price is allowed to seek its own level, mining activity should increase. It may become profitable to mine the high-level and remaining valley bottom placers for gold and rare earth minerals. The potential for environmental damage from this type of mining is tremendous.

Timber exploitation will probably continue at its present rate. New techniques should develop to encourage maximum utilization of the tree. Tree species not currently considered desirable timber types will be increasingly utilized. The size of clearcuts should diminish. Timber sales may be smaller. Horse logging, helicopter logging, and balloon logging may be common in the next few decades.

Although the South Fork valley has no features of regional or national attraction, it is rather accessible and attractive to recreationists. Recreation consists mainly of camping and hunting. Pressure will increase for more developed recreational sites accessible by automobile. Valley outfitters, stores, gas stations, motels, and restaurants will accrue direct commercial benefits from the increased recreational use of the valley. The high-quality recreational experience available in the valley must be maintained so that the valley continues to attract tourists.

The South Fork valley has tremendous potential for winter recreation, mainly snowmobiling. If facilities are developed and advertised, the area could conceivably become one of the most popular snowmobiling areas in the Northern Rockies. Vitality would thereby be pumped into the lethargic winter economy. Snowmobiling must be excluded from winter
game ranges. There is little prospect for large, capital-requiring facilities such as ski areas.

The location of wilderness on three sides of the valley puts the South Fork valley in a position to assume a gateway role. It could become one of the most important "jumping off" points in the region.

With increased activity in several sectors of the economy, a slight population increase should result. This increase will consist of permanent year-round residents, seasonal workers, vacation homeowners, and retired year-round and seasonal residents. It will be focused on: (1) the large meadows, (2) the enclaves of private land located along the South Fork and its tributaries, (3) Elk City, and (4) the lower part of the valley. An almost total lack of zoning laws will no doubt result in unplanned, haphazard, and unsightly development.

The results of this study may be applicable to similar valleys in John M. Crowley's Columbia Forest Region of the Rocky Mountains (unpublished map). The South Fork valley is fairly representative of the many narrow, steep-walled, dead end valleys characteristic of this region. The sequence of occupation, population, and settlement patterns probably do not differ greatly throughout the region. The common economic activities of the South Fork--timber harvesting, mining, recreation, and ranching--are also the base of many other valley's economies. The forests are similar throughout the region and much land is federally owned.

Care must be taken, however, when applying results of this study to areas outside the Columbia Forest or to valleys within it having through highways.
APPENDIX A

MODE OF CAMPING

Table A-1 lists the mode of camping used in the riverside campgrounds. Almost half of the campers had trailers. This indicates: (1) a preference for a certain amount of luxury, and (2) the accessibility of the area. Tenting was the second most popular method. This is the "traditional" method of camping but, more importantly, it is the least expensive. Tenting was more popular with younger people than with older folks. Camper units mounted on pickup trucks were the third most popular form of camping. This is rapidly becoming the most common method of camping in the Rocky Mountain states. Pickup trucks are popular in the agriculturally oriented mountain states, and camper units offer enough luxuries to make camping comfortable.

TABLE A-1

MODE OF CAMPING

<table>
<thead>
<tr>
<th>Type</th>
<th>Number</th>
<th>Per Cent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trailer</td>
<td>50</td>
<td>43</td>
</tr>
<tr>
<td>Tent</td>
<td>35</td>
<td>30</td>
</tr>
<tr>
<td>Camper</td>
<td>21</td>
<td>18</td>
</tr>
<tr>
<td>Tent on trailer bed</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Motorized home</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Other</td>
<td>5</td>
<td>5</td>
</tr>
</tbody>
</table>

Source: Field observations

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