THE BAKER VALLEY:
ITS RESOURCES, DEVELOPMENT, AND POTENTIALS

by

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Typed by Syvilla E. Gilmore
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THE BAKER VALLEY:
ITS RESOURCES, DEVELOPMENT, AND POTENTIALS

CHAPTER I

INTRODUCTION

The purpose of this thesis is to appraise Baker Valley from the viewpoint of resource geography. From this viewpoint an inventory of the resource base is made, and the present economic activities of the area are analyzed. It was found that the agricultural capabilities of the area are the basic resource and that a livestock-agricultural economy has evolved from it. The lack of a dependable water supply is the limiting factor. The inhabitants have also had to draw upon resources originating outside the valley to help support the livestock farming and a wood product industry. An evaluation of future possibilities is based upon these two factors: resources and present development.

Area of Study

The area studied is known as Baker Valley and is a basin occurring in northwestern Baker County and projecting slightly into southern Union County. It is entirely surrounded by uplands and is drained by Powder River which flows northward. Its maximum length is twenty-six miles on a northwest-southeast axis, and it
measures twelve miles across at its widest point.

**Method of Study**

Field work was carried on during the summer of 1955, and interviews were held with local leaders, farmers, miners, and industrialists. Questionnaires were prepared and used in gathering facts about agriculture, food processing and lumber manufacturing. The literature was searched in the library at Oregon State College and the Public Library at Baker. Aerial photographs were used in preparing a base map of the studied area while material for others was compiled.

The thesis has been written in four parts. These are: (1) the physical setting of the valley, (2) the occupance pattern, (3) the present status of resource utilization, and (4) an evaluation of the area's future.
ORIENTATION AND LOCATION OF BAKER VALLEY

Scale: 1" : 31,250"

Figure 1
CHAPTER II

THE PHYSICAL SETTING

Baker Valley is a broad structural depression in the upper Powder River drainage thought to have been formed by a series of faults. Exposures of these faults have been detected by geologists on the southern and northeastern borders and are thought to surround it. (1, p.74). The valley floor slopes from an elevation of 3,450 feet at its southern end to about 3,300 feet in the north where the Powder River leaves the area. The valley floor is of low relief except for one area of hills formed by igneous intrusions—the Hutchinson Hills which rise some 360 feet above the valley floor.

The materials making up the near level floor are thick deposits laid by the Powder River and its associated tributaries. Wells have been drilled into these deposits to depths of 600 feet without passing through the lacustrine deposit. The presence of two Powder River distributaries, Baldock and Old Settler's Sloughs, indicates that six miles of the southern portion of the valley is yet being aggraded.

The most prominent terrain feature delimiting the Baker Valley is the escarpment of the Blue Mountains which enclose the valley on three sides, north, northwest, and southwest. The dominant elevation is Rock
BAKER VALLEY RELIEF AND ELEVATION

Figure 1a

Scale: 1" : 31,250"
Figure 2. The Blue Mountains and the Pine-Goodrich Creek alluvial fan.

Figure 3. Irrigated pasture in western portion of the valley. Alluvial fans are visible in the background.
Creek Butte rising to 9,097 feet. Many of the Blue Mountain streams have carried sediments sufficient to form alluvial fans which fringe the valley floor on the western side. The largest of these fans was built by the combined action of Pine and Goodrich Creeks (See Figure 2).

The other physical boundaries are the Farley Hills on the east and the Lone Pine Hills on the south-east. The Farley Hills are a low group formed of Columbia River lavas. Magpie Peak (4,561') is its highest elevation. The Lone Pine Hills are composed of Lacustrian and fluviatile deposits and Columbia River lavas.

Remnants of a lake terrace about eighty feet above the present valley floor are discernable at three sites. It occurs as a flat-topped ridge east of Baker, but west of the city it has been eroded into a number of spurs. The terrace is also noticeable near Coyote Point. The remnants of the terrace are too small to be used as agricultural sites.

Climate

The Baker Valley has a BSk climate according to the Koppen system. The only weather station is at Baker where a record has been kept since 1889. The
Figure 4
annual precipitation for Baker averages 11.2\textfrac{1}{4} inches and is well distributed throughout the year. The maximum occurs in winter and spring with thirty percent of the yearly average falling during the winter, mostly as snow, and twenty-nine percent occurring in the spring. The winter and spring precipitation is mainly of cyclonic origin. Summer and autumn precipitation are also nearly equal with nineteen percent falling in the summer and twenty-two percent in the fall. The summer precipitation is of the convectional type with the area averaging sixteen thunderstorms a year. June and July each average four occurrences of thunder and August averages three.

Much of the precipitation falls as snow with an average of \textfrac{41}{12} inches falling each year. The greatest average occurs in January, 11.3 inches, followed by December with an average of 9.9 inches.

The rainshadow effect of the Blue Mountains is evident when the precipitation records of the Blue Mountain stations, Rock Creek Power Plant and the Columbia Mine, are compared to Baker’s. The Columbia Mine near the Blue Mountain summit at 6,000 feet elevation received an average of 35.9 inches annually, and Rock Creek Power Plant at 4,000 feet elevation received a yearly mean of 19.31 inches while Baker receives only 11 inches (See Figure 5).
Figure 5
The variability of annual precipitation is considerable. The greatest yearly precipitation occurred in 1941 when a total of 15.75 inches fell. The absolute minimum yearly precipitation, 5.79 inches, fell during the preceding year, 1939.

The absolute maximum monthly precipitation, four inches, was recorded in December, 1891. The absolute monthly minimum, a trace, has been recorded eleven times.

In the period from 1900 through 1951 only eighteen years received a greater precipitation than the mean, and thirty-four years received an amount smaller than the mean. The more moist years average 1.97 inches above the mean while the dry years average 2.17 inches below.

The influences of continentality and elevation are clearly expressed in the temperatures of Baker Valley. The mean monthly temperatures range from a low of 24.9°F. in January to a high of 65.7°F. in July.

The lowest monthly average was 7.1°F. recorded in January, 1949, and 62°F. in July, 1912. The absolute minimum temperature recorded was -25°F. in February, 1933. Mean monthly high temperatures range from 35.6°F. in January to 72.2°F. in July. The absolute maximum recorded temperature was 104°F. in July, 1934.

Diurnal ranges are always relatively high
especially in the summer resulting in pleasant cool nights. July daily maximums average 81.4°F, but nights average only 50.1°F. Winter days show smaller diurnal ranges. The average diurnal range during January varies from an average minimum of 17.1°F to an average maximum of 32.7°F. A mean diurnal range of 15.6°F.

The valley experiences three months a year with mean temperatures below freezing. These are January (24.9°F), February (29.9°F) and December (27.5°F). Only two months, July and August, have temperature means over 60°F. July has a mean of 65.7°F, while August averages 64.7°F. Baker averages 144 frost free days a year with the earliest frost usually occurring by October 12th and the latest by May 12th. A frost has occurred in every month except July; the latest recorded was on June 30, 1949, and the earliest on August 30, 1952.

The area's high elevation and clear skies and atmosphere are conducive to intense sunshine during most of the year except for the winter months when low clouds and precipitation tend to obscure the sun. This has been particularly helpful as a curing agent for grain and hay agriculture. Baker averages 122 clear, 107 partly cloudy, and 136 cloudy days a year. July is the clearest month receiving 83 percent of the total possible sunshine.
August and September follow with 41 percent and 74 percent of the possible sunshine respectively. December is the cloudiest month with only 37 percent of its possible sunshine. It is followed by January (41 percent) and November (46 percent).

An average of one heavy fog is recorded in November, December, and January with seven lighter fogs occurring throughout the winter.

**Drainage Pattern**

Baker Valley is drained by Powder River, a tributary of the Snake River. This river rises in the Blue Mountains south of the valley and drains several basins on its way to the Snake. The river enters through a narrow canyon at the valley's southern end where two distributaries, Baldock and Old Settler's Sloughs, leave the river; they rejoin it later midway between Baker and Haines. The two distributaries now carry water only during times of excess spring and early summer runoff. Powder River then meanders northward along the edges of the alluvial fans being joined by streams draining the surrounding uplands. Those streams draining the Blue Mountains are generally perennial while those entering from the east are intermittent. The river turns east near the town of North Powder, splits the Farley Hills
DRAINAGE SYSTEM OF BAKER VALLEY

Figure 6

Scale: 1" : 31,250"
and leaves the valley.

Measurements of the river's flow are taken at Salisbury, eight and one-half miles upstream from the valley. Records show that the river has an average discharge of 109 cubic feet per second or approximately 80,000 acre-feet per year. The maximum discharge recorded was 1,820 cubic feet per second while at times there has been practically no flow (6, p.70).

A great variance exists between yearly runoffs and the high and low monthly flows of each year (See Figures 7 and 8). These variances have posed some problem for agriculture within the area. During the eleven year period of 1930-1940 the yearly runoff varied from a low of 21,570 acre-feet to a high of 95,251 acre-feet, a difference of 73,681 acre-feet. Irrigation water supplies are not too dependable. The monthly flows have varied from a high mean of 16,989 acre-feet in May to a low mean of 209.6 acre-feet in September during this same eleven year period. A majority of the river's flow has moved down river by the time irrigation needs are beginning to arise.

The need for an impounding dam to hold back the spring snow melt waters so they may be used later in the summer is apparent, and field work to provide this aid has been completed by the Department of Interior.
POWDER RIVER RUNOFF IN ACRE-FEET

1930-1940

Figure 7
POWDER RIVER AVERAGE MONTHLY RUNOFF IN ACRE-FEET
1930-1940

Figure 8
Many streams entering the river below Salisbury aid in providing irrigation waters for the valley, but their flow is unmeasured. They are supplied primarily by snow melt waters also, and are subject to the same variance in monthly and yearly flows.

**Vegetation**

The natural vegetation has been altered in most of the areas in the process of clearing the land for agriculture or by the grazing of livestock. Today big sagebrush (*Artemisia tridentata*) and grass are the more common vegetative forms found on the well drained uncultivated soils. The grasses are short bunch grasses, with some of the more common species being cheat grass (*Bromus tectorum*), Sandberg bluegrass (*Poa secunda*), and Idaho fescue (*Festuca idahoensis*). The areas of saline soils have a cover composed of saltgrass (*Distichlis stricta*) and foxtail (*Honleum jubatum*).

The moister alluvial fans along the western portion of the valley have a tree cover, where not cleared off, with Lodgepole pine (*Pinus contorta*) and fir (*Abies spp.*) the dominant species. The tree cover is complemented with a brushy understory. The eastern and southern uplands have a sagebrush-grass cover, while the Blue Mountain boundaries are forested (8, pp.9-11).
Figure 9. Baldock Slough, a distributary of the Powder River, in early August.

Figure 10. An area of saline soil with a saltgrass cover. Note the light patches of alkali.
Soils

The mature soils of the valley show the influence of a low annual rainfall and are mostly lime accumulating. The major great soil group found here are the Prairie soils on the moister western margin, Chestnut soils, and Brown soils. Large areas were unclassified during the soil survey but are considered to be in a state of transition from alluvium to Brown soils. These mature soils are predominant in the northern half of the valley. Some alluvial soils are present along the streams that enter the valley. The city of Baker is situated on one of the larger areas of this soil type.

The southern half of the valley has had some problems relative to its soils. The soil of the central portion of this half are made up of Humic Glei, waterlogged meadow soils that reflect the high water table in the vicinity. Poor drainage has led to salt accumulation and areas of saline soils in this half of the valley also.
CHAPTER III

THE OCCUPANCE PATTERN

Settlement in Baker Valley did not begin until 1861 because of its distance from markets and the danger of hostile Indians. The first white men known to have visited the valley were Wilson Price Hunt and his party who passed through in December, 1861. Later visitors included the party of Nathaniel Wyeth and Jason Lee in 1834, and Dr. Marcus Whitman in 1836. These early visitors always passed through the Baker Valley but did not settle.

It was not until October 23, 1861, that any move toward permanent settlement took place. On this date a party of men returning to Portland from a search for the fabled Blue Bucket nuggets discovered gold in a small canyon just south of Baker Valley and stayed to work their claims. The following April a group of fifty prospectors arrived from Portland and were followed by others from Nevada and California. On June 16, 1862, the first land claim was filed in Baker Valley (3, pp. 26-32).

The first node of settlement was the village of Pochahontas located about six miles northwest of the present site of Baker. This town was settled by miners and their families who had claims in the nearby canyons. Wingville was the second site of settlement and was
occupied during the same year by a group of former Confederate soldiers. In 1863 a toll bridge was built across Powder River at the present site of Baker. The toll keeper's house was the first structure of Baker City. The discovery of lode gold in the uplands east of Baker in 1864 led to the construction of a water power plant and quartz mill at this new city and promoted further settlement. Baker became legally platted in 1868 and by 1870 had a population of 312. The population of the valley outside Baker at this time was 1,095. (13, p. 241).

Gold was the primary motivation of early settlement but the native grasses in the valley and the timber on the surrounding hillsides soon became the base for further settlement and work. Baker and Baker Valley soon became the collecting point for cattle from all parts of the Pacific Northwest which were then driven on to Montana and Wyoming for fattening and sale on the eastern market. It is said that between 1876 and 1890 an average of one million head of cattle a year were collected at Baker and driven to these states. Horses were also important in the valley's livestock industry with large numbers being raised, collected and shipped each year.

Further expansion was limited by lack of
THE URBAN-RURAL POPULATION OF BAKER VALLEY

Figure 11
transportation, for at this time the only means of communication was by stage or horse. The railroad arrived in 1884 and activity again increased. Fattened livestock shipments began moving eastward by rail and a few years later, 1887, the first load of lumber was shipped from the valley beginning a new phase in the valley resource development. The valley itself lacks timber, but the stands on the surrounding uplands are still supplying the milling center of the basin.

Present Settlement Pattern

Since the turn of the century the urban centers have dominated the population pattern of the valley (See Figure 11). Today there are three incorporated cities. The first and largest is Baker with a population of 9,471, eighty-six percent of the valley's people. Baker is the trade, industrial, and banking center of the valley and the entire county. Lumber manufacturing, retail and wholesale trade, and food processing are the principal phases of the city's industry.

The second urban center is Haines which is situated roughly in the center of the valley. Haines was founded in 1883 in conjunction with the newly arrived railroad, but today it exists as a wheat collection and storage point and rural trading center. The population of Haines in 1950 was 321.
Figure 12. The main street of Haines, looking north.

Figure 13. A view of North Powder, looking east.
North Powder is the third center and is located in the northern portion of the valley at the juncture of the North Powder and Powder Rivers. This city was founded in the late 1860's as a stage line station, but it did not become incorporated until 1902. Today North Powder is also a point for wheat collection and storage and rural trade. It does have the distinction of having a Union High School serving the rural population of the northern half of the Baker Valley. The population of North Powder in 1950 was 403.

The remainder of the valley population (1,563) is rural with half of the people living in the southern part of the valley and the others in the central and northern portions (See Figure 14).
POPULATION DISTRIBUTION IN BAKER VALLEY

Scale: 1" : 31,250"
Each Dot Equals 50 People

Figure 14
CHAPTER IV
PRESENT RESOURCE DEVELOPMENT

Development of resources within the valley has produced a crop-livestock agricultural and a food processing industry based upon the agriculture products. Agriculture is the most important resource based industry in the valley, but the extensive type of operation suited to the locale does not employ a large number of people. For other means of livelihood and to partially support the livestock industry the inhabitants also draw on the forest and summer grazing resource of the surrounding highlands. Lumber manufacturing using raw material from the uplands is the second largest resource based industry. Wholesale and retail trade, lumber manufacturing, and other services provide a larger number of jobs than does agriculture.

LIVESTOCK PRODUCTION

The production of livestock is the backbone of the area's agriculture. Beef production is the primary phase but dairy products, swine, sheep, and poultry also play a part. Table 1 lists the number of each animal type in 1954.
Table 1

LIVESTOCK NUMBERS IN BAKER VALLEY, 1954

<table>
<thead>
<tr>
<th>Animal</th>
<th>Numbers</th>
<th>% of Oregon</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beef Cattle</td>
<td>28,000</td>
<td>1.8</td>
</tr>
<tr>
<td>Dairy Cows</td>
<td>2,000</td>
<td>1.0</td>
</tr>
<tr>
<td>Swine</td>
<td>3,000</td>
<td>2.2</td>
</tr>
<tr>
<td>Sheep</td>
<td>8,700</td>
<td>1.0</td>
</tr>
<tr>
<td>Poultry</td>
<td>17,000</td>
<td>3.5</td>
</tr>
</tbody>
</table>

**Beef Cattle**

The beef industry is a cow-calf operation and depends upon the sale of weaner calves or yearlings as feeders. After the calves are born and the branding is completed in early spring the herds are moved in all directions from the valley to the spring grazing lands in the surrounding hills (See Figure 15). This movement usually starts about April 15th. The herds are later moved to the high grazing lands where they remain through the summer season. With the approach of Fall the cattle move back down to the fall grazing lands and then into the winter feed lots between October 15th and November 15th. During the time of summer grazing the operators have been raising hay to be used as winter feed (See Figure 16). Some operators move

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1 All acreages and production figures are the estimates of the County Agents of Union and Baker Counties and are based upon County Agricultural Census figures for 1954.
Figure 15. Sheep on spring grazing land, typical of the Baker Valley uplands.

Figure 16. A winter feeding scene, typical of Baker Valley.
Their cattle on to the second hay crop in the fall especially if they lack fall grazing grounds.

During the fall and winter the sale of feeder yearlings and long yearlings takes place with most of them passing through the sale ring at Baker. Approximately ten thousand head were sold during 1954-—2.4% of Oregon's beef cattle sales. The majority of the feeders are shipped to California by rail.

About one thousand head are fattened each year in the valley and are moved usually by truck to larger urban centers such as Portland. A number of animals are butchered in the valley for local needs.

Operators prefer the Hereford type because of its good beef qualities and ranging abilities although a few Shorthorn are also raised. There are five pure-bred Hereford producers in the valley.

Dairying

Dairying is an important part of the livestock scheme but is primarily for the local markets. There are some 2,000 head of dairy cattle in the valley, and thirty farmsteads are classified as dairy farms. Most farmers keep a cow or two for their personal needs, however. Most of the fluid milk moves to Baker where it is bottled or is manufactured into butter. It is a
common practice for many farmers to sell cream and feed the skim milk to hogs, but the growth of specialized dairy farms has curtailed this practice in recent years.

**Sheep**

Some 8,700 head of sheep winter in the valley each year after returning from the highland grazing areas. The movement of sheep closely parallels that of the beef cattle movement. Emphasis is placed upon wool production and Merino sheep are the type commonly used. About 5,800 head are shorn each spring yielding about 58,000 pounds of wool, nine-tenths percent of Oregon's wool production. All move to Portland for sale. Sheep are not and probably will not become as important as cattle because of their need for winter protection.

**Swine**

Hogs are another segment of the livestock economy with some three thousand head in the valley at the end of 1954. An equal number are sold each year, two percent of Oregon's swine sales. Hogs fit in best with farms which place emphasis on crop agriculture rather than beef livestock production. None of the animals are processed in the valley but are shipped to a plant in La Grande or Portland. The hogs are usually
fattened on grain or skim milk and are very rarely turned loose to hog-down a crop.

**Poultry**

Poultry products contribute to livestock returns also as both chickens and turkeys are common to the valley. In 1954 there were 12,500 chickens and 4,500 turkeys in the area. About 10,000 chickens were sold during the year, one and one-half percent of Oregon's poultry sales. There are only four farms classified as poultry farms, but almost every farmstead keeps a flock for its personal needs and to provide a cash crop which the housewife can care for. One family when interviewed stated that the money received from eggs produced on their farm provided their grocery money. It is a minor occupation but an important one to the individual farm owners. Some 15 percent of the poultry products are consumed locally while the remainder is shipped to Portland.

**CROP AGRICULTURE**

Valley agriculture historically has been based upon the production of livestock with crops being secondary. The topography, soils, and growing season are favorable for crops but lack of water is a limiting factor. About 50,000 of the valley's 76,000 acres
were classified as harvested cropland in 1951 while
9,000 acres were classified as pasture. Lack of rain-
fall made it necessary to let some 10,000 acres lie
fallow during that same year. The remainder of the valley's
acreage occurs as scrub rangeland, wasteland, or is util-
ized by roads, buildings, or farm lots. About 60,000
acres within the valley are irrigated but, as pointed
out in the discussion of the valley's water supply,
most of the surplus water has gone downstream by July
1st when the greatest need arises. This has been the
farmers' greatest problem. Land use acreage in Baker
Valley is presented in Table 2.

Table 2

<table>
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<tr>
<th>Use</th>
<th>Acreage</th>
<th>% of Oregon</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cropland Harvested</td>
<td>50,000</td>
<td>.15</td>
</tr>
<tr>
<td>Pasture</td>
<td>9,000</td>
<td>1.10</td>
</tr>
<tr>
<td>Fallow</td>
<td>10,000</td>
<td>1.00</td>
</tr>
<tr>
<td>Rangeland</td>
<td>6,000</td>
<td>.04</td>
</tr>
<tr>
<td>Wasteland, Buildings, etc.</td>
<td>1,000</td>
<td>----</td>
</tr>
<tr>
<td>Irrigated Land</td>
<td>60,000</td>
<td>4.00</td>
</tr>
<tr>
<td>Total Area</td>
<td>76,000</td>
<td>.12</td>
</tr>
</tbody>
</table>

The principal crops raised in the valley re-
fect the water shortage problem and the importance of
livestock. Hay crops, which can utilize the early
moisture, make up the largest acreage while cereals take
up much of the remaining crop land. Potatoes, seed
crops, and sugar beets are the only others worthy of mention. Table 3 lists the crops and acreages devoted to each.

Table 3

<table>
<thead>
<tr>
<th>Crop</th>
<th>Acreage</th>
<th>Yield</th>
<th>% of Oregon Yield</th>
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<tbody>
<tr>
<td>Hay</td>
<td></td>
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<tr>
<td>Legume</td>
<td>13,000</td>
<td>56,000 tons</td>
<td>4.0</td>
</tr>
<tr>
<td>Wild</td>
<td>12,000</td>
<td>12,000 tons</td>
<td>2.0</td>
</tr>
<tr>
<td><strong>Total Hay</strong></td>
<td><strong>25,000</strong></td>
<td><strong>68,000 tons</strong></td>
<td><strong>6.0</strong></td>
</tr>
<tr>
<td>Grain</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wheat</td>
<td>15,000</td>
<td>325,000 bushels</td>
<td>1.9</td>
</tr>
<tr>
<td>Barley</td>
<td>7,000</td>
<td>260,000 bushels</td>
<td>1.4</td>
</tr>
<tr>
<td>Oats</td>
<td>1,000</td>
<td>50,000 bushels</td>
<td>0.5</td>
</tr>
<tr>
<td><strong>Total Grain</strong></td>
<td><strong>23,000</strong></td>
<td><strong>645,000 bushels</strong></td>
<td><strong>3.8</strong></td>
</tr>
<tr>
<td>Potatoes</td>
<td>250</td>
<td>55,739 sacks</td>
<td>0.6</td>
</tr>
<tr>
<td>Alfalfa Seed</td>
<td>---</td>
<td>20,000 pounds</td>
<td>1.1</td>
</tr>
</tbody>
</table>

Farms average about 200 acres, but a trend toward larger farmsteads is apparent in the dryer eastern margins of the valley and in the northern half of the valley where water shortages are first felt and grain accordingly becomes a more important crop.

Plowing and seed bed preparation begins as soon as the snow has left the ground, usually in early March, and is completed by April. Planting takes place in late March and is usually completed by May 10th. Irrigation of seeded crops is begun immediately and continues until the water shortage forces curtailment. Use of
Figure 17. The more moist, western part of the valley.

Figure 18. The dry eastern part of the valley.
commercial fertilizer is not practiced widely with only some 600 tons being used annually in the valley. Nitrogen fertilizers are applied to the seed and cereal crops while phosphate fertilizers are applied to some of the legume hays. Sulfer is sometimes used in the saline soil areas in an effort to reduce soil alkalinity.

Examination of Tables 1, 2, and 3 reveals that Baker Valley has only 0.15 percent of Oregon's total harvested cropland but from this area comes six percent of the state's hay, almost four percent of the state's grain, and five and one-half percent of the marketed animals. Slightly more than one percent of the state's total harvest of wool is shorn in the valley. This high return of certain products from such a small area may be partially explained by the fact that four percent of the state's irrigated land is found in the area.

Hay Crops

Hay crops occupy the largest crop acreage and are raised for use as winter feed for livestock. About 13,000 acres of legume hay and 12,000 acres of wild hay are raised each year. Yields average a ton to one and a half tons per acre for wild hay and three and one half tons to the acre for legume hays. Two cuttings of hay
are made each year with the first taking place around July 1st and the second in the middle of August. The second cut yield is much smaller and many operators prefer to pasture their stock in the fall on this second growth rather than cut it. The hay harvesting is highly mechanized with most operators now using power bucks and stacker equipped tractors. Some baling is being done but most operators prefer the stacking method. The valley sells some five percent of its hay each fall and winter to adjoining Union and Wallowa Counties.

**Grain Crops**

The cereals crops raised in Baker Valley are second in acreage and importance to hay. The grains raised by order of importance are wheat, barley, and oats. Their combined area totals 23,000 acres. Winter and spring wheats are of equal importance. The chief varieties sown are Elmar, Elgin, and Federation. The Elmar and Elgin varieties are winter wheats and the Federation is a spring wheat.

About seventy percent of the grain is irrigated, and yields average some 60 bushels to the acre. Dryland grain averages only about 20 bushels to the acre. Harvest takes place sometime during the month of August. About one-fourth of the grain remains in the
valley with the remainder being shipped to Portland. After harvest it is the usual practice to allow the stubble to stand during the winter. In general grain lands are cropped in alternate years, being left fallow every second or third year.

Other Crops

Some seed, potatoes, sugar beets, and vegetables are raised each year but are of much less importance. About 20,000 pounds of alfalfa seed is raised yearly with most of it being sold in Idaho. About two hundred fifty acres of potatoes are grown annually with the yield averaging a little over 200 sacks (100 pound) to the acre. Approximately ten percent of the crop is used locally while the remainder is shipped to Portland for distribution. The valley has an allotment of 100 acres for the production of sugar beets. All production is shipped to the refinery at Nyssa, Oregon. This could become a more important crop in the future. A small amount of truck gardening is carried on around the edge of Baker to supply the local market, but the acreage is quite small.

FOOD PROCESSING

The processing of agricultural products of the
valley is a secondary industry but an important one. There are three grain storage and two grain processing plants, two meat packing plants and a creamery.

The grain storage facilities are located in North Powder, Haines and Baker. Haines also has a feed mixing plant which is operated in conjunction with the rolling mill at Baker. The plants at Haines and Baker are the actual processing agencies. These plants utilize wheat, barley, and oats, produced in the valley, and corn and Milo maize which is imported by rail from Nebraska and Iowa. The flour derived from the milling process is marketed locally, but a small amount is exported to the Philippine Islands. Baker's flour mill can produce 425 barrels a day when working on a 24 hour basis. The products from the rolling process are utilized by the Haines mixing plant in the preparation of dairy, hog, and poultry feed. These feeds are marketed in an area of 300 miles radius of Baker. Haines was chosen as the site of the mixing plant because of its central location and ease of movement to all parts of the valley.

The creamery is located in Baker and processing involves the bottling of fresh milk and making butter. All production is marketed locally. All milk is bought from a group of Grade A producers who have definite
quotas of production. Competition has been keen, with dairy interests from Idaho capturing a part of the valley market during the time of field study.

There are two meat packing firms in Baker and several custom meat cutters scattered through the valley. One plant processes sheep and cattle obtained from the valley and produces all types of fresh and cured meats. These products are marketed throughout Eastern Oregon. The plant spokesman felt that their greatest problem was competition from Western Oregon, Idaho and the Midwest. The second plant processes only cattle and produces only fresh meat. They slaughter about one hundred twenty-five head per week. About half the meat is marketed locally while the remainder is shipped to Washington markets.

LUMBER MANUFACTURING

Lumber and wood products manufacture is an old industry in the area. Forest supplies have always come from the enclosing highlands, and Baker has long been an important milling center in Eastern Oregon. The first lumber shipment from the valley took place in 1887, and the largest lumber concern operating in Baker today was founded in 1889. At present there are seven mills in the basin; six of these are in Baker, and one is located
at North Powder. The high price and ease of marketing of lumber products following the war is reflected in the fact that four of these mills were founded after 1944 and a fifth started operation in 1944. Table 4 lists the producers, number of men employed and their production.

Table 4

<table>
<thead>
<tr>
<th>Concern</th>
<th>Employees</th>
<th>Daily Production</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oregon Lumber Company</td>
<td>240</td>
<td>150 M bd. ft.</td>
</tr>
<tr>
<td>Burnt River Lumber Company</td>
<td>145</td>
<td>110 M bd. ft.</td>
</tr>
<tr>
<td>Ellingson Lumber Company</td>
<td>55</td>
<td>100 M bd. ft.</td>
</tr>
<tr>
<td>Baker Wood Products</td>
<td>30</td>
<td>50 M bd. ft.</td>
</tr>
<tr>
<td>Baker Lumber Company</td>
<td>43</td>
<td>35 M bd. ft.</td>
</tr>
<tr>
<td>Eastern Oregon Lumber Company</td>
<td>17</td>
<td>20 M bd. ft.</td>
</tr>
</tbody>
</table>

Oregon Lumber Company is the oldest and largest firm and has been in continuous operation since 1889. The plant includes a planing mill for dimension lumber and a cut-up factory which produces such specialty items as molding, interior door and window trim, interior door jambs, and furniture parts. Ponderosa Pine is the only species handled. The lumber is sold in the Midwest while the specialty items move to the Midwestern states and to the Southeast. Two hundred forty people are employed at this mill, forty of them being women. The
women work in administration and the cut-up factory. The material processed is rough lumber which is brought by truck seventy-six miles from Bates, Oregon, (the company's logging and saw-milling operation in the Blue Mountains). Private holdings and Forest sales are this camp's log sources. One hundred forty men are employed at Bates and many of them commute weekly from Baker. The plant includes an administration building, the factory-planing building, a dry storage group, a dry kiln, and an area for open storage. Thirty-six million board feet of Pine are processed each year while an additional six thousand feet of shop lumber is bought from other local manufacturers for processing. Saw-dust and other waste is used as fuel in a thermal-electric plant situated on the mill property and owned by the local power company. The mill receives compensation for its power supply in return. The steam plant is used primarily as a peaking plant.

Burnt River Lumber Company began its operation in 1945 and is now the second largest lumber firm of the valley. The company has some small holdings of timber but relies heavily on Forest Service sales. Complete utilization is practiced. All logs are debarked before entering the saw mill, and the bark and all other mill waste products are used as fuel in the
boiler room. Larger waste such as slabs are put through the chipper and are sold as pulp chips to a paper mill in Lewiston, Idaho. The logs are milled and planed into dimension lumber or molding. These products have been shipped to every state but California and Washington. Twenty-eight million board feet of Ponderosa Pine are processed each year, and the firm employs 145 men.

The Baker Lumber Company occupies a plant which started production around 1900 but was operated sporadically since that time. This company is a subsidiary of the Burnt River Lumber Company and its main purpose is to process the Douglas-fir, Larch, and Spruce obtained in logging allowing the parent company to process the Ponderosa Pine. The mill produces dimension lumber only and handles about 50 percent Douglas-fir, 30 percent White Fir, and 20 percent Western Larch. Its production is 10.5 million board feet annually and is marketed in the Midwest and eastern United States. Forty-three men are employed at the plant.

The Ellingson Lumber Company is the most recent plant to begin operations in Baker. The plant consists only of a planing mill, a resaw shed and three storage sheds, as the material used is rough lumber from the Company's sawmills at Unity and Seneca, Oregon (See Figure 19). The rough lumber is trucked fifty miles
from Unity and one hundred twenty miles from Seneca. When questioned as to the feasibility of moving the material such a distance for the planing operation, a company spokesman gave three reasons: (1) the movement was eastward toward markets and placed the finished product on a main rail line, (2) the cost of a large turnover of planer mill employees who would become discouraged at living in such a remote area as Unity or Seneca would be prohibitive, and (3) Baker was known to have a good source of dependable, skilled lumber labor. Ponderosa Pine is the chief variety used with some occasional Douglas-fir mixed in. Fifty-five men are employed and 37.5 million board feet of lumber are processed each year. The dimension lumber, shiplap, and paneling is sold throughout the United States.

**Baker Wood Products** opened in 1944 with a contract with the United States Army to build truck and trailer crates. At that time the plant employed one hundred men. Following the war the production shifted to such specialty items as molding, jambs, and special order stocks, but now lumber and cut stock are the primary products. The physical plant is scattered with the sawmill located in south Baker and the planing and cut-up plant in west Baker. Two storage sheds are also located with the planing and cut-up plants. The operation
processes only Douglas-fir and White Fir which it buys from "gypso" loggers in the Blue and Wallowa Mountains. This plant handles thirteen million board feet per year with markets in the East and Midwest, and Nevada. Truck shipments must be made to Nevada to compete with California operations. This mill employs thirty men.

**Eastern Oregon Lumber Company** is the smallest of the valley mills processing about twenty thousand board feet per day, primarily Ponderosa Pine. All timber used is privately owned and is obtained in the Blue Mountains. The milling of dimension lumber is its only process with the Midwest being its market. There are seventeen employees in the mill with an additional eighteen men working on the logging crew. About 4.5 to 5 million board feet are processed annually.

**North Powder Pine Company** is the first valley mill not to be located in Baker and is the most recently opened plant. The firm produces fifty-five thousand board feet of lumber a day but operates only nine months of the year. About two-thirds of its production is Douglas-fir and the remainder is Ponderosa Pine. All their timber comes from the spur of the Blue Mountains that forms the northern boundary of the valley. The lumber is shipped by rail to Midwestern markets and is
trucked to Utah and Nevada. The plant employs twenty-five men.

**Future of Sawmillng**

Shortage of available saw timber is an impending problem and will limit future growth of the sawmilling industry. The preferred species has historically been Ponderosa Pine but each of the manufacturers, especially the smaller ones, are becoming more and more dependant upon Douglas-fir, White Fir, and Western Larch. Another problem is the increasing distance that logs and rough lumber have to be hauled to the processing plants of Baker. At present it seems that the cost of moving plants to a location nearer the timber source and the assurance of a dependable and skilled labor supply in Baker are the two factors which keep the industry from moving. One spokesman, when questioned on the subject, felt that when all the Ponderosa Pine, Douglas-fir, White Fir, and Western Larch were cut—then the industry would begin cutting Lodgepole Pine, if the price of lumber were to remain high. Competition has been keen for logs with the larger concerns being able to buy the better and larger private tracts while the smaller operators are becoming more and more dependent upon Forest Service sales.
CHAPTER V

THE FUTURE

Baker Valley is one of the more important areas of settlement in Eastern Oregon. Early in its history gold mining was the basis of settlement but today agriculture and livestock, the processing of agriculture products, and the manufacture of lumber and wood products are the basis of the valley's economy. The valley has reached its limits in these fields and certain problems will have to be overcome before any future expansion can take place.

Agriculture can expand only through intensification which is possible with adequate irrigation. Accomplishment of a dependable water supply would probably result in two changes. The livestock operations would expand their holdings and herds by producing more winter feed and would consequently improve their range land by the inauguration of a sagebrush eradication and control program. The smaller farms, not taken over by the livestock operations, would place more emphasis upon crop agriculture by producing more potatoes and sugar beets.

The United States Bureau of Reclamation recently completed a series of field studies concerning the possibilities of building a storage dam on Powder River to provide irrigation for the southern half of Baker Valley.
The proposed Mason Dam would be a rock filled, rolled earth structure one hundred eighty-five feet high and eight hundred twenty feet long and would provide a 100,000 acre-feet storage basin. Fifty-four thousand acre-feet of this would be allotted to irrigation, 17,000 acre-feet would be assigned to flood control and irrigation, and 3,000 acre-feet would be consigned to sedimentation and recreation. This plan would provide adequate irrigation for 19,800 acres at a cost averaging $2.92 per acre. (8, pp.3-4) Approximately eighty percent of the project area has high water table, alkalinity, or salinity problems, but with the assurance of higher yields and returns from the land these problems could be overcome.

The wood products industry has also reached its limits, and the near future will probably bring some curtailment. Lack of nearby sources of saw timber is already being felt by each of the operations. In the future the firms that are able to keep operating will probably have to turn more to the manufacture of specialty items rather than lumber. The area lacks the large amounts of water required for paper manufacture, so will be unable to use the smaller trees for this purpose. Possibly the fabrication of pressed board or fibre board would partially help to solve this problem.

Remedy of these problems could bring some future
expansion, but definite limitations have been set by the environment and the resources it offers.
BIBLIOGRAPHY


APPENDIX
SOURCES OF DATA FOR GRAPHS AND MAPS

Fig. 1. U. S. D. A. Aerial photographs, and U. S. G. S. Topographic Maps: Baker, Sumpter, and Telocaset quadrangles.

Fig. 1a. U. S. G. S. Topographic Maps: Baker, Sumpter, and Telocaset quadrangles.

Fig. 4. Local Climatological Summary with Comparative Data.

Fig. 5. Ground-water Resources of Baker Valley, Baker County, Oregon.

Fig. 6. U. S. G. S. Topographic Maps: Baker, Sumpter, and Telocaset quadrangles.

Fig. 7. Compiled from State Engineer Bulletins: Numbers 3, 9, and 10.

Fig. 8. Same as Fig. 7.

Fig. 11. Compiled from U. S. Census Bureau, Census of Population: 1890, 1920, 1950.

Fig. 14. U. S. Census Bureau, Census of Population: 1950.

Fig. 19. Oregon State Highway Commission, Oregon Highway Map.