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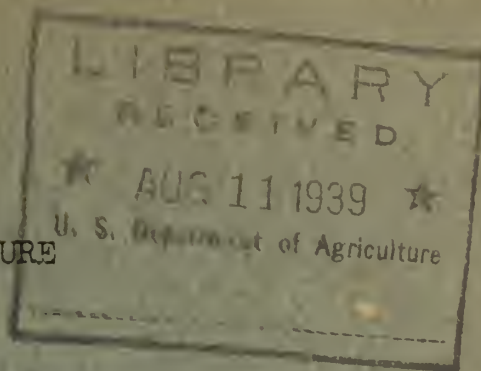
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UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
Region Eight
Albuquerque, New Mexico

Hugh G. Calkins
Regional Conservator

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A REPORT ON SNOWFLAKE

Regional Bulletin No. 31
Conservation Economics Series No. 4
February, 1936

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SNOWFLAKE

The Snowflake area, as here defined, lies within the drainage basin of Silver Creek which rises in the Sitgreaves National Forest and flows roughly northward, joining the Little Colorado River fifteen miles above Holbrook. The principal concentration of agricultural land within the area extends for about nine miles along Silver Creek just north of the forest boundary, and includes 2000 acres of irrigated land. The population of this irrigated strip is concentrated for the most part in the three settlements of Snowflake, Taylor and Shumway. Together, these include about 1400 people or 225 families. (Within this paper the name Snowflake will be used to designate these three settlements.)

Eighteen miles south of Snowflake, within the forest boundary, about 350 people are concentrated at Showlow where there are about 1300 acres of agricultural land, a small portion of them irrigated by direct diversion out of Showlow Creek, a tributary of Silver Creek.

Scattered through the forest within a radius of 20 miles of Showlow are numerous homesteads and several small settlements: Lakeside, Linden, Burton, Clay Springs, Pinetop, and Pinedale. These, together with Showlow, have a total population of approximately 2000 and a cultivated area of about 7000 acres of dry-farm land.

Also within the National Forest, about twelve miles to the west of Showlow (at a settlement called Standard), is one of the two lumber mills in the area. The other is at McNary, about 20 miles southeast of Showlow just over the Mogollon Rim. Both mills are connected by a company-owned rail line with Holbrook, the two branches joining at Snowflake.

Settlement of the area is relatively recent. While there had been a few scattered ranches in the area for a number of years, it was not until 1878 that there was any attempt to establish a permanent community. In that year, one of the many Mormon colonies which were coming down into northern Arizona at that time established settlements at Snowflake and Taylor. Shortly after another settlement was established at Shumway. In 1882 the Daggs Dam was built on Silver Creek, a few miles southeast of Shumway, creating a storage reservoir designed to provide a permanent water supply for 2400 acres of agricultural land, upon which the Snowflake community was heavily dependent. In later years homesteads were taken up in the forest, dry-farming developed, and new settlements grew up; some of them not until as late as 1920.

Prior to 1920 the agricultural land of Snowflake was used chiefly for the production of subsistence and feed crops. Cash income was derived almost entirely from the sale of livestock, chiefly cattle. After the World War the combination of a particularly severe winter and the drop in cattle prices served effectively to remove most the people of the area from the livestock business. It is estimated that from fifty to seventy-five per cent of the cattle owned in the area were lost within a few years after the war. Control and use of the major portion of the surrounding range land was lost at that time.

After 1921 a few people continued to be primarily dependent upon cattle-raising. A few others, by converting raw agricultural

products into poultry and milk, derived cash income from the sale of these products in the limited markets of Holbrook and Winslow. The majority, with almost no available market for crops, and with small holdings of agricultural land, had no alternative to a largely non-commercial use of their land. These found a new source of cash income, in the form of labor, in the lumber mills at Standard and McNary, and in the National Forest for a few months of the year.

The natural increase in population was painlessly drained off by increasing business activity in the cities of the West, and the resident population remained fairly stable. The area functioned chiefly to provide an exportable reserve of labor, a portion of it part-time, to the nearly timber operations, and a portion of it permanently to the cities of the region.

Shortly after 1929, however, the lumber mills cut wages to 24 cents per hour and imported negroes from Louisiana to work for that wage. Young people who had been employed in Los Angeles, Phoenix, and elsewhere lost their jobs and began to return to their families in Snowflake. Younger people coming out of school could not leave the area. The market, both in the immediate vicinity and in more distant places, for the labor which Snowflake had functioned to provide disappeared. A sharply increasing population became dependent upon the resources which alone had not been adequate to support a smaller population.

Relief became necessary as a substitute source of cash income. At one time, in 1934, of the approximately 550 families in Snowflake and the dry-farming area, as many as 260 were receiving relief in some form.

At the present time, excluding relief, the people of Snowflake are almost entirely dependent upon the renewable resources of the area. These renewable resources consist primarily of 2000 acres of irrigated land and the surrounding range lands. All of the irrigated land is owned and operated by resident families. Renting of irrigated land is practically non-existent. At the same time irrigated land is not owned by every family, nor is it evenly distributed among its owners. Of the 225 families in Snowflake, some 35 own no irrigated land and 15 own less than an acre. Included in this group are those whose livelihood is derived from the provision of goods and services to the rest of the population: teachers, doctors, lawyers, storekeepers. The number of families dependent upon such activity is not greater than thirty or thirty-five, however, and there are fifteen or twenty families not dependent on such activity who own no land. Of the 175 families owning over one acre of irrigated land, one-third own less than 5 acres. Over one-half own less than 10 acres, and almost three-fourths own less than twenty acres. Of the remaining 47 families, twenty-five own between 20 and 30 acres, eighteen between 30 and 50 acres, and just four own over 50 acres. The largest individual holding is 100 acres.

Table I

Ownership of Irrigated Land - Snowflake - 1935*

Holding in Acres	Families
0	35
Under 1 acre	15
1 to 4 acres	63
5 to 9	26
10 to 19	38
20 to 29	25
30 to 39	13
40 to 49	5
50 to 59	2
60 to 89	0
90 to 99	1
100	1
<hr/>	
Total	224
<hr/>	

There are, according to the tax rolls of Navajo County, approximately 25,000 acres of grazing land owned by Snowflake residents. An unknown additional amount of range land is leased. The greater part of the range land in the area is owned or leased by a few large (1) livestock operators who are not residents in the area. According to the tax rolls, approximately 2000 head of cattle are owned by Snowflake people. Comparison of the data from the tax rolls with statements by the larger owners indicates that the actual number of cattle owned in Snowflake is probably between 3000 and 3500. Approximately 2600 of these cattle are owned, however, by 10 families. The remaining cattle

*From records of Snowflake and Taylor Irrigation Company

(1) See attached map.

are distributed among about 80 families, the great majority of whom own between one and 10 head.

The type of use of irrigated land varies with the size of the land-holding. In all cases, however, holdings are worked by their owners with only family labor. No paid farm labor is employed. Except on a few of the larger tracts, there are no mortgages. The investment in machinery is relatively low. A large proportion of the products raised are consumed on the farm. The larger tracts of irrigated land, with one or two exceptions, are held by the owners of the larger herds of cattle who raise feed for their cattle and products for home use. The use of the smaller holdings of land is primarily non-commercial. There is no outstanding cash crop, and only one farmer in the area is reported to live solely from the sale of crops. Of the 2000 acres harvested in 1935, 1750 were devoted to the production of feed crops. None of this feed was sold out of the area, and considerable quantities of feed were imported as they ordinarily are every year. While some of this feed brings a cash return in the finished form of livestock, poultry, and milk, a large part of it is used by owners of small numbers of domestic stock who derive either a very small or no cash return at all from their cattle, milk cows, poultry, and swine. It is reported that 360 quarts of milk per day are shipped out of Snowflake, and a correspondingly small amount of live poultry and eggs.

The other 250 acres yielded vegetables, potatoes and beans, of which only a small proportion was sold. Sales of these products outside the community did not amount to more than a few hundred dollars in 1935.

A single case may help to illustrate the character of farming in the area. One farmer owning 40 acres of irrigated land, considerably more than the usual holding, had in 1935 20 acres in alfalfa, 10 acres in corn, 5 acres in wheat and oats, and a little in garden vegetables. The yield of vegetables was sufficient to supply family needs through the entire year in fresh or canned form. All the other products were used to feed 9 milk cows and several horses, chickens and pigs. The chickens and pigs were used for home consumption only. Part of the milk produced was used at home, and between 20 and 30 quarts per day sold to the trucker who operates a milk route in Holbrook and Winslow. This sole source of cash income did not provide enough to buy flour, sugar, spices, clothing, farm implements and fertilizer, gasoline, etc., and to pay water assessments of \$3.00 per acre, an electric and water bill of \$3.00 per month, county and state taxes, church tithes, and the educational expenses of his numerous children. In former years this farmer had made up the deficit by several months wage work in the lumber mill and by some small trucking in the area. At present the deficit merely persists.

For owners of smaller tracts, substantially the same situation exists, except that their dependence on wage work was greater, and the number of them now on W. P. A. is accordingly greater. A total of some 70 families in Snowflake are now either partially or entirely dependent upon relief in some form. An additional number of families, whose livelihood could never have been termed more than ample, have been obliged

to restrict their customary mode of consumption. While the number of families in this latter group cannot be exactly determined the number of families actually on relief affords a partial measure of the deficiency existent in the community.

The dry-farming area to the south displays many of the characteristics of Snowflake. Most of the dry farming is on patented land within the National Forest. About 2000 people, or 325 families, live on 60 to 160-acre homesteads. Most of them own a few head of livestock which are ranged or pastured on their own land. Almost none of them have permits for grazing on National Forest land. In 1935, of the 7,000 acres in crops, 6,000 were in forage crops, chiefly corn and oats. Beans, potatoes, and vegetables for home use were raised on the other 1,000 acres. Cash income is derived almost entirely from the sale of livestock and livestock products. In the best of years this cash income was much scantier than the income of people in Snowflake, insofar as conditions of homes, clothing radios, and automobiles are reliable comparative indices. Dry years and crop failures are common. With the opportunities for supplemental wage work gone, there are now almost 100 families dependent upon direct relief or Works Progress Administration wages.

Several years ago the possibility of widening the resource base of the community was considered, and a plan projected. This plan called for the construction of a dam on Showlow Creek, to store 20,000 acre-feet of water, the improvement of the Daggs Dam on Silver Creek, to raise its storage capacity to 10,000-acre feet, construction of a new

system of irrigation canals, relocation of the power plant above Daggs Dam, and the irrigation of a total of 6500 acres of land, an increase of about 4500 acres over the area at present irrigated. It was estimated that an expenditure of \$175,000 would be required. It was proposed that in order to secure funds the irrigation company be reorganized as an irrigation district and application for a loan and grant be made to the Public Works Administration. Around this proposed project considerable conflict developed within the community.

The irrigation enterprise had been organized as a private company, with one share of stock for each acre of irrigated land. A board of directors, elected annually, supervised operation and maintenance of the dam and ditches and of the power plant which supplied power for the settlements. The revenue from the sale of power approached \$6000 per year, of which a third is reported by the secretary of the irrigation company to have been the average surplus above operating expenses of the power plant. The operation and maintenance of the irrigation system was financed by this surplus in addition to an annual water assessment which averaged \$3.00 per acre.

One group within the community, composed largely of the stockmen who owned large irrigated tracts, opposed the project on the grounds that it was certain of failure. They claimed that, (a) there would never be enough water to irrigate the 6500 acres to be included in the project, (b) even if there were enough water, the lack of markets made the possibilities of any sufficient cash return from the land extremely slight. The charges on the existing landed indebtedness were

borne only with the greatest difficulty, and an additional debt of \$150,000 could certainly never be carried or repaid.

The majority group in the community favored the project, arguing that, (a) there would be sufficient water, in spite of inadequate data on run-off, (b) markets for products did exist in Holbrook, Winslow, Phoenix, and elsewhere, and a sufficient cash return could be secured to carry the debt and provide a livelihood for the farm operators. In 1932, over the opposition of the first group, the irrigation district was formed and application for a loan made to Public Works Administration. After some delay, occasioned by lack of adequate data concerning run-off and precipitation, the project was approved upon the recommendation of Mr. Richard Lyman, a reputedly competent western engineer, who is also a high official in the Church of the Latter Day Saints. A loan of \$120,000, secured by the land, was granted by Public Works Administration and an outright grant of about \$30,000 was made. It is estimated that about \$40,000 additional will be needed to complete the project, with the total reimbursable cost per acre about \$27, payable over 20 years. The bonds carry 5% interest payable each year, and no principal is to be paid during the first ten years.

The opposition group went to court in an attempt to block the project, but finally after the intervention of the central church authorities the conflict was settled out of court. The new irrigation district was formed and preceded with its plans, but 26 land owners were permitted to remain outside the district. These 26 were reimbursed for their share in the assets of the irrigation company at \$17 per share.

They retain their water rights and pay the annual water charge, but their land does not stand as security for the debts of the irrigation district.

No final judgment upon the soundness of the arguments of either side of the controversy is possible at the present time. It is significant, however, that a sizable group of persons in the community were sufficiently skeptical of the capacity of the land to carry the new burden that they carried on a two-year fight against the project, at some expense to themselves and in the face of its partial sponsorship by the Mormon Church. In addition, they permitted the project only when they themselves were freed from any of the risk attendant upon it.

The total 6500 acres to be irrigated would provide approximately 30 acres per family if evenly distributed among the farm families. Actually, of the 4000 additional acres to be included, only 1000 are owned by individuals in the community. About 1700 acres are owned by the state of Arizona and 1300 by the Aztec Land & Cattle Company and the Arizona-New Mexico Land Company which are now a single organization. The distribution of the privately owned land in the new district is substantially similar to that of the land at present irrigated. (See Table II).

Table II

Private Ownership of Land in New
Irrigation District

OWNERS		
Holding in Acres	No.	%
Under 1 acre	3	1.8
0 to 5	53	32.2
5 to 10	24	14.6
10 to 19	33	20.0
20 to 29	26	15.8
30 to 39	7	4.2
40 to 49	3	1.8
50 to 59	7	4.2
70 to 79	3	1.8
90 to 99	1	0.6
100 to 120	2	1.2
160 to 180	2	1.2
200 to 220	1	0.6
Total	165	100.0

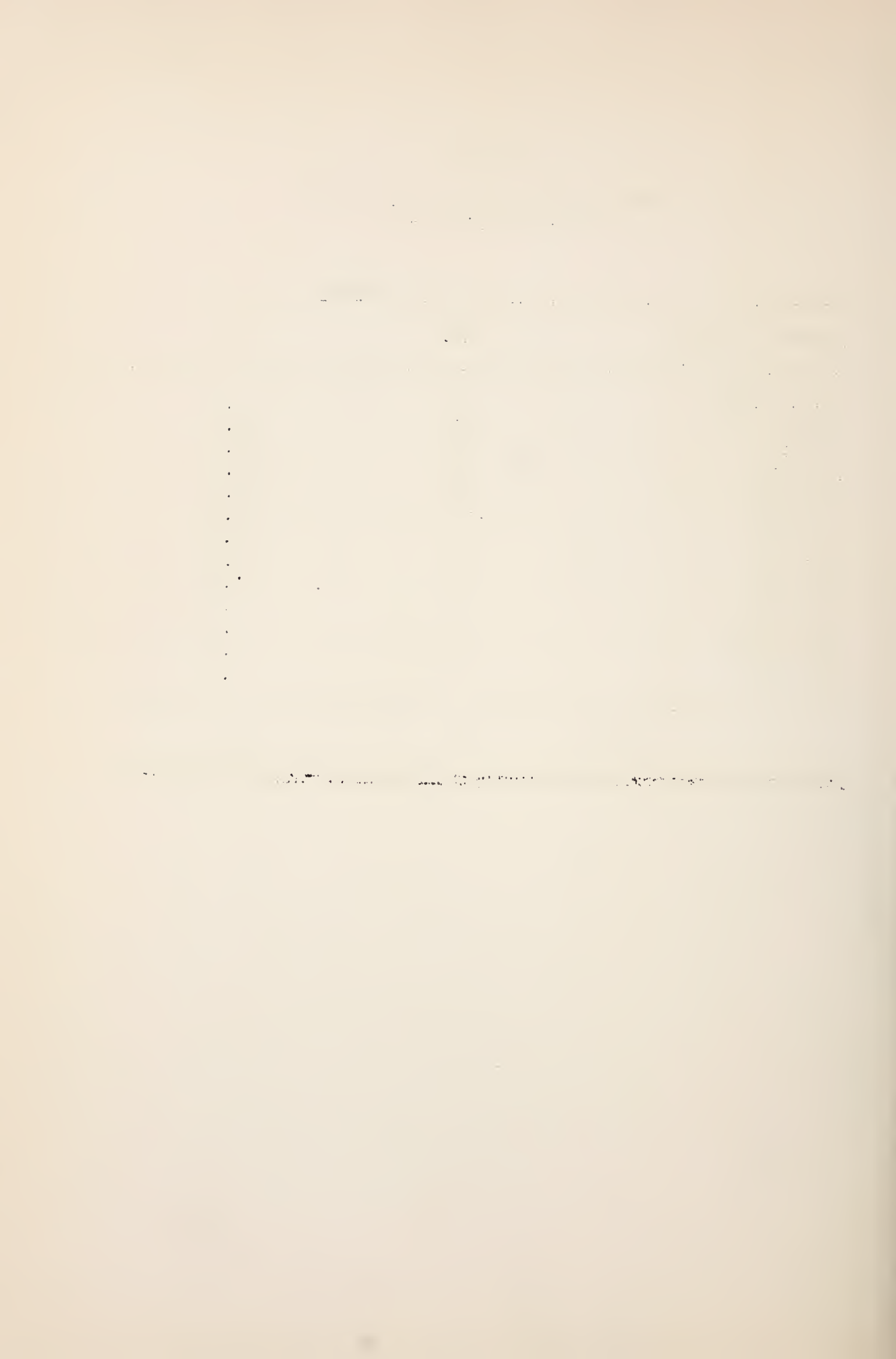


Table III
Status of Land in New Irrigation District

Land Holdings - New District		Old District	
Land Company	1336	Land Company	0
State	1692	State	50
Private	3375	Private	2332
		(182 owners)	
Total		6403	2382

The state-owned land is for sale at \$25 per acre, and by resolution of the State Land Commission not more than 40 acres will be sold to any one individual. The ~~Arizona-New Mexico~~ Land Company has tentatively agreed to sell its land at an average of \$8.00 per acre. The Irrigation District, according to its secretary, plans to purchase this land and resell it at the same price to those individuals in the area most in need of it. Where such individuals will obtain either the cash or credit necessary to purchase land, is not clear. Nor is it by any means clear that enough cash income can be obtained from the land to pay interest on land loans, water assessments, and state and county taxes.

The Resettlement Administration has attempted to render assistance to the community in several ways. Numerous individual loans

have been granted in the past few years for purposes varying from the buying of seeds to the buying of cows. The present county official of the Resettlement Administration, who has just assumed his post, reports that it is impossible to discover the number of loans granted, the number repaid, or the extent of repayment from the office records now in existence. His impression is that a large proportion of those granted have been repaid, but almost none in cash.

In 1935 the incumbent agent of the Resettlement Administration established a marketing cooperative and cannery. One hundred and seventy farmers in Snowflake joined, agreeing not to sell produce except through the cooperative. According to the statement of the Resettlement Administration agent there is a large market in Phoenix from the end of July to mid September for fresh vegetables. He stated that by taking advantage of the reduced cost of marketing through the cooperative large quantities of fresh vegetables produced in Snowflake could be marketed there. The surplus over what was thus sold could be canned in the cooperative cannery and sold throughout the state.

Unfortunately in the case of the cannery again, only the most desultory records of its first year of operation, 1935, were kept and these have not as yet been audited. From existing records, however, it appears that less than \$200 worth of fresh produce was sold by the cooperative, and no canned stuffs except for an inconsequential amount to local merchants. In all, 105,000 cans were produced, and

53,400 are still on the shelves of the cannery. The balance was absorbed within the community, most of it being retained by the producers of the vegetables, who ordinarily had produce canned on a 50/50 basis, the cannery retaining half the cans packed from the produce as a service charge.

The cooperative and the cannery do not appear to have operated to increase measurably the cash income of Snowflake producers. Their chief function seems to have been to permit the repayment of loans made by the Resettlement Administration. A number of such loans were repaid by the delivery of produce to the cannery. A large number, amounting to almost \$3,900 were paid by labor in the cannery, a type of repayment which was facilitated by the rapid rotation of employees in the cannery.

The Resettlement Administration is now attempting to sell the cannery to the cooperative for \$15,000,⁽¹⁾ which is supposed to be the value of the cannery, equipment and buildings and its present stock of canned stuffs. Allowing \$5,000 for the value of the canned stuffs on hand, the remaining \$10,000 is still many times the value of the cannery property consisting, as it does, of an abandoned school building and a few small pressure cookers. It is reported that the 1935 labor expenditure, though most of it was not actually paid in cash, and some amount for administrative expenses are included in the sale price. The Resettlement Administration emerged from 1935 with a great many loans wiped off its books. In their place it has a large number of cans. These it now proposes to sell back to its former debtors, accepting for them

(1) It is reported by Mr. Thomas of the Navajo Service that \$7000 of this has since been written off.

150 notes of \$100 denomination each. Presumably the cannery is expected to provide the means of payment. Whether or not the cannery can provide the means of payment is extremely doubtful, if its first year of operation is any test of its capacity to add to the community income. According to the present agent of the Resettlement Administration, the cannery cannot produce cheaply enough to sell canned stuffs in the competitive market; but it can function as a threat which will force large canning companies to buy fresh produce raised in Snowflake. This agent surmises that large canning companies, to avoid competition from the "Sun-Sno" brand of canned corn, for example, will buy all the surplus fresh corn raised in Snowflake. It is rather difficult, however, to see how these companies will be threatened if they can at all times undersell. The large number of people in Snowflake who seem to regard the cannery as a potentially expensive gift may be more realistic than the Resettlement Administration. Certainly it is not possible to predict confidently that the cooperative and cannery will function to increase the community income.

Recently the officials of the irrigation district requested aid from the Soil Conservation Service. They report that gullies have begun, in a few places, to cut into farm land; that one large wash continually threatens a main canal; and that the reservoir and canals are in danger of excessive silting.

As has been pointed out, the range land above the agricultural area is used by livestock operators who own no agricultural land in Snowflake and who live elsewhere. A portion of that range land is contained

within the National Forest, the remainder is owned principally by the State of Arizona and the New Mexico-Arizona land company.

No direct economic relationship exists between the owners and users of the range lands and the people of Snowflake. The future livelihood of the latter is nevertheless directly dependent upon the conditions of the range land above, by virtue of the physical relationship existing between the two types of land in the drainage basin.

SUMMARY AND CONCLUSIONS

Snowflake is a community of small land-owners, primarily dependent upon land resources. The land resources of the area include 2000 irrigated acres at the present time, 4500 acres which are to be irrigated in the near future, and many thousand acres of grazing land. Of the latter only a small portion is available to the people of Snowflake, the remainder being used by a few large outside livestock operators. That which is available to Snowflake is used largely by a few families who own between 50 and 500 head of cattle each. Of the 6500 acres of irrigable land, approximately 3,000 acres, not yet irrigated, are owned by the State of Arizona, and the Arizona-New Mexico Land Company. These lands are for sale to Snowflake residents. Approximately 3,500 acres are owned within Snowflake in tracts varying from one-fourth acre to 200 acres, with half the owners holding less than 10 acres, and two-thirds holding less than 20 acres.

The use of the irrigated land is primarily non-commercial because of: (a) the limited available markets, and (b) the small size of the majority of landholdings. Opportunities for the sale of labor,

once an important element in Snowflake economy, are now almost entirely absent. In consequence, the community as a whole and the majority of its members operate on a deficit. This deficit may be measured by the large subsidy to the community in recent years, in the form of direct relief, Works Progress Administration employment, and unpaid Resettlement Administration loans.

The Resettlement Administration, in an effort to increase the cash income of the community and to collect its loans, has established a marketing cooperative and cannery. Through its operations, no additional farm products were marketed but the Resettlement Administration received payment for its loans in the eventual form of a large amount of canned goods. The Resettlement Administration is now exchanging these cans for another set of notes which are equally likely to remain unpaid. Whether the cannery and cooperative can increase the cash income of the community at all is highly doubtful.

Whether or not the additional 4000 acres of irrigated land will increase the net cash income of the community is also doubtful. A large part of these 4000 acres must be purchased; and, assuming that funds for this purpose can be borrowed, the cost of credit and of water may absorb any additional cash income they produce. In fact they may not produce enough to pay even those charges; in which case either the landowners will lose their land or the irrigation development will turn out to be still another subsidy to the community. These are questions which cannot be readily answered at this time though they merit serious consideration.

Even, however, if the irrigated land in Snowflake should prove unable to repay the cash charges now saddled upon it, even if in the future no more cash income should be derived from it than now, that land may still remain productive, and may still be the primary source of livelihood for the people of Snowflake. The 6500 irrigated acres, though they produce little cash, can produce large quantities of corn, oats, alfalfa, potatoes, and vegetables. These products can constitute a major part of the income of the people of Snowflake. The justification of the expenditure of labor and funds to preserve these lands must take account of the dependence of the people of Snowflake upon them.

February, 1936.

