

DISTRICT PROGRAM

OTERO SOIL CONSERVATION DISTRICT

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DISTRICT PROGRAM

OTERO SOIL CONSERVATION DISTRICT

INTRODUCTION

The Otero Soil Conservation District was organized with the intention that it would establish machinery capable of coping with the problem of soil and moisture conservation. The intent of the district in writing this program is to bring to light all the problems directly or indirectly related to conservation of the soil and moisture. By so doing, each problem may be outlined and all interested persons, organizations, and agencies given an opportunity to help in the solution of these problems.

This program has been prepared for distribution to all interested persons, for the purpose of informing them as to the purpose of this organization. Land-use problems are discussed herein and recommendations made as to the possible solution of these problems. This program has been prepared by the District Supervisors with assistance from the County Planning Board, and State and Federal Agencies.

GENERAL DESCRIPTION OF THE DISTRICT

Location: The Otero Soil Conservation District is located in the south central part of New Mexico and includes all of Otero County except Grazing District No. 5 which is in the southeast corner of the county. (See appendix for map indicating general location). Included within the district are the White Sands of about four townships, the Mescalero Indian Reservation of about thirty townships, the Lincoln National Forest of about thirty townships, State lands consisting of 387,520 acres, a small amount of railroad land, and a major portion of public domain along the west side with patented lands of 317,467 acres or only 13% of the total. Altogether the district consists of 2,356,224 acres. (See appendix for legal description).

Topography: The District includes most of the Sacramento Mountains extending on the west across the desert plains to the foothills of the San Andreas Mountains and ranges in elevation from approximately 4,000 feet near the Texas state line to about 9,600 feet in the vicinity of Cloudercroft.

The most important drainages on the west side which originate at the summit are the Tularosa Valley, Laborcita Canyon, La Luz Canyon, and Fresno Canyon. Besides these there are the following canyons draining sharply to the west: Dry, Three Rivers, San Andreas, Alamo, Coyote, Mule Canyon, Rinconada, Esccondido, Grapevine, and Dog. On the east side the Penasco Valley with the smaller tributaries of Elk, James Canyon, Cox Canyon, Wills Canyon and Agua Chiquita constitute one important drainage system, while the Blue Water, Pinon, and Sacramento River are the other major drainages to the east and south.

Climate: The climate varies considerably with the elevation, ranging from that of the semi-arid desert west of the Sacramento Mountains (Tularosa Basin), with an average rainfall of approximately eight inches, to that of the cool, damp climate of the upper Sacramento Mountains with an annual precipitation of twenty-five inches.

Soils: Most of the soils throughout the mountainous section of the district are very fertile and capable of producing very good crops. Gravelly loams and clay loams predominate. Soil types are very variable, and several different types can frequently be found in each farm.

Along the west slope of the Sacramento Mountains heavy adobe types of soil predominate which are usually very fertile. Further out on the desert gypsum occurs more frequently, especially near the White Sands National Monument which is almost pure gypsum.

Land use capability tables have been prepared by the Soil Conservation Service for a considerable portion of the cultivated land.

Vegetation Characteristics: The desert along the west part of the district supports creosote bush, mesquite, chamisa, sacaton grass, with, of course, many other species of shrubs and grasses occurring in lesser quantities.

Along the foothills, the pinon and juniper woodland type occurs with black grama, blue grama, and tobosa as the major grasses. In the higher mountainous portions Ponderosa Pine and Douglas fir make up the major vegetative type, while Mountain Muhle, blue grass, blue grama, and scrub oak make up the major part of the palatable vegetation.

Along most of the east side blue grama is the principal native grass, associated with side oats, grama, western wheat, and other species.

Erosion Conditions: Lumbering and clearing of brush in the upper reaches of the Sacramento Mountains and grazing of the woodland areas have resulted in an increased runoff and accelerated erosion on such areas. The increased runoff changed the conditions under which the drainages and canyons had become established and degradation is now the dominant force in the major drainages.

Steep slopes rise abruptly from the valley floors and depletion of the brush cover on these slopes causes excessive runoff and washing of debris over cultivated lands. Many men can remember when there was no runoff through most of the major drainages; however, logging operations, heavy grazing, and cultivation of steep slopes have so resulted in denuding slopes that large gullies have been cut out through all of the major tributaries and almost all of the smaller ones.

A great deal of cultivated land has been destroyed in the Tularosa Basin and a large part of La Luz Canyon has been rendered almost worthless for farming while deep channels have been cut out through both James Canyon and Cox Canyon. Heavy downpours frequently cause heavy deposits of old logs, rocks, and other debris on some of the farm lands. On the Penasco, particularly where the channel is not large enough to handle floods, deposits of logging debris are frequently left in the midst of truck farms or other crops.

One of the major problems here is to reduce these floods and devise a channel which would prevent these overflows.

Land Use: There are three general types of land use: farming, grazing and forest. Approximately 16,000 acres are devoted to cultivation, about 2,000 of these being cotton farms with an allotment of 540 acres. Almost 8,000 acres are orchard land with approximately 1,200 acres devoted to production of truck crops. The National Forest lands cover about thirty townships. Almost all of this is also used for grazing. About 780,000 acres of public domain are grazed and the 475,000 acres of Indian Reservation is practically all grazed.

Irrigation: There are two general types of irrigation being practiced within the district. Near Tularosa where cotton and alfalfa are two of the major crops, most of the irrigation is along the natural grade of the land, which often is as much as $\frac{3}{4}$ % and irrigation runs are frequently as much as 1500 feet.

Some studies have been made to determine the effect of different grades. Results at present indicate that a grade of approximately 2 inches fall per 100 feet is probably best for this type of land. It is therefore recommended that this land be bench terraced on grades of approximately 2 inches per 100 feet and that checks and turnout boxes be constructed to facilitate the economical use of water. Interested farmers have for several years been studying the possibility of constructing a storage reservoir which would increase the supply of irrigation water. Also they are considering the possibility of pumping water into the irrigation ditches from the underground supply, and these possibilities should be investigated.

Elsewhere in the district irrigation is from small streams and row irrigation is practiced on truck crops and in small orchards, while in many orchards the water is merely turned loose on the upper side and spreads over the slopes below. Some farmers have done some bench terracing and practice flooding on these benches which appears to be the most satisfactory method.

Scarcity of water is an important factor in all of the irrigated sections with perhaps the exception of the Penasco Valley from Cox Canyon down. A large amount of water goes to waste each winter due to lack of storage facilities. It is recommended that all possible storage sites be examined and those which prove feasible be developed; also it is recommended that most of the land which is now irrigated on grade be bench terraced on a grade not to exceed 2 inches fall per 100 feet.

The Board of Supervisors feel that two proposals should be presented to the Bureau of Agricultural Economics for Water Facilities within the District. One proposal would embrace the watersheds on the west side including Tularosa, Fresno, Alamogordo and La Luz, and one on the east side, including the Penasco and its tributaries. Data for these proposals is being compiled by the Otero County Planning Committee and will be sent direct to the Bureau of Agricultural Economics.

Cropping Practices: Near Tularosa, the principal rotation practiced has been cotton, sorghum grains, and alfalfa, which appears to be the most practical rotation. It is suggested, however, that some study be made of the possibility of introducing cow peas or other annual legumes

into the rotation.

In the higher mountain sections where orchards are grown, most farmers permit weeds and grass to remain and do not cultivate at all. It is recommended that an attempt be made to establish sweet clover in these orchards which should be mowed twice annually. In the areas where truck is grown, especially cabbage, considerable difficulty with black leg and root rot has been experienced. In order to avoid this trouble, it is recommended that annual rotations be worked out and that some legumes such as cow peas be tried.

In the grain farming section, grains have been grown year after year until production has decreased by 50% in many cases. Terracing of the land and contour farming will probably tend to increase the yield somewhat, but it is also recommended that some crop rotation be practiced, perhaps by planting a green manure crop each four or five years.

Subsistence Farmers: It is recognized that there is a problem of farmers below the subsistence level who seem to be distributed fairly evenly throughout the district. These farmers occur because of several different factors among which are: units too small to produce sufficient income, farms eroded too badly to be productive, lack of balanced unit, etc. It is recommended that assistance be given such farmers by the Farm Security Administration and that an attempt be made to check the erosion on such units and that the ultimate aim be to either rehabilitate such farmers or establish them upon a better balanced basis in order that they will be self-sufficient.

Farmers near High Rolls and Mountain Park have been cooperating with the Forest Service and Soil Conservation Service in the construction of silt saving dams which will decrease flooding from that area considerably.

One of the major farming sections on the eastern slope is James Canyon which produces large quantities of oats. It is estimated that production has decreased from 75 bushels per acre some thirty years ago to about 35 bushels per acre at present. Field slopes range as high as 15% and although gulying has not been serious, sheet erosion has removed large quantities of the top soil. One large gully does extend through the canyon which farmers estimate has lowered the water table 10 to 30 feet. Runoff from this area causes considerable damage to the very productive bottom lands around and below Mayhill where James Canyon joins the Penasco.

Another important farming section on the eastern side is Cox Canyon where large quantities of cabbage, lettuce, and all types of vegetables are grown. This truck is grown under irrigation from the small springs which originate at intervals along the entire canyon. Field slopes are very steep and utilization of the water could be increased considerably by bench terracing on much of this land. Some dry farming is practiced here also on the steep hillsides which are above the springs. Irrigation water is limited but precipitation ranges between 15 and 20 inches. This year some vegetables were grown without any irrigation whatever. A few farmers have developed storage tanks to assist in getting young cabbage plants started, after which they depend on rainfall. Production during the past year, however, was considerably below average because of insect damage and perhaps toxic conditions in the soil.

Most farmers of the section feel that a better system of rotation must be devised if vegetable production is to be continued.

Along the Penasco Valley, into which both James and Cox Canyons flow, irrigation water is more plentiful. Vegetable farming is generally practiced although considerable quantities of seed crops and some fruit is produced. The main problem along this canyon is flooding of the crops due to heavy floods from side tributaries. The main channel is not large enough to care for the heavy floods which overflow the fields depositing silt in cabbage, lettuce, and other crops, or washing them away.

On Miller and MacDonald Flats, dry farming is practiced altogether and beans and seed crops are grown. Some of this land is badly eroded and very much in need of terracing. A few farmers have already started terracing but have not the equipment to do the work as rapidly and efficient as might be possible.

This same system of farming is practiced on the lower Agua Chiquita, Blue Water, and to a small extent around Pinon.

The major portion of the land south of the Penasco River is range land adapted to the grazing of both cattle and sheep. A good many goats are raised around Pinon and Avis. A great deal of the land has been grazed so heavy that palatable plants are becoming scarce and snake weed and other indicators of over-grazing abound.

Throughout the National Forest many desirable locations for lakes and ponds exist. A great many tourists travel the mountain roads, and construction of ponds in some locations to provide a place for fish, ducks, and other wildlife would greatly enhance the attractiveness of the mountains as a recreational area.

On the other hand, many of the fruit growers, especially around the High Rolls and Mountain Park area, are greatly troubled each year with wild pigeons eating cherries. These pigeons also damage grain crops when in the shock. Crows and other birds do a great deal of damage to the corn in the fall of the year, and also squirrels and gophers contribute a great deal to such damage. Jack rabbits and rats are a great hindrance to re-vegetation throughout the lower lands on both sides of the mountains.

Noxious weeds also constitute a considerable problem around Tularosa especially, and also on James and Cox Canyons. Bind weed, tie vine, morning glory, and others are prevalent. Cooperative effort on the part of the farmers will be necessary in order to get rid of these weeds.

Poisonous weeds on the ranges are also a menace to the stock growers. Considerable numbers of cattle are lost each year in the mountain section due to their eating oak brush; wild parsnips also abound throughout the mountain section as well as loco and other poisonous weeds.

Throughout most of the farming section where irrigation is practiced, a scarcity of water constitutes one of the greatest problems. A few farmers have constructed small storage reservoirs which afford sufficient water for irrigating small gardens or supplement the regular irrigation system. Pos-

sibilities along this line of development have not been thoroughly explored but undoubtedly a great deal of valuable work should be done in the improvement of water storage facilities.

Roads: Great improvement has been made in transportation facilities through the District within the past few years. The Forest Service has constructed many miles of road throughout the Lincoln National Forest which are used for scenic travel by many tourists and serve the local farmers and ranchers as well.

One of the major results of this road construction, however, has been the decrease in large forest fires. CCC Camps are located throughout the Forest during the dry spring and summer months and are able to reach all areas of the forest in a very short time after a fire has started.

Loss of timber from fires, and resulting erosion on burns over the areas has therefore been reduced to a very great extent.

Need for additional improvement in highways within the District does exist, however. To this end the County Planning Committee recently requested and received promise that Highway #52 from Tulareosa to Hot Springs would be made a Federal Aid secondary road project. Plans are already under way to build a new highway from Alamogordo to Pinon which will better transportation facilities from the farm and ranching sections throughout the Sacramento Mountains and thereby give the farmers a much needed outlet to market.

LONG-TIME OBJECTIVES FOR THE DISTRICT

The long-time objectives of the District may be summed up as follows:

1. Proper Land Use

This will include the development of the land use capability approach in which lands of the District will be classified according to their potential ability to produce. Adjustments will necessarily have to be made in grazing practices which may include reduction of livestock to the proper carrying capacity based on periodic or semi-annual checks of the vegetation. The carrying capacity will fluctuate in most instances in proportion to the amount of precipitation received. Deferred and seasonal grazing will also be used where practicable. Cropping and tillage practices on the agricultural land should be adjusted to include retirement of extremely steep and unprotected fields from cultivation, contour cultivation, contour terraces, and bench terracing on irrigated and farm lands depending upon the slope and soil type involved. Cropping systems which will provide for the return of organic matter to the soil and to the elimination of crop diseases will be stressed. Adjustments should be made in the forestry practices on privately owned lands to provide for continued production of these lands where suited to

forestry purposes by proper logging practices, reforestation, and other silvicultural measures which may be needed. Adjustments should be made wherever practical for the improvement of the land ownership pattern so that proper use can be made of the lands within the District.

2. Flood Control

The necessary surveys should be initiated to determine the causes and the extent of flood damage on such drainages as Tularosa Creek, La Luz Canyon, and others which constitute a flood hazard to valuable property below.

3. Water Facilities: Irrigation and Domestic

Since there is a scarcity of both irrigation and domestic water in many parts of the District, every effort should be made to improve the water facilities by taking advantage of all the programs that may lend themselves to increasing the water resources of the farmers and ranchers, and villages and municipalities. Dam sites for additional storage, the development of springs, and exploration for underground shallow water should be investigated.

4. Channel Stabilization - on critical canyons.

Channel stabilization is necessary in many canyons if the irrigation water is to be conserved and flood damage alleviated.

5. Irrigation Practices

Irrigation water must be conserved by every practical method. This will be accomplished by proper location of lateral and ditches, installation of checks and turnouts, using proper length of run for the soil type and slope, limiting the amount of water used to the amount required for the optimum growth of certain crops, and the adjustment of the cropping system to the water supply.

6. Wildlife and Recreational Resources

Since the District is noted for its natural resources and considerable income is derived from this source, every effort should be made to conserve the natural and scenic beauty of its numerous recreational areas. The National Park Service and Director of State Parks will be asked to assist in this program as well as the Forest and Indian Service.

7. Highway Erosion Control

Every effort should be made to eliminate erosion and flooding caused by the location of highways, bridges, culverts, etc. Additional roads should be constructed and others eliminated in order to effect erosion control and reduce maintenance costs.

8. Agricultural Research

Agricultural research in the District should be encouraged, particularly on problems relating to farm forestry and woodland, revegetation of steep slopes, irrigation practices, control of noxious weeds, insects, and plant diseases, and the adaptability of soils to various crops. The Experiment Station should assist in establishing control of these weeds.

SPECIFIC PLANS FOR ACCOMPLISHING THESE LONG-TIME OBJECTIVES BY MAJOR PROBLEM AREAS WILL BE INCORPORATED INTO THE DISTRICT WORK PLAN.

ACCOMPLISHMENT OF LONG-TIME OBJECTIVES

The Board of Supervisors would like to point out that the Otero District is unique, in that so many different types of land tenure are represented within its boundaries. (See appendix). The major portion of the district is under the direct jurisdiction of one or more public agencies. Therefore, in order to carry out a sound soil and water conservation program, it is necessary that a coordinated effort be put forth by all Federal, State, and Local agencies, who are directly or indirectly concerned with the soil, and other resources within the district. The Board of Supervisors is asking that the various agencies who have assisted in the formulation of this program as well as others to cooperate with the district insofar as they are able.

The Extension Service is asked to continue and expand the educational program within the district by informing the farmers individually, and through group meetings, of the basic problems involved in the conservation program; to call on the several specialists from the State Office to assist in developing specific plans for individual problem areas within the district. The Extension Service is also asked to continue the splendid conservation program that it has already established in various parts of the district.

The Farm Security Administration is asked to continue its efforts to bring about satisfactory land use adjustments for the low income producing groups of farmers within the district; to assist the supervisors in working up satisfactory cooperative agreements with farmers within this group.

Since a greater portion of the important watersheds within the District is under the jurisdiction of the Forest Service, the Board of Supervisors is especially anxious that the Forest Service continue its efforts to gain satisfactory control of critical non-agricultural areas within these watersheds through its land acquisition program. The Board of Supervisors especially wishes to commend the Forest Service for its efforts in erosion control and especially the work on the stabilization of the Fresno Canyon arroyo. Similar work of this nature is needed in other portions of the District.

The Board of Supervisors expects to work in close cooperation with the County Committee of the Agricultural Adjustment Administration in order to spread the conservation practices within the limitations of this program to a greater number of farmers and ranchers within the district.

Since the Mescalero Indian Reservation is included within the boundaries of the District and is strategically located as far as several major watersheds are concerned, the Board of Supervisors especially requests that the Indian Service continue its conservation program on the Reservation and especially on those drainages which contribute directly to flood and sedimentation damage to lands within the District and outside the boundaries of the Reservation.

Since a large portion of the grazing lands within the District is Public Domain, the Board of Supervisors hope to enter into an appropriate arrangement with the Grazing Service relative to the conservation problems on Public Domain, or with the General Land Office for the Public Domain which it administers, particularly where they are located on critical watersheds and contribute to the conservation problem on other than public lands.

The State Land Commissioner will be asked for cooperation in establishing conservation measures on State lands, especially those so located that measures are vital to towns or agricultural areas.

The Board of Supervisors also wishes to cooperate with the Fish and Wildlife Service in conserving the wildlife resources within the District and also in the control of rodents and predators. In this connection the Supervisors will also solicit the assistance of the State Game Commission and other organizations primarily interested in conserving wildlife resources.

The Board of Supervisors expects to contact and seek material cooperation from the State Highway Department and the Board of County Commissioners in development of practices that will alleviate erosion conditions due to the location of roads, highways, bridges, culverts, etc.

The Board of Supervisors expects to place this district program in the hands of Vocational Agriculture Teachers and County Superintendents of Schools, the Superintendents of all municipal schools, and ask that they cooperate in disseminating information on the soil and moisture conservation problems within the District.

In a like manner Service Clubs and contemporary organizations will be asked to further the cause of conservation within their several organizations.

The Bureau of Agricultural Economics is requested to assist the Supervisors in preparing a long-time district work plan and specifically to assist in the development of a Water Facilities plan for the District.

The Soil Conservation Service will be asked to provide technical assistance to help the Supervisors make the necessary conservation and range surveys; to develop the land use capability approach to proper

land use; and within the limits of their facilities to provide for the loan or grant of equipment, and CCC labor to assist in carrying out the conservation program on lands within the District.

The municipalities of Alamogordo, Tularosa, La Luz and Cloudercroft, whose water supply is dependent upon the soil conservation program, will be asked to materially cooperate with the Board of Supervisors.

The Southern Pacific Railroad and other large corporate interests who have a vital interest in the conservation program will be asked to cooperate with the Supervisors in working out a solution for these problems.

INTER-AGENCY ADVISORY COUNCIL

Since it is essential that a coordinated program be instituted in the District, the Board of Supervisors will take the initiative in the formulation of an Inter-Agency Advisory Council. This Council will consist of the Chairman of the Board of Supervisors, the County Extension Agent, and a representative from the Forest Service, F.S.A., Grazing Service, ECS, Indian Service, E.A.E. and other agencies concerned. This council will meet on call to discuss the problems in the District and make suggestions for revising or amending the Program and work plan for the District.

APPENDIX

1. Legal description of District.
2. Land Status Map.
3. District map - showing major problem areas.
4. Coordinated Survey Proposal.
5. Map - indicating distribution of farms and ranches.

LEGAL DESCRIPTION

of the

OTERO SOIL CONSERVATION DISTRICT

Beginning at the northeast corner of Otero County, New Mexico, which is the northeast corner of T. 12-S, R. 16-E; thence south $2\frac{1}{4}$ miles along the county line to the southeast corner of T. 15-S, R. 16-E; thence west along the county line approximately 2 miles; thence south approximately 30 miles to the southeast corner of T. 20-S, R. 15-E, still following the said county line; thence west approximately 12 miles; thence north 6 miles; thence west 6 miles; thence south 6 miles; thence west 6 miles; thence north 6 miles; thence west 6 miles, which point is the southwest corner of T. 19-S, R. 11-E; thence north approximately $\frac{1}{4}$ miles following the west boundary line of the Lincoln National Forest; thence west about $\frac{1}{4}$ mile; thence north $\frac{1}{2}$ mile, still following the west boundary of the Lincoln National Forest; thence west about $1\frac{1}{2}$ miles; thence south about $1\frac{1}{2}$ miles, which point is the northwest corner of Sec. 25, T. 19-S, R. 10-E; thence west 1 mile; thence south 1 mile; thence west 1 mile; thence south 1 mile; thence west 1 mile; thence south 1 mile; thence west $\frac{1}{2}$ mile; thence south 1 mile, which is the southwest corner of Sec. 5, T. 20-S, R. 10-E; thence west about $3\frac{3}{4}$ miles to the Southern Pacific Railway right-of-way; thence southwesterly along the said Southern Pacific right-of-way to a point where it intersects the boundary line between the states of Texas and New Mexico; thence west along said boundary line to the southwest corner of T. 26-S, R. 6-E, which is the southwest corner of Otero County; thence north along the west Otero County boundary line to the northwest corner of T. 16-S, R. 6-E; thence east about $2\frac{1}{2}$ miles; thence north about 30 miles to the northwest corner of Otero County; thence east about 36 miles, following the county line; thence south about 6 miles, still following the county line; thence east along the said county line about $2\frac{1}{4}$ miles to the

northeast corner of said county, which is the point of beginning;

Excepting therefrom the area within the corporate limits of the towns of Alamogordo and Tularosa and the plotted townsite of Clouderoft and any other plotted townsites within the area described above.

COORDINATED SURVEY PROPOSAL
OTERO SOIL CONSERVATION DISTRICT
NEW MEXICO

NAME: Otero Soil Conservation District

SIZE: 2,356,224 acres or 3,681 square miles (approximately)

LOCATION: The district includes the northern and western portions of Otero County, New Mexico; or all of the county except for the area within Grazing District No. 5. The county seat of Alamogordo is approximately in the center of the district.

DESCRIPTION: This district lies on the eastern edge of the Basin-Range Province. The Sacramento Mountains cover most of the eastern portion of the district and divide the drainage. The east slope is part of the Pecos River drainage, and the west slope drains into Tularosa Valley, an inland basin which includes the western portion of the district. Many of the small streams that originate high in the mountains are permanent for considerable distance along their course.

Elevations range from approximately 9,000 feet in the highest portion of the mountains to 4,500 on the arid basin floor on the west and to 6,500 feet where the drainages leave the district on the east slope of the mountains.

Average annual precipitation ranges from eight or ten inches in Tularosa Valley where desert shrubs predominate to over twenty inches in the mountains where forest and grasslands occur.

Land ownership status of all lands within the district boundary is approximately as follows:

Private	317,467 acres
State	387,520 "
Federal	

National Forest	307,990	
National Monument	88,400	
Public Domain	780,607	
Indian Reservation	474,240	1,651,237 "

Total in District 2,356,224 acres

PREVIOUS SURVEYS: Detailed Soil Conservation surveys totaling 350 acres have been made on a number of individual holdings on the west slope of the mountains by the Soil Conservation Service. The Forest Service has made range surveys and an extensive erosion survey on lands under its jurisdiction.

JUSTIFICATION FOR SURVEYS: It is the purpose of this proposed survey to obtain information that will furnish a basis for land use planning and technical assistance in the development of a soil and water conservation program by the Otero Soil Conservation District with the cooperation of the Forest Service, Extension Service, Soil Conservation Service, and land owners.

TYPES OF SURVEYS PROPOSED: All proposed surveys are exclusive of lands under the jurisdiction of the Department of the Interior, and Forest Service.

1. Detailed conservation survey of 15,000 acres of farm lands.
2. Reconnaissance conservation survey of 689,987 acres of range land.
3. Extensive range survey of 689,987 acres of range land.
4. Extensive Economic and Sociological Survey of farmlands having a total of 15,000 acres under cultivation.

BASE MAPS AND SCALE: Detailed conservation Surveys will be made at a scale of four inches to one mile. Photographic enlargements of aerial contact prints will be used where available. Where contact prints are not available, base maps will be prepared by the area office from GLO plats, USGC topographic sheets, Forest Service maps and ACP farm maps, or where none of the above are available, plane table surveys will be made.

Surveys on range lands will be made at a scale of two inches to one mile on aerial contact prints where available; otherwise base maps will be prepared from any available source as mentioned above.

OTHER SURVEYS: Agronomy, engineering, wildlife, and woodland surveys will be made by area technicians during detailed planning activities.

COOPERATING AGENCIES: No direct cooperation on the part of other agencies is contemplated in the execution of the surveys. The information will be available for general use of all interested parties concerned with Land Use planning.

PERSONNEL OF SURVEY PARTIES: (Fiscal year 1941)

The conservation surveys are to be made by the personnel of the mobile surveys unit of Region Eight with the assistance and under the supervision of technicians of the Southern New Mexico Area. It is estimated that the services of four Junior Soil Surveyors will be required for a total of twelve man months.

Economic and Sociological Surveys will be made by personnel from the area office in cooperation with technicians from the Division of Economic Surveys of Region Eight. It is estimated that the services of one Agricultural Aid will be required for a total of six man months and one Assistant Soil Conservationist (Economist) for two man months.

Range surveys will be made by resident technicians of each individual ranch as needed.

DATE OF INITIATION:

REMARKS: Conservation Survey procedure will be as outlined in Soil Conservation Survey Handbook, USDA, Miscellaneous Publication No. 352.

Conservation surveys on private farmlands will be given first priority.

ESTIMATED COST OF EXTENSIVE RANGE SURVEYS (FISCAL YEAR 1941)

It is estimated that completion of the extensive range survey on lands proposed herein will cost approximately \$0.012 per acre, and will not exceed a total of \$9,500.00.

ESTIMATED COST OF CONSERVATION SURVEYS (FISCAL YEAR 1941)

RECONNAISSANCE CONSERVATION SURVEY

(Five field days per man-week, four weeks per month)

Acreage to be surveyed	689,987
Average acres surveyed per man-day	6,000
Average for party (2 men) per day	12,000
Number of man-months required to complete survey (field work - 2 men, three months each, office work - 1 man, 1 month)	
Salaries (\$166.67 per month)	\$1,166.69 ⁷
Per diem (\$3.00 per day) 2 men, 2 stations 30 days each station	360.00
Transportation	200.00
Miscellaneous	100.00
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Total	\$1,826.69

Cost per acre \$0.0026

DETAILED CONSERVATION SURVEY

(Five field days per man-week, four weeks per month)

Acreage to be surveyed	15,000
Average acres surveyed per man day	200
Average per party (2 men) per day	400
Number of man-months required to complete survey (field work - 2 men, 2 months each; office work - 1 man, 1 month)	
Salaries (\$166.67 per month)	\$ 833.35 ⁵
Per Diem (\$3.00 per day) 2 men, 2 stations, 30 days each station	360.00
Transportation	75.00
Miscellaneous	50.00
	<hr/>
Total	\$1,318.35

Cost per acre \$0.0878

ESTIMATED COST OF EXTENSIVE ECONOMIC AND SOCIOLOGICAL SURVEY
(FISCAL YEAR 1941)

It is estimated that this survey will cost approximately \$1,200.00.

This will include the services of one Agricultural Aid at \$5.00 per day WAB for approximately six months, and one Assistant Soil Conservationist at \$213.67 per month for approximately two months.