NAVAJO SERVICE

RANGE MANAGEMENT BRANCH REPORT

LAND MANAGEMENT UNIT NO. 3

TUBA CITY

Box 50

D. G. ANDERSON
Jr. Range Examiner
March 15, 1937

WR 7419

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I. FOREWORD

A. LOCATION: Land Management Unit No. 3, with headquarters at Tuba City, Arizona, is located in the extreme western portion of the Navajo Indian Reservation and comprises the western portion of the Western Navajo Jurisdiction. The south boundary of the Reservation forms the south boundary of the Unit. On the west, the Tusayan National Forest, Grand Canyon National Park, and the Colorado River form the boundary. The Unit lies in Coconino County, Arizona, roughly between 110° 30' and 111° 45' longitude and 35° 30' and 37° 15' North latitude. For relative location see Reservation Map (Map 1).

B. AREA: The area of Land Management Unit No. 3 as outlined on the base map and compiled from range type maps is 1,750,800 acres. The original boundaries of the Unit included 1,422,230 acres but due to various conditions existing, several boundary changes were proposed and the area has been compiled considering the changes as effective. For description of changes see

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Paragraph "C".

C. BOUNDARIES: The boundaries of the Unit as originally set were, in general, as follows: Beginning on the Little Colorado River on the southern Reservation boundary and extending west and south along said boundary to the east boundary of the Tusayan National Forest; thence, north along the Tusayan National Forest, and Grand Canyon National Park boundaries to the Little Colorado River; thence, northeast to Moenave Demonstration Area, White Point, and Red Mesa; thence, to White Mesa; thence, east to Black Mesa; thence, south and west along Blue Canyon to 111° 00' parallel, thence south along Units No. 4 and 5 to the point of beginning. Boundary changes at Cedar Ridge, Red Lake, Howell Mesa, Dennebito Trading Post, and Black Falls have changed the boundaries of the Unit as follows: Beginning at the junction of the Colorado River and Little Colorado River the boundary extends north along Marble Canyon (the west Reservation boundary) to Lee's Ferry; thence south along Echo Cliffs to the Gap Trading Post; thence northeast along Crooked Ridge to 111° 15' Meridian; thence southwest to Red Mesa; thence southeast to Little White Mesa; thence south along Red Lake Wash to Blue Canyon; thence east along Blue Canyon to Dusty Valley; thence south along Dusty Valley and rim to the Dennebito Wash at the Standing Cottonwood Tree Agricultural Area; thence southwest along the Dennebito Wash to three miles south of Dennebito Trading Post; thence west and south approximately twelve miles

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thence south to the Little Colorado River approximately three miles above Black Falls; thence north along the Little Colorado River to the south Reservation boundary; and thence along said boundary to the point of beginning.

Five boundary changes were proposed. A description of each including boundaries, acreage, carrying capacities, and reasons for making such proposals follows:

1. Cedar Ridge Bodaway House Change:

This change adds to Unit #3 the area lying north of the original unit boundary east of Marble Canyon, west of Echo Cliffs and south of Crooked Ridge, an area comprising approximately 485,000 surface acres, 40,000 forage acres, and a carrying capacity of 16,000 sheep units yearlong. The area involved was originally in L. M. U. #1.

Reasons for proposing this change are numerous. First, the proposed boundaries fall on natural topographic boundaries, Echo Cliffs being inaccessible from Lee's Ferry to the Gap with the exception of trails at Navajo Springs, Cedar Ridge, and Bitter Seeps. Crooked Ridge is a natural boundary, though not inaccessible.

From administration standpoint the area involved can be handled easier from Tuba City than Kaibito as headquarters.

Livestock usage in the area indicates an important need for the change. Indians in and around Crooked Ridge recognize this as a boundary, splitting very definitely Gap and Kaibito

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usage. Very little livestock movement across the boundary is to be expected from either groups of Indians. In the past there has been some shift of livestock south of Crooked Ridge by Kaibito Indians during June for water. This condition has been corrected by construction of drilled wells north of Crooked Ridge.

Cultivated land at Tuba City and Moenave tend to draw Indians from Bodoway House, Cedar Ridge, and the Gap during the farming season. Livestock water in the Bodoway House area is of temporary nature and a seasonal shift to permanent supplies at the Gap and Tuba City results. There is, then, created a livestock movement that is best managed by including all the area involved in one land management unit.

Livestock usage in the vicinity of Cedar Ridge extends as far north as Bitter Seeps. The area north of that within the proposed change is used by Kaibito people for the purpose of salting their sheep on salt bush. Large herds come from Kaibito Plateau to this area for short periods of time to salt their sheep. There are enough Cedar Ridge cattle and horses in the area yearlong to more than properly utilize the available forage. The practice of salting on salt bush is very detrimental to the range, and to stop people from coming to this area for that purpose would be a wise action.

Administratively, this small area is only accessible to the Supervisor of Land Management Unit No. 1. by means of a trip of

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one hundred or one hundred fifty miles, the Supervisor have to go to Tuba City or the Gap to cross Echo Cliffs.

It was therefore deemed advisable to extend the boundary north of Bitter Seeps to Lee's Ferry along Echo Cliffs.

2. Red Lake - Black Mesa Change:

This change is an exclusion from Unit No. 3. The boundary would extend from Red Mesa to Little White Mesa and thence down the Red Lake drainage to Blue Canyon. This change would exclude 385,000 surface acres, 27,790 forage acres, and a carrying capacity of 11,116 sheep units yearlong in the vicinity of Red Lake, Cow Springs, and Black Mesa from Unit No. 3. Of this area approximately 205,500 surface acres with 13,000 forage acres in the vicinity of Red Lake, Cow Springs, and western part of Black Mesa would be added to L. M. U. No. 1. Approximately 180,000 surface acres with 14,790 forage acres in the vicinity of Cow Springs and Black Mesa would be added to L. M. U. No. 2. The exact location of the line between Units No. 1 and 2 is not yet quite definite but the entire area is excluded from Unit No. 3.

Reasons for proposing this change were principally usage and management. The Red Lake Chapter boundary extended from Little White Mesa to Wild Cat Peak and then to White Mesa. Permanent water developed just east of this line has caused Red Lake usage to extend slightly farther west (to the proposed boundary line).

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There is a constant shift of people from Kaibito to Red Lake for the purpose of cultivation very similar to the Bodoway House-Tuba City shift previously discussed. In the winter is a countershift of people from Red Lake to Kaibito and the Copper Mine area for winter range. Such a shift creates a livestock movement problem better administrated by including Red Lake and Kaibito in the same unit.

Red Lake is much closer to Kaibito than Tuba City and would be more easily administered by Unit No. 1.

3. Howell Mesa Change:

This area would add to Unit No. 3 the area south of Blue Canyon, west of Dusty Valley and Dennebito Wash, and east of 111° 00' Meridian and includes 176,031 surface acres, 19,884 forage acres, and a carrying capacity of 7994 sheep units year-long. This change was first proposed by Study Group "C" while working on Unit No. 4. A livestock usage was checked in this area with similar results as those obtained by that group.

Briefly, to review the reasons for making this change: Usage is primarily Tuba City. The area is easily accessible to Tuba City because of roads and distance, making for more ease of administration from Tuba City than Pinon and natural topographic boundaries would form the boundary.

4. Dennebito Wash Change:

This area is a continuation of the Howell Mesa Change adding to Unit No. 3 from Unit No. 5, 15,380 surface acres, 1369 forage acres, and a carrying capacity of 548 sheep units

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yearlong. The area is defined by the Dennebito Wash on the east, Kley-e-Chee rim on the West, and the Howell Mesa change on the north.

This change is made for the same reasons of usage, administration and topography as the Howell Mesa change.

5. Black Falls Change:

This change adds to Unit No. 3, 34,575 surface acres and 2585 forage acres with carrying capacity of 1134 sheep units yearlong. The area is delimited by the Little Colorado River on the south and west, the former Unit No. 3 boundary on the north and Rock Springs rim on the east. By this change the Tuba City and Leupp usage is split as nearly along the correct line as could be ascertained in the study. A well defined natural boundary is followed.

Usage in the area is principally as cattle and horse range and few people inhabit the area. None were present during the study on Unit 3 but more complete information has been obtained from the study on Unit No. 5 by Mr. McKinney. For further information see Range Management Branch Report of Unit No. 5.

The changes would increase the area of the Unit to 1,750,800 acres and the carrying capacity to 119,214 forage acres or 47,686 sheep units yearlong.*

*The changes involved in this unit have been considered

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as effective with regard to information for this report. Any figures and information hereinafter referred to in this report will consider the new boundaries with their consequent additions or exclusions from the original boundary.

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II. GENERAL DESCRIPTION

A. ACCESSIBILITY: Roads, trails, telephone lines make the entire area accessible.

1. Roads:

Primary roads in the Unit include U. S. Highway No. 89 entering the Reservation south of Cameron and continuing north via the Gap and Cedar Ridge, and leaving the Unit at Lowery's Lodge at the Navajo Bridge across Marble Canyon. This is the main road between Utah and Flagstaff, Arizona. State Route No. 64 between Cameron and the Grand Canyon crosses the southwest portion of the Unit. These roads are passable at all seasons of the year.

Secondary roads include: The Tuba City - Kayenta road, the Tuba City - Hotevilla road, and the Cameron - Needmore Road. Numerous wagon roads and truck trails radiate from the various primary and secondary roads making nearly all the area accessible to cars.

2. Trails:

Restricted areas not accessible to cars can be reached by horse-trails.

3. Telephone:

Telephone connections in the Unit include: The Flagstaff - Tuba City line via Cameron, the Tuba City - Hotevilla line, the Tuba City - Kayenta line, and the Tuba City - Gap line via Moenava. The telephone connections are at present adequate for the

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unit.

4. Railroads:

The Atchison, Topeka, and Santa Fe Railroad lies to the south of the Unit and furnishes the chief outlet for livestock and livestock products of the Unit.

B. TRADING POSTS: Trading posts within the Unit are located at Tuba City, Tuba Trading Post and Kerley's Post; Gap, Cameron, Cedar Ridge and Lowery's Trading Post. The trade of the Unit is effected by Kaibito, Hotevilla, and Dennebito Trading Posts.

C. SCHOOLS AND HOSPITALS: A boarding school at Tuba City, a day school at Moenava and a county school at Tuba City furnish the educational facilities of the Unit.

Medical facilities include the hospital at Tuba City.

D. POPULATION CENTERS: The population of the Unit is rather evenly distributed over the area with the exception of a concentration at Tuba City and to a lesser degree concentrations on Gray Mountain, Coal Mine Mesa, Gap, and Bodoway House. The latter concentrations are of a seasonal nature.

Population is made up of Navajo Indians with a colony of Hopi Indians located at Moencopi Village.

For further information as to numbers of people, classifications, etc., see Sociology Branch Report L. M. U. No. 3.

E. AGRICULTURE: Farming land located in the Unit is limited

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to less than .1% of the area. Potential land is very limited. The factor of agricultural land is very important, more because of its limited amount than any other factor.

F. PHYSIOGRAPHY:

1. Topography and Drainage:

Topography of the Unit varies from steep, broken, rough hillsides and canyons to level or rolling mesa tops and valleys. Gray Mountain, Kloy-e-Chee, Echo Cliffs, Lower Basin and Lee's Ferry area exhibit this rough broken terrain. Coal Mine Mesa, Moencopi Plateau, Willow Springs Wash, and the Cedar Ridge area exhibit a rolling terrain. For the most part the area is of the latter type and is primarily with a browse, grassland or sage brush cover. The only forested areas are on Gray Mountain, Red Mesa, and Cedar Ridge.

The entire area lies within the Colorado River or Little Colorado River watersheds. For the most part the area is drained by the Moencopi Wash, Denwabito Wash and the Little Colorado River with their tributaries. A large area in the central portion of the Unit is so sandy as to furnish little or no run-off.

2. Geology:

Geology of the Unit may be divided into three parts. The western and southwestern portion of the Unit is found the Kaibab limestone, Moencopi sandstone and shinarump conglomerate. Water in drilled wells in this area is doubtful.

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The central portion of the Unit is made up of Chin Lee shale, and Navajo and Wingate sandstones found along Echo Cliffs and Ward Terrace.

The eastern portion of the Unit is made up of Navajo and Morrison sandstones. Water in drilled wells in this part of the Unit is more or less certain with certain geologic limitations.

Large masses of igneous rock are found in the southwestern portion of the Unit.

3. Soils and Erosion:

Soils in the central and east part of the Unit are derived from the Morrison, Navajo and Wingate formations and are extremely sandy in nature. The soil in the western central part of the Unit exhibits largely shale derived from the Chinle, Shinarump, and Moenkopi formations. Soils in the west portion of the Unit are rocky and calcarious, derived from the Kaibab formation.

Erosion over the entire area is rather severe. Wind and sheet erosion is very prevalent throughout, many moving sand dunes and bare slopes resulting. Restricted areas near Gray Mountain and Bodonny House exhibit only slight or moderate erosion.

Gully erosion is only important in restricted areas.

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4. Climate:

(a) Elevation: The Unit varies from approximately 4200 feet above sea level on the Little Colorado River, 4900 feet at Tuba City, to 6500 feet on Gray Mountain. The largest portion of the area is from 4500 to 5000 feet above sea level. The only accurate measure of altitude is at Tuba City where the elevation is 4900 feet above sea level.

(b) Temperature: The only climatological station in the Unit is located at Tuba City, Lee's Ferry being just outside the boundary. Temperature varies from minus 15° F to plus 108° F over a 29-year period of incomplete records at the former station.

(c) Growing season: Killing frosts have been known at Tuba City as late as May 19th. The average growing season is from April 22 to September 19, with an average length of 179 days.

(d) Precipitation: Rainfall records at Tuba City inform us the average annual precipitation is approximately seven inches, varying from three inches as a minimum to twelve inches as a maximum. The records are incomplete for 29 years during the period from 1897 to 1935.

(e) Prevailing winds: Prevailing winds in the area, especially in the spring, are from the southwest causing much wind erosion especially in the area in the vicinity east of Echo Cliffs and Kloy-e-Chee Rim.

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G. VEGETATION:

1. Vegetative Zones:

Vegetation in this Unit is typical of the Upper Sonoran Zone. In the bottom of a few canyons, mesquite and cactus typical of the Lower Sonoran Zone was found, but in such small quantities that, from an ecological standpoint, they were of negligible importance. The vegetation of the Unit is comprised of Chamise, pinon, juniper, blue grama, big sage, shadscale, blackbrush, Mormon tea, and other species typical of the Upper Sonoran Zone vegetation.

2. Vegetative Species:

Vegetative species of importance occurring in this area by vegetative types are as follows: 1 or 1(5) (grassland type), blue grama (Bouteloua gracilis), Galletta grass (Hilaria jamesii), alkali sacaton (Sporobolus airoides), sand dropseed (Sporobolus cryptandrus), black grama (Bouteloua eriopoda), 3-Awn (Aristida spp.), six week's grama (Bouteloua barbata), with browse species occurring to a lesser degree, chamise (Atriplex canescens), snakeweed (Gutierrezia spp.), yellow bush (Chrysothamnus greenii), Mormon tea (Ephedra spp.) and weeds, Russian thistle (Salsola pestifer), sunflower (Helianthus spp.), Croton (Croton spp.), careless weed (Amaranthus palmeri), and cocklebur (Xanthium commune); in 4 type or sage brush, big sage (Artemisia tridentata), sand sage (Artemisia filifolia), blue grama (Bouteloua gracilis), and chamise (Afriplex canescens); in the 5 or browse types besides the grass

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species already mentioned, galletta, blue grama, sand dropseed, and sacaton, spinsy muhley (Muhlenbergia pungens) is important and browse species include: Greasewood (Sarcobatus vermiculatus), black brush (Coleogyne ramosissima), shadscale (Artiplex confertifolia), bush mint (Poliomintha incana), Mormon tea Ephedra spp.), buckwheat (Eriogonum spp.), winterfat (Eurotia lanata), iodine bush (Allenrolfea spp.), rabbit bush (Chrysothamnus spp.) and weeds, Indian wheat (Plantago spp.); in 7 or waste type, some vegetation occurs but is inaccessible to livestock; in 8 or barren types, some annual weeds occur especially Russian thistle (Salsola pestifer); in 9 or woodland type the upper flora is made up of pinon (Pinus edulus) and juniper (Juniperus scopulorum) (J. Utahensis) and (J. monosperma), the lower flora is made up of species already mentioned, big sage, cliff rose, spiny muhley, sand dropseed, snakeweed, and yellow bush.

3. Vegetative types: Range vegetative types included in the Unit include: 1 type, grassland; 4 type, sagebrush; 5 type, browse; 7 type, waste; 8 type, barren; and 9 type, woodland. The following table graphically explains the area and importance in carrying capacity of the various types:

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Table Showing Acreage and Carrying
Capacities by Vegetative Types in L. M. U. No. 3

TYPE	SURFACE ACRES	PERCENT OF AREA	FORAGE ACRES	PERCENT OF CARRYING CAPACITY
1. Grassland	396,821	22.68%	51,427	43.14%
2. Sagebrush	122,915	7.02%	15,344	12.87%
5. Browse	846,707	48.36%	46,911	39.35%
7. Waste	125,263	7.15%		
8. Barren	156,801	8.96%		
9. Woodland	89,362	5.10%	5.532	4.64%
Cultivated	2,423	0.13%		
Demonstration area	10,508	0.60%		
	1,750,800	100 %	119,214	100 %

The above table shows some interesting facts. About one-sixth of the area is non-productive, being either inaccessible or barren. Less than one-eighth of one per cent of the area is cultivated and only 4½% of the area is woodland. Grassland which makes up one-fifth of the area furnishes more than two-fifths of the carrying capacity. Browse, which makes up nearly one-half of the area, furnishes only two-fifths of the carrying capacity. This is largely due to a large area of browse type with a low forage acre factor, .01 to .05.

4. Condition of Vegetation:

Vegetation in large areas of the Unit have been so severely overutilized that their vitality is greatly reduced, making more pronounced the condition of range depletion. Only a small area just north of the junction of the Colorado River and Little Colorado River is the vegetation in good condition.

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5. Forested Areas:

Here, too, as in agriculture, the forested areas become important not from the standpoint of abundance but because of the shortage of wood and wood products available. Pinon (Pinus edulus) and Juniper (Juniperus monosperma, J. utahensis and J. scopulorum) comprise the forest species in the Unit. Stands on Gray Mountain and scattered stands on Cedar Ridge, and Crooked Ridge are the only woodland areas on the Unit. No coniferous timber is present. Because of the scarcity and isolation of stands, this becomes a very important factor in preventing use and abuse of palatable range vegetaion such as big sage, and Chamise as fuel wood. Relative scarcity and long hauls make woodland important from a range standpoint. Approximately 89,000 acres of woodland occur in the entire unit or about 4½% of the area. (For further information see Forestry Branch Report of L. M. U. No. 3.)

6. Poisonous Plants:

Poisonous plants are rather widespread over the entire unit but as a rule are not in such large quantities as to cause severe losses except the Bodoway House - Cedar Ridge area, in which loco is in hazardous quantities. (See Map.)

Poisonous plant species in the Unit are: Loco (Astragalus), Rayless goldenrod (Isocoma wrightu), Greasewood (Sarcobatus vermiculatus), broad-leaf milkweed (Ascelepias spp.), lupine

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(Lupinus spp.), larkspur (Delphinium) and cocklebur (Xanthium commune).

Loco is widespread over the entire area and occurs in hazardous quantities near the Bodoway House, Cedar Ridge, Shinamo Alter and Tuba Butte (See Map 3.). Various species of this plant occur in the Unit, some being perennial and always present, others being annual and very abundant in certain years, causing severe losses especially in horses.

Rayless goldenrod and broadleaf milkweed occur along drainage ways in the Chinlee and Shinarump formations, although widespread and rather abundant, losses from this plant were not reported.

Greasewood is localized around Tuba City and the Moencopi Wash. Losses from this plant were not reported and death loss only occurs when careless salting practices and handling of sheep prevail.

Lupine and larkspur are restricted to small areas on Gray Mountain and Lower Basin. These plants are not abundant and not widespread. No losses were reported.

Cocklebur is localized along the Moencopi drainages and no death losses were reported. Loss from the bur in wool is not an important factor.

As a whole, Unit No. 3 is relatively free from death loss due to poisonous plants, loco being the most important plant in the area causing losses. Eradication is not economically feasible.

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H. LIVESTOCK WATER: The problem of livestock water on the Unit is a serious one. For discussion, the Unit may be divided into two general regions, the area east, and the area west of Highway No. 89. In the former area water is rather abundant and of permanent nature with relatively good distribution. The principal factor in this area is maintenance of existing supplies with the development of a few supplies.

The latter area the water problem is more difficult of solution. Nearly all the water in the area is of temporary nature. Lack of abundance and poor distribution of existing supplies make for poor livestock distribution and utilization. Possibilities of permanent water in this area lie only in the construction of large reservoirs on long drainages. Definite proposals have been made (See Map). Drilled well possibilities are not present in this area because the area is drained by the Little Colorado River Gorge (1500 feet deep) and Marble Canyon (approximately 3500 feet deep).

There are in the area 172 water supplies or an average of a supply either temporary or permanent for every 10,179 acres. There are 86 permanent supplies or on an average a permanent supply for every 26,358 acres.

The various supplies may be classified as follows:

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12	drilled wells permanent
24	shallow " "
18	developed springs
24	undeveloped "
8	reservoirs nearly permanent
77	" temporary
9	shallow wells "
172	Total

I. DIPPING VATS: There are at present active vats at Cameron, Tuba City and Gap. There are abandoned vats at Needmore and Poverty Tanks. Vats outside the area affecting the Unit are located at Sand Springs, Red Lake and, to a lesser degree, Kaibito. The vats are in good condition except Tuba City vat, which fills with water from seepage. To move the vat is difficult and not recommended.

J. RODENTS AND PREDATORS: Principal rodents in the area include prairie dogs, kangaroo rats, ground squirrels and mice. Damage except in restricted areas, is negligible. (See Biology Report).

Predators in the area are lead by coyotes. More than fifty individuals were seen during the study and severe losses are reported. Exact numbers of losses could not be obtained. Predatory inclined Indian dogs may be responsible for some losses attributed to coyotes.

Bob cats are the only other predators but losses from this animal are small. (See Biology Report)

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K. LIVESTOCK PESTS: Lice, ticks and grub-in-the-head constitute the livestock pests of the area. Dipping has effectively eradicated scab and controls to some degree lice and ticks. Close confinement of sheep in corrals is responsible for spread and reinfection of sheep to lice, ticks and grub-in-the-head. Treatment for grub-in-the-head is not practiced at present. (See Biology Report)

L. GENERAL RANGE CONDITIONS: At the time of this study both extremes of forage condition were exhibited in the area. Needmore area dn Bodoway House area exhibited abundance of feed while Tuba City, Cameron, and other areas showed very little feed available. The areas where the range is in good, medium and poor condition closely follow the areas outlined on the utilization map, accompanying this report.

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III. LAND USE

A. STATUS: Although all land in the Unit lies within the Navajo Indian Reservation, there are certain private patented lands. The area covered by General Land Office surveys includes four and a half townships at Tuba City and the area south and west of the Little Colorado River. Land status was obtained by Mr. Carver and Mr. Jones from records at Phoenix and Flagstaff. A map showing land status accompanies this report.

B. LAND USE: Of the 1,750,800 acres of land on the Unit, 282,064 acres are waste or barren and are non-productive. Approximately 1/8 of 1% of the area is cultivated, 89,000 acres are woodland, and all the productive area of 1,455,805 acres 83% is used as range land. Range usage then overshadows the importance of other uses.

C. CHIEF VALUES OF THE LAND: Very little farm land is available. Forested areas comprise only 4½% of the area. The remainder of the area can best be used in range livestock production. We must not lose sight of the fact that the entire area lies within the Boulder Dam watershed and value of the land for watershed protection above this structure is important.

D. PRESENT CLASSES AND NUMBER OF LIVESTOCK: The present

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class of stock on the area is predominately sheep, although cattle are more important in this unit than other units throughout the Reservation.

Livestock numbers for this area have been taken from the 1936 dipping records. Because of the large and numerous boundary changes made, there has had to be a recompilation of dipping vat records. Since adequate information was not placed on the original dipping vat records at the vat as to range of the herds, there will be inaccuracies that can only be corrected at the next dipping time.

The following tables compiled from the 1936 dipping vat records by Mr. C. W. Maddox shows graphically the numbers and classes of livestock:

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Livestock Statistics Re-compiled from
Original Vat Records by C. Maddox to
Conform to Boundary Changes

Number of bands 159
Number of owners 268

		Sheep Units	
Ewes	24,222	24,222	Lambs 12,248
Wethers	3,978	3,978	
Bucks	485	485	42.7% lamb crop
Grown sheep	28,685	28,685	
Nannies	3,082	3,082	Kids 1,823
Wethers	182	182	
Billies	163	163	53.2 % Kid crop
Grown Goats	3,427	3,427	
Cows	500	2,000	Calves 212
Bulls	55	220	
Steers	41	164	35.6% Calf Crop
Grown Cattle	596	2,384	
Mares	389	1,945	Colts 211
Stallions	46	230	
Geldings	589	2,945	15.7% Colt Crop
Mules and Burros	319	1,595	
Grown Horses	1,343	6,715	
		Total 41,211	

Total Sheep Units 1933 41,211
Carrying Capacity 47,686
Understocking 6,475

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The above table shows an understocking of the unit. Even considering there are errors due to incomplete records at the dipping vats, this figure is lower than it should be. During the study, movement on 35,000 sheep and goats was obtained. It is estimated 5,000 more sheep and goats are present. Horse population is estimated at 2500 head and cattle at 1500. If we use these estimates, we come closer to checking with utilization observations for the Unit. There would be then approximate stocking of 58,500 sheep units or an overstocking of 10,800 sheep units, or 22.64%.

E. _____

Present carrying capacity of the Unit is 47,686 sheep units yearlong.* Present stocking on the area is 58,500 sheep units yearlong. A reduction of 10,814 sheep units or 18.46% is necessary to bring the present stock numbers to carrying capacity. There is a large number of wethers, horses, steers, and other non-productive stock that can be sold to bring about the reduction without serious loss in income to the Indians.

* Carrying Capacity of the Unit was based on a 2-1/2 acre forage requirement per sheep unit yearlong.

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F. RELATIVE CARRYING CAPACITY OF THE LAND: Much of the area in the unit, although shown to have a vegetative cover, is nearly in the class of waste land, having a forage acre factor of .01 or .02 and suffering a cut from 20% to 100% for slope and soil conditions. Only limited areas at Needmore, Bodeway House, and Coal Mine Mesa are good range land.

G. UTILIZATION: Range utilization over the area as a whole is from severe to moderate with only small areas showing proper or under-utilization. (See Utilization Map) The area around permanent water, especially arou[illegible]y, Cameron, Willow Springs Wash, and the Gap, have been a[illegible]rely overstocked over a period of years with consequent over-utilization and range depleti[illegible]n. Water has been the principal limiting factor and the areas near Needmore and the Junction have not been over-utilized because of the lack of permanent water.

H. ANIMAL HUSBANDRY:

1. History:

This unit is one of the oldest inhabited portions of the Reservation. The Mormon settlements at Lee's Ferry and Tuba City were established about 1869 to 1871. Continuous white livestock operations have been carried on in the Unit from that time until the area was made Reservation 1890, 1910, 1918, 19[illegible] The last addition was the Cambell-Francis area.

2. Breeds and Types of Livestock:

The present herds of sheep on the unit are typical Navajo

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sheep of Merino and Spanish origin with a decided influence especially in large herds of Rambouillet rams of improved quality. Small herds exhibit a number of the old long wool sheep.

Goats in the area are first of Angora strain used in the production of meat and mohair; second a Navajo strain, slick-haired, and only valuable in meat production.

Cattle on the whole are rather good type and quality, good Hereford sires being used on the original Mexican type of cattle found in the area.

Horses are typical Indian ponies, small of size and much inbred, showing the lack of good sires.

Cattle and sheep in the area show the influence of good sires owned by white livestock producers near the Reservation.

3. Present Practices:

(a) Breeding season at present in the Unit is year-long. No attempt at segregating the bucks from the ewes is made except in a few instances. The apron is used extensively but is far from being satisfactory.

(b) Selection has been more of a retrogressive selection than a progressive selection, especially in small herds. Because the trader does not take the smaller lambs, they are left in the breeding herd and are not of the desired thrifty, large individuals that should be retained for breeding purposes. Little consideration has been given market type

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in selection of the breeding herds. The fat individuals are slaughtered regardless of market type and the desirability of keeping them in the breeding herd.

(c) Lambing season, as is the breeding season, is yearlong, the most of the lambs being dropped in January, February and March. This past season, as is the general rule, a large number of lambs were lost due to cold weather. Lambing this past season took place with about a foot of snow on the ground.

(d) Herding practices at present are not conducive to putting flesh on the stock. Herds are driven while grazing instead of being herded from the front to increase utilization and reduce trampling. Close herding and trailing to and from water is prevalent throughout the unit. Only a few instances of proper herding were noticed during the study. Bedding in the same corral night after night is the universal practice in the Unit.

(e) Salting is done primarily on salt bush. The herds are driven periodically to supplies of saltbush. Chamise on Coal Mine Mesa has been practically killed out because of this practice. Traders in the area report selling only about 1000 pounds of salt apiece. Of Indians asked about the use of salt for their stock only about 10% answered affirmatively. The price of stock salt in the Unit varies from $2.50 to $3.50 per hundred pounds.

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NN004155

(f) Shearing started on the Unit about March 15th. By the 15th of April shearing will be at its peak or nearly over. Hand shearing is practiced universally. There are no power shears. Sorting and tying the fleeces is not practiced, making an undesirable and lower priced market product than the wool produced by white producers.

(g) Sales of livestock and wool are not at present conducive to good Animal Husbandry. The traders do not pay premium for heavy, uniform, and exhibiting good breeding and market type. Neither do the traders pay premium for clean, sorted, and tied wool. Consequently, there is no incentive for the Indian to improve his flock. He is working merely on a poundage basis.

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(f) Shearing started on the Unit about March 15th. By the 15th of April shearing will be at its peak or nearly over. Hand shearing is practiced universally. There are no power shears. Sorting and tying the fleeces is not practiced, making an undesirable and lower priced market product than the wool produced by white producers.

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NN004157

IV BASIC NEEDS OF THE LAND AND PEOPLE

A. PROPER CLASS OF STOCK: The vegetation is such that either cattle or sheep can utilize the forage with a few exceptions. Areas of coarse grass are found around the Little Colorado River above Cameron and along Ward Terrace that are better utilized by cattle than sheep.

B. PROPER NUMBERS OF STOCK: The present carrying capacity of the Unit is 47,686 sheep units yearlong.* A reduction of 10,814 sheep units is necessary. This should take place in unproductive stock as much as possible. An allowance of 5 horses per family or consumption group should be allowed because of the character of the country. Steers, wethers, and cull individuals should make up the large part of the reduction.

C. PROPER SEASON OF USE: Climate of the Unit is such that the entire Unit is year-long range. Water conditions in the western part of the Unit limit this usage, however, and make it necessary to use the range in winter only. (See map)

D. PROPER DISTRIBUTION: The area has been divided into subunits to obtain distribution of stock. Herding of sheep can

*A round-up is recommended to obtain accurate counts on cattle and horses, and establish ownership.

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do much to improve the present distribution, especially if temporary water is used while it lasts, and permanent waters only when necessary. To this end, nearly permanent reservoirs in the Gap - Bodoway House area should be fenced and used only when the smaller reservoirs are dry.

Salting and fencing will aid in distribution of stock.

Present bad distribution and improper utilization have resulted from lack of permanent water, especially in the western part of the area. To correct this condition in part, there has been recommended for development new water supplies. (See Water Report and Map) The concentration of stock around the Gap and Tuba City should be partly corrected by further development of water in the Bodoway House area.

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A Graphic Representation of the
Range Management Plan Follows
(Also see map)

SUB UNIT	AREA	FORAGE ACRES	(Sheep Units Yearlong) CARRYING CAPACITY	SEASON OF USE
1. Lees Ferry	35,674	294	117	Yearlong
2. Tanners Wash	58,358	5,041	2,071	Yearlong
3. Junction	134,958	18,437	8,974	Yearlong
4. Cedar Ridge	75,196	6,287	3,515	Yearlong
5. Gap	73,417	4,856	1,934	Yearlong
6. Crooked Ridge	67,191	2,981	1,193	Yearlong
7. Tuba City	152,168	6,686	2,674	Yearlong
8. Willow Spring	94,105	2,594	1,038	Yearlong
9. Shadow Mt.	137,674	5,791	2,315	Yearlong
10. Lower Basin	48,543	4,257	1,703	3354 S.U. 9-12/3-15
11. Gray Mt.	54,956	6,723	2,689	5305 9-12/3-15
12. Needmore	120,768	10,676	4,270	8662 S.U. 3-15/9-12
13. Cameron	242,541	4,293	1,317	Yearlong
14. Black Falls	34,575	2,825	1,130	Yearlong
15. Dennebito	15,383	1,369	547	Yearlong
16. Moencopi Plateau	56,910	3,462	1,385	Yearlong
17. Buck Pasture	25,037	1,765	700 Rams	Ranged 1-1/11-15
18. Coal Mine Mesa	124,613	10,470	4,188	Yearlong
19. Coal Mine Canyon	12,394	443	177	Yearlong
20. Howell Mesa	176,031	19,984	7,894	Yearlong

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The above plan has been worked out after careful consideration of various factors influencing management. In the following sub-units only temporary water with a very few permanent supplies exists: Junction, Cedar Ridge, Gap, Willow Springs and Shadow Mountain. They have been classed as yearlong range considering further water development. If the new developments do not furnish enough water, changes will have to be made so as to care for stock in these sub-units during the months of May, June and July.

E. PROPER ANIMAL HUSBANDRY:

1. Breeding: A buck pasture on Coal Mine Mesa is under way at the present time. This pasture will carry 700 rams from January first to November fifteenth. A buck band may be necessary to completely care for the remainder of the Unit as another suitable location for a buck pasture could not be found. Approximately 500 additional bucks will be necessary to fulfill the requirement of three rams for one hundred ewes. Breeding season will be from Nov. 15 to January first.

2. Lambing season then would come April 15 to June first. Most of the lambs coming before May 15. This season in average years is as nearly correct as could be established from observation.

3. Selection of breeding stock will be of great economic value to the Indian. Improvement of the breeding herd by

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culling will make the herds uniform, more productive, and produce a type demanded by the market. Good herd sires, rams, bulls, and stallions will do much to improve the stock although this change should not come too far in advance of improvement of the range or servere losses result. Cull and undesirable sires should be removed from breeding purposes and if possible from the range.

4. Shearing should come from June to July instead of the present April shearing.

5. Herding practices should conform to good range management and animal husbandry. Loose herding, herding from the head instead of driving, and bedding out are recommended. Where bedding out is impractical in small herds, multiple corral systems are recommended.

6. Salting of livestock on livestock salt instead of saltbush is recommended as a means of reducing range depletion to and from salt bush types. The cost of salt is high at the traders. The administration could foster the idea of salting livestock by supplying the Indians with cheaper salt. Sale of salt to Indians much on the same system of reimbursable rams would be very effective in reducing the cost of salt to the Indians. At present prices quoted by traders it is $2.50 to $3.50 per 100 hundred pounds. Salt should cost $20.00 to $25.00 per ton at the railroad. This seems a high price for fright charges to the Reservation.

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7. Dipping should be continued to control pests and to obtain livestock statistics.

No predatory animal control is at present recommended but the situation should be watched and predatory control instigated when the necessity arises.

F. SPECIAL CONSIDERATIONS: Photographic stations are recommended in the following places to study range control: (1) 4½ miles north of Tuba City, active moving sand dunes. (2) U. S. 89 north of Cedar Ridge. (The highway right of way is fenced, giving an excellent opportunity to study livestock exclusion and range comeback. (3) U. S. 89 south of Cameron. (The same situation as north of Cedar Ridge). (4) Eight miles north of the junction of the Big and Little Colorado Rivers. (This area is an under-utilized big sage - blue grama country.)

2. Deferred and Rotation grazing practices and systems would aid materially in range comeback and natural re-vegetation in the area east of Echo Cliffs. Total exclusion in the area does not seem practical.

3. Hopi Livestock: At Moencopi Village there is a colony of Hopi Indians. The range used includes the area surrounding the village, south on Coal Mine Mesa and Moencopi Plateau, and Ward Terrace. This area is used partially by Navajos. The

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livestock owned by the Hopis fall in small herds. Information as to livestock figures were obtained from dipping records for sheep and goats and from Mr. Jos. O'Neal, and Mr. R. L. Fraser on horses and cattle. These seem to be the best source of information at present. The following shows the number of livestock owned:

NAME	Ewes	Wethers	Bucks Lambs	Nannies	Wethers	Billies	Kids	Horses	Total Sheep Units (Grown Stock)
Gasseoma	290	10	77	18			17	8	258
Philip Hongeva	228	20	89	18			12		266
Teddy Munguama	138	4	1 60	10		1	3	4	174
Naseyuma	102	17	2 42	23		2	16		146
	758	51	3 268	69		3	48	80 (s u)	1012

Cattle owned by Hopis number approximately 300 grown cattle. Mr. O'Neal counted 284 head on last year's round-up. Between 20 and 40 head of horses are owned by the Hopis. The largest owner has 75 cattle or a sheep unit equivalent of 300. The maximum limit of the unit is approximately 375. (This figure must be corrected by this year's dipping records. See "Present Livestock numbers".)

This means from available data the livestock numbers will not be above the maximum limit.

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An area large enough to cary the Hopi stock would have a carrying capacity of approximately 2400 sheep units yearlong, or 6000 forage acres.

Using Kloy-e-chee rim on the west and eight miles of fence already constructed on the Tuba City Buck Pasture only about 18 miles of fence would be required to fence enough area to carry the Hopi stock.

Since this area is the present principal Hopi range and such little fencing would be required, it is deemed advisable to select this location for Hopi range. Further compilation will be necessary when final livestock figures are available. (See accompanying diagram). A driveway must be allowed on the east side of the range.

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V SUMMARY

The Range Management program on L. M. U. No. 3 should embrace the following:

1. Stock adjustment to proper carrying capacity bearing in mind unproductive stock should be first disposed of, enough horses to meet necessities of people need to be retained, and herds can be culled so as to improve the market type of livestock in the breeding herd.

2. Proper seasonal use as indicated on the Range Management plan should be followed using deferred and rotation grazing wherever possible.

3. Proper class of stock for range should be used.

4. Distribution of stock over the various sub-units by proper herding of the various flocks can do much to improve range conditions.

5. A definite breeding season by use of the buck pasture and band will improve lambing practices and give a uniform lamb crop.

6. Education along lines of proper animal husbandry practices including shearing, docking, castrating, branding, herding, salting, and selection.

7. Development of range improvements such as water supplies, stock trails, etc. so that proper management will be possible.

8. Continual vigilance on the part of the District Supervisor and his assistants in regard to the need of new water supplies, need for rodent and predatory control, and any other special considerations that would benefit the range usage.

9. Importation of good herd sires to improve the quality and type of the livestock.

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3 A-2 Impounding Reservoir Permanent 12/7/36
111 00' 36 15' 8 3/4 S x 12 1/4 W
1/2 mi. south Tuba dipping vat.
This was used as impounding reservoir by Hopi Indians.
Range poor and accessibility fair.
East end washed out. Now will only hold about 2' of water.
Too near permanent supply to warrant developments.

3 A-3 Spring, permanent, undeveloped. 12/7/36
111 00' 36 15' 8 5/8 S x 12 W
No developments.
Range depleted. Accessibility good.
Flow about 1 gal. per minute.
Too close to other permanent water to warrant development.

3 A-4 Reservoir, permanent 12/10/36
111 00' 36 15' 7 1/2 S x 12 1/2 W
1 1/2 miles east of Tuba City - Hopi Reservation.
Will hold water 10' deep. Has 4' of water now.
Range depleted. Accessibility good.
Good condition.
No recommendation.

3 A-5 Spring, permanent, undeveloped 2/18/37
111 00' 36 15' 4 S x 11 1/2 W
At head of Pasture Canyon.
Flow breaks out for several miles. Flow up to 1/2 second feet.
Accessibility poor. Range depleted.
No development needed because of large flow.
No recommendation.

3 A-6 Well, permanent, Indian 2/18/37
111 00' 36 15' 3 1/4 S x 13 1/4 W
About 3 1/2' to water. Used in summer time. Dug out by Indians.
only when needed.
Accessibility good. Range poor.
Poor condition. Blows full of sand.
Range badly depleted. No development recommended.

3 A-7 Well, shallow, permanent (E. C. W. ?) 12/9/36
111 00' x 36 15' 1/4 S x 12 3/4 W
Concrete and rock cribbing. 1 - 20 x 2 x 1 concrete trough.
Poor range and accessibility.
Water at about 3 1/2'. Has had pump but pump has been taken.
Install hand pump.

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3 A-8 Well, Indian, permanent 2/18/37
111 00' x 36 15' 1 1/4 S x 11 W
Same description as 3 A-6
Loose, blowing sand.
No recommendation.

3 A-9 Well, shallow, permanent E. C. W. 12/10/36
111 00' x 36 15' 1 3/4 S x 10 1/4 W
Masonry crib. 1 - 20 x 1 x 1 concrete trough. Hand suction pump.
Range and accessibility, poor to fair.
Good condition. 3' to water.
No recommendation.

3 A-10 Well, permanent, Indian 2/18/37
111 00' x 36 15' 5/8 S x 6 3/4 W
Dug in rock in side of hill. Water dipped out for sheep.
Poor range and accessibility. Range depleted.
No recommended developments.

3 A-11 Well, temporary, Indian 2/18/37
111 00' x 36 15' 3/4 S x 7 1/4 W
About 3' to water now. Probably dries up in summer time. Hole dug by Indian.
Range depleted. Poor accessibility.
No recommended developments.

3 A-12 Lake, natural, very temporary 12/7/36
111 00' x 36 15' Greasewood Lake 5 1/4 S x 7 1/4 W
Range poor. Accessibility excellent.
Dry now. Is large, shallow. Capacity several acre ft. Cannot be counted on for livestock water.
No developments recommedned because of shallow depth and large surface.

3 A-13 Stream, permanent 12/10/36
111 00' x 36 15' 10 S x 12 W
Moencopi Wash
Range and accessibility, poor to fair.
Flow about 4 second feet. Watering capacity ample.
No recommendation.

3 A-14 Spring, permanent, undeveloped 2/24/37
111 00' x 36 15' 10 1/4 S x 11 1/2 W
No development. Water breaks out for about 1/2 mile along wash.
Poor range and accessibility.
Poor condition.
Too close to Moencopi Wash to develop.

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L. M. U. #3

3 A-15 Spring, permanent, U. S. Irrigation. 12/10/36
111 00' x 36 15' 10 1/8 S x 9 3/4 W
About 1 mi. south of Moencopi Wash.
1 - 20 x 3 x 2 concrete trough. Built in canyon and sand is blowing badly.
Range and accessibility, poor to fair.
Flow about 2 gallons per minute. Watering capacity about 1000 sheep per day.
No recommendation.

3 A-16 Spring, permanent, E. C. W. 12/10-36 Project # 4 BB
111 00' x 36 15' 10 3/4 S x 8 1/2 W
1 - 20 x 1 x1 concrete trough. 3/4 " lead pipe.
Poor range and accessibility.
In canyon. Trough filled with sand. Flow about 1/2 gal. per minute.
Needs dirt removed from around trough.

3 A-17 Spring, permanent, E. C. W. or Irri. 12/22/36
111 00' x 36 15' 16 3/4 S x 14 W
1 - 20 and 1 - 8 x 2 1/2 X 1 1/2 concrete troughs. Masonry crib and 1 1/2 lead pipe.
Range and accessibility, poor to fair.
Flow about 3/4 gal. per minute. Troughs being blown out.
Need rock apron around front of troughs.

3 A-18 Spring, permanent, Indian, Irri. 2/20/37
111 00' x 36 15' 6 3/4 S x 13 1/2 W
Just north of Tuba City
An old irrigation development. Pipeline broken and dug up.
1 - 2 1/2 x 20 x 1 1/2 concrete trough.
Range depleted.
Troughs present but no water is coming into them.
Repair pipeline.

3 A-19 Reservoir, permanent 2/18/37
111 00' x 36 15' 7 S x 13 1/2 W
North end of Tuba City
Holds about 5 acre ft. Fed by springs. Fenced and is accessible to livestock.
No recommendation.

3 A-20 Reservoir, temporary E. C. W. (Charco Type) 12/9/36 Project #4 C
111 00' x 36 30' - 10 1/4 S x 10 W
About 8' deep.
Range and accessibility, fair to good.
Dry now. Has never caught. Very sandy. Cannot be counted on to furnish stock water.
No recommendation.

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L. M. U. #3

3 A-21 Windmill, permanent, E. C. W. 12/7/36
111 00' x 36 30' 6 3/4 S x 9 1/2 W
14' windmill, 5,000 steel rim, storage tank and 2 - 20 x 1 x 1 concrete troughs.
Range and accessibility: Good. Very little feed this year.
Wheel and sucker rods for mill are not connected. No float or lead pipes installed.
Complete construction on windmill.

3 A-22 Reservoir, temporary, E. C. W (Charco Type) 13/9/36 Project #4 D
111 00' x 36 30' 7 1/4 S x 9 1/4 W
About 6' deep by 30' by 50'
Range and accessibility: Good
Very sandy. Has never caught water.
No recommendation.

3 A-23 Well, shallow, Indian 12/22/36
111 00' x 36 00' 1/4 S x 14 W.
Partially cribbed with rocks. About 3' to water. No troughs.
Two wells.
Range and accessibility: Poor to fair.
Fair condition.
No recommendation. Too close to other supplies to warrant development.

3 A-24 Spring, permanent, undeveloped 12/22/36
111 00' x 36 00' 3/4 S x 0 W
Flow about 1/4 gal. per minute.
Flow about 1/4 gal. per minute.
Range and accessibility: Poor to fair.
Fair condition.
No recommendation.

3 A-25 Spring, permanent, E. C. W. 12/22/36
111 00' x 36 00' 1 3/4 S x 13 3/4 W
1 - 20' concrete trough. Flow about 1/2 gal. per minute.
Range and accessibility: Fair to poor.
Trough nearly filled with dirt.
Indians should be responsible for keeping trough clean.

3 A-26 Well, permanent, E. C. W. 12/22/36
111 00' x 36 00' 2 1/4 S x 13 3/4 W
Concrete cribbed. 1 - 20' x 1' x 1/2 ' concrete trough. Hand suction pump.
Range and accessibility: Poor to fair.
Good condition.
No recommendation.

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L. M. U. #3

3A-27 Windmill, permanent, E. C. W. 12/22/36
111 00 36 00' 1/2 S x 5 3/4 W
18' windmill. 50,000 gallon storage tank. 2 - 20' x 1' x 1' concrete troughs.
Good range and accessibility.
Trough is crumbling. Float not present.
Re-build trough. Install float.

3 A-28 Windmill, permanent, E.C. W. 12/21/36
111 00' x 36 00' 6 1/4 S x 9 W
14' wheel, 50,000 gallon storage tank. 2 - 20' x 1' x 1' concrete troughs. Storage tank. Has about 15,000 gal. water.
Good range and accessibility.
Fair condition. Float not present and trough beginning to deteriorate, crumble.
Repair trough. Replace float.

3 A-29 Spring, permanent, undeveloped 12/21/36
111 00' x 36 00' 12 1/4 S x 6 1/2 W
Tresholoni.
Flow about 1/4 gallon. Could be developed to flow more.
Poor accessibility. Range good.
No recommendation.

3 A-30 Spring, permanent, E. C. W. 12/23/36
111 00' x 36 00' 15 1/2 S x 12 3/4 W
1 - 20' x 1' x 1' concrete trough. Masonry crib. Flow now about 1/4 gallon per minute.
Poor range and accessibility.
Only a small portion of the water is being caught.
Repair cribbing and pipeline to catch more water.

3 A-31 Reservoir, natural, temporary 12/23/36
111 00' x 36 00' 17 S x 10 1/4 W
Has 2' water now. Will hold 4'
Range and accessibility: Poor to fair.
Water runs down in sand pockets after storms and is caught.
No recommendation.

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L. N. U. #3

3 A-32 Spring, permanent E. C. W. 12/23/36
111 00' x 35 45' 3 1/2 S x 10 W
1 - 20' x 1' x 1' concrete trough. Flows about 1/2 gals. per minute.
Range and accessibility: Poor to fair.
Trough nearly full of sand, pipeline washed out and water is washing cribbing.
Cover pipeline and construct wall to divert water.

3 A-33 Spring, permanent 12/23/36
111 00' x 35 45' 4 1/4 S x 10 1/4 W
2 - 16' x 2' x 1/2 concrete trough. Flows about 3 gals. per minute.
Range and accessibility: Poor to fair.
Troughs are not level.
No recommendation.

3 A-34 Spring, permanent, undeveloped 12-23/36
111 00' 35 45' 7 1/2 S x 11 1/4 W
Badger Spring. Flow now about 1/4 gallons per minute.
Poor range and accessibility.
Indians have made some excavation and have holes in sand to water livestock.
Develop spring.
Install 1 - 20' x 1' x 1' concrete trough.

3 A-35 Spring, permanent Indian 12/22/36
111 15' x 35 45' 5 1/4 S x 2 3/4 W
Has 1 wooden trough and flow of about 1/2 gal. per minute.
Accessibility, good; range, fair.
Excavation has caved in and much water is being lost.
Develop spring and install 2 - 20 x 1 x 1 concrete troughs.

3 A-36 Well, permanent 12/22/36
111 15' x 36 00' 11 1/2 S x 5 3/4 W
Board cribbed well. Used by some mining operations at this location.
Range, barren.
Can be used by dipping water. Pump assembled but is in poor state of repair. No troughs.
No recommendation.

3 A-37 Stream, semi-permanent 12/22/36
111 15' x 35 00' 11 S x 6 1/2 W
Little Colo. River above Cameron
Flows part of year and water is shallow at all times.
Accessibility, good; range, poor.
Dangerous in spring and summer because of bog.
No recommendation.

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3A - 38 Reservoir, natural, temporary 12/23/36
111 15' 36 00' 2 3/4 S x 3 1/2 W
Has about 2' water now is nearly full. Large surface exposed.
Fair range and accessibility.
Not dependable as a livestock water supply.
No recommendation.

3A-39 Spring, permanent undeveloped 12/23/36
111 15' x 36 00' 1 5/8 S x 4 1/2 W
Flow of about 3/4 to 1 gallon per minute break out below rock ledge.
Poor range and accessibility.
No excavation has been done.
No recommendation.

3A-40 Lake, natural, temporary 2/18/36
111 15' 36 15' 13 3/4 S x 3/4 W
Dry now. Capacity several acre feet but small sandy drainage.
Fair range and accessibility.
Dry 95% of time; cannot be counted on for livestock water.
No recommendation.

3A-41 Stream, semi-permanent 2/1/37
111 15' x 36 15' 0 S x 9 1/4 W
Moencopi Wash
Flow in this wash is about 6 to 9 months of the year.
Poor range and accessibility.
Fair. Stock can water nearly any place along wash.
No recommendation.

3A-42 Spring, permanent Indian 2/2/98
111 15' 36 15' 9 1/2 S x 1 3/4 W
Frozen so could not determine. Flow 1 - 6' Wooden trough.
Range and accessibility: Poor - barren land.
Poor condition.
No recommendation because of barren land.

3A-43 Spring, permanent E. C. W. 2/2/37
111 15' x 36 15' 7 3/4 S x 3 1/2 W
Flows about 1/2 gallon perminute. 1 - 20 x 2 x 1 concrete trough.
Poor range and accessibility.
Good condition.
No recommendation.

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3A-44 Reservoir and spring, permanent 2/2/37
111 15' x 36 15' 7 1/2 S x 4 W
S. C. S. camp at Moenave.
Same as 3A-46
Poor range and accessibility.
Good condition.
No recommendation.

3A-45 Reservoir and Spring 2/2/37
111 15' x 36 15' 7 1/2 S x 4 3/4 W
Same as 3A-46
Poor range and accessibility.
Good condition.
No recommendation.

3A-46 Spring and Reservoir, permanent 2/2/37
111 15' x 36 15' 7 1/2 S x 5 W
Moenave Day School
Flow about 1/2 second foot water and impounding reservoir.
Poor range and accessibility
Good condition.
No recommendation.

3A-47 Well, shallow temporary 2/1/37
111 15' x 36 15' 12 3/4 S x 9 W
1 mile west of U. S. 89 crossing on Moenoopi
Abo t 8' to water cribbed with rock.
Range, barren. Accessibility, fair.
Poor condition. No trough or pump.
No recommendation because of barren range.

3A-48 E.C.W. Well, permanent 2/1/37 Project # 5 U
111 15' x 36 15' 14 1/2 S x 11 W
Concrete crib ing. 2 - 20' x 1' x 1' concrete troughs. Hand suction pump and cross-cut well in wash.
Accessibility good. Range, poor.
Good condition. About 4' to water. Well about 12' deep.
No recommendation.

3A-49 Reservoir, temporary Indian 2/1/37
111 15' x 36 15' 14 1/2 S x 13 1/2 W
Dam about 6'. No spillway. Capacity 2 acre feet. Small rock drainage.
Range and accessibility: Poor to fair.
Has about 2' water now. Will hold about 5'. Dam rocked on both sides.
No recommendation.

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L. M. U. #3

3A-50 Reservoir, Indian temporary 2/24/37
111 15' x 36 15' 11 1/2 S x 12 3/4 W
Dry now. Capacity 1/4 acre foot. Will hold 3' water. Small slick rock drainage.
Poor range and accessibility.
Poor condition.
Drainage too small to warrant development.

3A-51 Reservoir, temporary Indian 2/3/37
111 30' x 36 15' 7 1/4 S x 2 1/4 W
Dam 10' high. Small drainage. Is silting badly. Capacity 1/2 acre foot.
Poor range and accessibility.
No recommendation.

3A-52 Reservoir, Indian, temporary 2/3/37
111 30' x 36 15' 8 1/2 S x 8 1/4 W
Has 2' water now. Will hold 4'. Capacity 1 acre foot. Small drainage.
Good range and accessibility.
No spillway. Dam rocked on lower side.
Drainage too small to warrant further development.

3A-53 Reservoir temporary Indian 2/1/37
111 30' x 36 15' 16 1/4 S x 8 1/4 W
Dam about 6' high. Has about 2' water now. Capacity 1 acre foot.
Fair range and accessibility.
No spillway. Rocked all over dam.
Clean tank and raise dam 3'. 500 yds. dirt out of tank and provide spillways.

3A-54 Reservoir, temporary Indian 2/1/37
111 30' x 36 00' 1 1/4 S x 8 1/4 W
Has 3' water now. Will hold 6'. Capacity about 1 acre foot.
Dam rocked on both sides.
Fair range and accessibility.
Fair condition. No spillway provided. Rather small drainage, but red clay soil.
Clean reservoir (500 yds.) and raise dam 2' to 3' and provide spillway.

3A-55 Reservoir E. C. W., temporary 2/24/37 Project #1 LL (?)
111 50' x 36 00' 0 S x 2 3/4 W
5 miles west Shadow Mt.
Dam riprapped. Has 4' water now. Will hold 9'. No desilting plot. 150' spillway. 2 1/2 to 3' freeboard.
Range, poor to fair. Accessibility, good.
Good condition. Has nearly filled.
Recommendations: Desilting plot, 40 acres. 1 mi. fence. @ $300

WR 7457a

L. M. U. #3

3A-56 Spring, temporary, undeveloped 2/1/37
111 15' x 36 00' 4 1/2 S x 13 3/4 W
Flow now less than 1/4 gal. per minute.
Poor range and accessibility.
No development work has been done on this at all.
No recommendation.

3A-57 Stream, semi-permanent 2/1/37
111 50' x 36 00' 5 S x 1/2 W
Little Colo. River where it boxes up into Canyon.
Trail has been constructed to make watering place available.
Poor range and accessibility.
Can be used to advantage only with limited number of stock.
No recommendation.

3A-58 Spring, permanent 2/8/37 Project # 5 IL
111 15' x 36 00' 10 S 10 3/4 W
2 - 20' x 1 x 1 concrete troughs. Flow about 10 to 15 gallons per minute.
Poor range and accessibility.
Pipeline washed out by flood from Poverty Tank. Pour over from fall forms reservoir. Serves as Cameron water supply.
Do not develop until needed as floods may wash out pipeline again and reservoir is sufficient.

3A-59 Spring at Cameron Dipping Vat. 2/8/37
111 15' x 36 00' 9 S x 9 3/4 W
2 - 20 x 1 x 1 concrete troughs. Water piped from Tappan Spring.
Poor range and accessibility.
Good condition. Water here especially in time of dipping.
Repair burst pipe.

3A-60 2/8/37 Project # 5 W
111 15' x 36 00' 15 S x 8 1/4 W
Concrete cribbing, 1 hand suction pump. 1 - 20 x 1 x 1 concrete trough.
Range and accessibility: Poor to fair.
Handle missing from pump and diaphram is worn out. Water at depth of about 8'.
Replace handle, clean well, and replace diaphram.

3A-61 Well, permanent E. C. W. 2/8/37 Project #50
111 15' x 36 00' 15 1/4 S 10 1/4 W
Masonry cribbed well, 1 hand suction pump, 1 - 20 x 1 x 1 trough.
Fair range and accessibility.
Good. Water at a depth of about 8'.
No recommendation.

WR 7457b

L. M. U. #3

3A-62 Well, permanent, E. C. W. 2/8/37 Project # 5 G
111 15' x 36 00' 17 S x 8 1/4 W
Masonry cribbed. Hand suction pump. 2 - 20' x 1' x 1' concrete trough.
Poor range and accessibility.
Well outside reservation fence.
Remove hand suction pump for use on some well in reservation.

3A-63 Reservoir, temporary, E. C. W. 12/18/36 Project # 5 K
111 30' x 36 00' 15 1/8 S x 1 W
Poverty Dam
Large fill on an old tank site. Desilting plot fenced. Will hold about 200 acre ft.
Range and accessibility: Fair to good.
Washed out last summer but crew is re-building. 3200 yds. of rock to some out of spillway.
Crew seems to be making dam right.

3A-64 Reservoir, temporary 12/18/36
111 30' x 36 00' 15 1/8 S x 2 W
2 mi. west of Poverty Tank.
Masonry dam about 8 to 10' high. Has about 2' water now. Will hold about 4' water.
Range and accessibility: Fair to good.
Has silted badly.
Clean or build dam up 4' (30 yds. masonry work @ $16 - $480.)

3A-65 Reservation, temporary, E. C. W. 12/18/36
111 30' x 35 45' 0 S x 2 3/4 W
Natural basin with diversion ditch. Has 3' water now and will hold 12 - 15' water.
Range and accessibility: Fair to good.
Ditch broken in places.
Repair diversion ditch and dam.
Estimated cost, $250

3A-66 Reservoir, temporary, E. C. W. 2/18/37
111 30' x 35 45'
1 1/4 mi. NW of Lockett Tank.
Charco type with diversion ditch. Has about 5' or 6' water now.
Good range and accessibility.
Diversion ditch needs cleaning and building up.
Enlarge diversion ditch and put in desilting plot.

WR 7457c

L. M. U. #3

3A-67 Reservoir, temporary 12/18/36
111 30' x 35 45' 3 1/8 S x 5 3/4 W
Locket Tank
Masonry dam about 8' high. Has only 2' water now.
Range and accessibility: Fair to good.
Has silted up so capacity is practically nothing.
Clean reservoir if cost can be about 5¢ per yd.

3A-68 Reservoir, temporary, E. C. W. 12/18/36 Project #122.17
111 30' x 35 45' 4 1/8 S x 9 3/8 W
3 miles east of Needmore Reservoir.
Has about 3' water now. Willhhold 10 to 12'. No desilting plot fenced.
Range and accessibility: Fair to good.
Fair condition. Has silted somewhat. Capacity 3 acre ft.
No recommendation.

3A-69 Reservoir, temporary 12/18/36
111 30' x 35 45' 5 3/8 S x 12 W
Needmore Tank
Dirt dam about 18' fill. Capacity several acre ft. Has about 8' water now.
Range and accessibility: Fair to good.
Has silted but Indians plan to clean as soon as water lowers.
Clean reservoir if cost is low enough not to be prohibited.

3A-70 Reservoir, temporary, E. C. W. 2/18/37
111 30' x 35 45' 1/4 S x 10 W
7 miles NE of Needmore Tank
Masonry dam about 6' high in rock canyon. Is dry now but has been full.
Range excellent. Accessibility fair.
Capacity about 1 acre foot. Looks as though is leaking. Dam should be raised 5' to insure larger capacity or another site. should be chosen in this vicinity and a dam constructed because of lack of water.

3A-71 Reservoir, temporary, E. C. W. 12/14/36 Project # 5 I
111 30' x 36 00' 13 1/2 S x 9 1/2 W
Jones Reservoir
Dry now. Will hold 8'. Small drainage.
Range and accessibility: Fair to good.
Recommendations: 500 yeds. dirt on dam. Diversion ditch and masonry diversion dam.

WR 7458

L. M. U. #3

3A-72 Reservoir, temporary, E. C. W. 12/14/36 Project # 5 CC
111 30' x 36 00' 12 S x 11 1/4 W
Grey Mt. Smith Reservoir.
Will hold 12' water. Has 6' water now. Capacity 3 to 5 acre ft.
Range and accessibility: Fair to good.
Spillway 30' wide 4' freeboard.
Desilting plot and enlarge spillway.

3A-73 Reservoir, temporary, E. C. W. 12/14/36 Project # 122.44
111 30' x 36 00' 12 S x 8 1/4 W
Washed out about a 20' fill. Water went over dam complete length.
Range and accessibility: Poor, badly eaten out.
Holds water (2') in barrow pit.
Re-build dam.

3A-74 Reservoir, temporary, E. C. W. 12/14/36 Project #11 K
111 30' x 36 00' 11 S x 8 3/8 W
Washed out. About 6' fill. Silt in bar pit.
Range and accessibility: Poor. Badly eaten out.
No recommendation.

3A-75 Reservoir, temporary, E. C. W. 12/14/36
111 30' x 36 00' 9 1/4 S x 10 1/2 W
Grey Mt. Bush Reservoir.
Will hold water about 12' deep. Desilting plot fenced. Has about 3' water now.
Fair range and accessibility but over-grazed.
Spillway about 3 1/2 ' freeboard and 30' wide.
Inlarge spillway.

3A-76 Reservoir, temporary, E. C.W. 12/14/36
111 30' x 36 00' 8 1/2 S x 7 3/4 W
Smiley Reservoir.
Will hold 10' water. About 5 acre ft. capacity. Desilting plot fenced.
Range and accessibility: Fair to good.
Desilting plot fence is down where silt has piled up.
Re-build fence and put in wooden posts inwater run.

3A-77 Reservoir, temporary, Indian 12/14/36
111 30' x 36 00' 9 S x 6 W
Mormon Tea Reservoir.
Dry now. Will hold 3 1/2' water.
Good range andaccessibility.
Dam be raised tank enlarge.

WR 7458 a

L. M. U. #3

3A-78 Reservoir, temporary, E. C. W. 2/8/37 Project # 5 FF
111 30' x 36 00' 7 1/2 S x 1 1/4 W
Will hold about 10' water. No desilting plot. Small drains.
Vegetation too scarce to benefit by desilting plot.
Range and accessibility. Poor to fair.
Capacity several acre ft. Dry now.
No recommendation.

3A-79 Reservoir, temporary, E. C. W. Project # 4 C 2/8/37
111 30' x 36 00' 5 1/4 S x 4 1/4 W
Will hold about 12' water. Small drainage. No desilting plot.
Vegetation too sparse to warrant plot.
Fair range and accessibility.
Has about 1' water now. Capacity 4 acre ft.
No recommendation.

3A-80 Reservoir, temporary 2/25/37
111 30' x 36 00' 2 1/2 S x 11 1/2 W
Not visited butshown on range maps.

3A-81 Reservoir, temporary 2/25/37
111 30' x 36 15' 17 S x 12 W
Not visited butshown on range maps.

3A-82 Reservoir, temporary 2/25/37
111 30' x 36 15' 14 3/4 S x 12 3/4 W
Not visited but shown on range maps.

3A-83 Reservoir, temporary 2/25/37
111 30' x 36 15' 13 1/2 S - 10 3/4 W
Not visited but shown on range maps.

3A-84 Reservoir, temporary 2/25/37
111 30' x 36 15' 11 1/4 S x 12 1/4 W
Not visited but shown to exist on range maps.

3A-85 Reservoir, temporary 2/25/37
111 30' x 36 15' 10 1/2 S x 13 W
Not visited but shown on range maps.

3A-86 Well, shallow, Indian 12/10/36
111 15' x 36 15' 5 1/2 S x 2 W
Not cribbed. 6' wooden trough.
Poor range. Accessibility good.
Hole dug in sand.
No recommendation.

WR 7459

L. M. U. #3

3A-88 Well, shallow, permanent, E. C. W. (?) 12/8/36
111 00' x 36 15' 3 3/4 S x 5 1/8 W
NW of Greasewood Lake
1 - 20' x 2' x 1' concrete trough. Rock and concrete cribbing.
3' to water.
Range fair. Accessibility good.
Top is off well.
Install pump.

3A-89 Spring, permanent, U. S. I. Irr. 12/8/36
111 00' x 36 15' 3 1/4 S x 5 W
1' lead pipe. 2 - 20' x 2' x 1' concrete troughs.
Range poor to fair. Accessibility good.
Flow about 1/2 gal. per minute.
No developement needed.

3A-90 Stream, permanent 12/8/36
110 45' x 36 15' 3 S x 13 W
Flowing So. from Red Lake
Range poor. Accessibility, poor.
Flow about 1/8 second ft. Watering capacity ample.
No developments recommended.

3A-91 Spring, permanent, E. C. W. 12/8/36 Project # 9 G
110 45' x 36 15' 1/2 S x 13 1/4 W
2 - 20' x 1' x 1' concrete troughs with concrete aprons.
Range poor. Accessibility fair.
Flow about 3/4 gals. per minute.
No developments needed.

3A-92 Spring, permanent, E. C. W. 12/9/36 Project # 9 G
110 45' x 36 30' 16 S x 13 1/2 W
1 - 20' x 2' x 1' concrete trough.
Poor range and accessibility.
Blow sand is filling in around trough. Indians should be held responsible for keeping trough cleaned.
No recommendation.

3A-93 Spring, permanent, E. C. W. 12/9/36 Project # 9 A
110 45' x 36 30' 14 1/2 S x 12 W
2 - 20' x 1' x 1' concrete troughs.
Range and accessibility: Poor to fair.
Good condition. Flow about 1/4 gal. per minute.
No recommendation.

WR 7459a

L. M. U. #3

3A-94 Windmill, permanent, E. C. W. (2) 12/9/36 Project # 12 BB
110 45' x 36 30' 12 S x 10 1/2 W
At Red Lake (Tonolea)
8' windmill, 15,000 gallon storage tankand 2 - 2[illegible]' x 1' x1' concrete troughs.
Poor range. Accessibility good.
Fair condition. Adequate water supply.
No recommendation.

3A-95 Spring, permanent, E. C. W. 12/9/36 Project # 9 K
111 00' x 36 30' 10 1/4 S x 3 W
Rat Spring.
Troughs put in probably by U. S. I. Irr. Cribbed with rock and concrete.
Range and accessibility: Fair to poor.
Small flow about 1/3. Fair condition.
No recommendation.

3A-

WR 7460

L. M. U. #3

3A-144 Spring, permanent, E. C. W. 2/20/37 Project #4 D
111 00' x 36 15' 7 1/2 S x 6 1/2 W
4 miles abouve road crossing along Moencopi Wash
Has been an old Indian Irr. Spring improved by E. C. W.
1 - 20' x 1' x 1' concrete trough and 1 - 20' x 2' x 1 1/2' concrete trough.
Poor range and accessibility.
Flow about 1/2 gal. per minute. Large trough has chipped away till only a small amount of water gets into small trough.
Build up large trough or lower inlet pipe into smaller trough.

3A-145 Spring and stream, permanent 3/8/37
111 00' x 36 15' 10 S x 3/4 W
Coal Canyon
Flow from 1/4 to 1 second foot of water from various springs in canyon.
Poor range and accessibility
No recommendation.

111 00' x 36 15' 14 3/4 S x 4 1/2 W
3A-146 Reservoir, temporary, E. C. W. 2/24/37 Project # 4 FF
Capacity about 2 acre feet built on small sandy drainage. Dry now. Has had only about 2' water.
Good range and accessibility
Good condition since it was constructed 1934
No recommendation

3A-147 Well, temporary 3/8/37
111 00' x 36 15' 6 1/4 S x 2 3/4 W
At Coal mine
Dry now.
Range and accessibility: Cannot be used by stock.
No recommendation.

3A-148 Reservoir, temporary, E. C. W. 12/21/36 Project # 4 WE
111 00' x 36 15' 17 S x 1 1/2 W
Has 3' water now. Will hold 10'. Capacity 3 acre ft. No desilting plot fenced. Rather small drainage.
Good range and accessibility
Good condition. Large spillway
Fence desilting plot 20 acres

3A-149 Windmill, permanent, E. C. W. 12/21/36
111 00' x 36 00' 3 1/2 S x 4 3/4 W
18' wheel. 50,000 gal. storage tank and 2 - 20' x 1' x 1' concrete troughs. 750' to water.
Good range and accessibility.
One trough disintegrating (poor sand). Crew is repairing mill which was off center. Float stolen.
Repair or re-build trough. Install float.

WR 7460a

L. M. U. #3

3A-150 Reservoir, temporary, E. C. W. 12/21/36 Project # 4 HH
111 00' x 36 00' 4 3/4 S x 6 3/4 W
Dam 12' to 15' high. Capacity about 7 acre ft. Sandy drainage of about 600 acres. Dam fenced.
Good range and accessibility
Is silting but desilting plot impractical because of sandy soil and sparse vegetation. Has 1 1/2 water now. Fence on dam in poor condition.
No recommendation.

3A-151 Windmill, permanent, E. C. W. 12/21/36
111 00' x 36 00' 10 S x 5 W
18' wheel but no storage tank or troughs.
Good range and accessibility
Windmill only in place.
Complete project.

3A-152 Spring, permanent, undeveloped 12/21/36
111 00' x 36 00' 15 1/2 S x 5 W
Gold Spring.
Flow about 1/4 to 1/2 gal. per minute. About 60 to 75 horses watering here now.
Range and accessibility: Fair to good.
Has had dam.
Develop.

3A-153 Drilled well, permanent, E. C. W. 2/22/37
110 45' x 36 00' 14 1/2 S x 13 3/4 W
Well drilled nd troughs and 50,000 gal. steel rim storage tank constructed. Windmill not yet up.
Good range and accessibility
Complete project.

3A-154 Drilled well, permanet, E.C.W. 2/22/37
110 45' x 35 45' 1 1/4 S x 13 W
Well drilled. Is to be deepened and 50,00 gal. storage tank, trough, etc. to be placed.
Good range and accessibility
Complete project.

3A-155 Well, shallow, permanent 12/23/36
111 00' x 35 45' 4 1/4 S x 6 W
Burr Williams Well
Masonry cribbed. Well #1. 1 - 16' x 2' x 2' concrete trough.
Fair range and accessibility
Well has filled with sand.
Indians should be responsible for such maintenance.

WR 7461

L. M. U. #3

3A-156 Spring, emporary, undeveloped 12/16/36
111 30' x 36 30' 7 S 12 1/2 W
Flow undetermined. Indians have dug it out. Dry in spring.
Range and accessibility: Poor to fair.
Condition: Fair
No recommendation.

3A-157 Spring, temporary, undeveloped 12/16/36
110 45' x 36 30' 9 S x 2 W
Not visited but shown on maps.

3A-158 Spring, temporary, undeveloped 12/8/36
110 45' x 36 30' 14 1/4 S x 5 W
Range and accessibility: fair
Flow could not be determined. Indians dig in sand to get water.
No recommendation

3A-160
3A-160 Reservoir, temporary, U. S. I. Irri. 3/21/37
111 30' x 36 30' 3 S x 8 3/4 W
Has 2 or 3' water now. Will hold 8 to 10'. Capacity 9 acre feet.
Range and accessibility: good sod, but over-grazed.
Dam on east end has settled about 1 1/2' giving only about 1 1/2 actual freeboard. No desilting plot fenced.
Raise east end of dam. Fence desilting p lot.

3A-161 Reservoir, temporary, U. S. I. Irri. 3/23/37
111 30' x 36 30' 12 1/4 S x 1/4 W
On ridge 3 miles NW of Gap T. P.
Has about 2' water now. Will hold about 10 feet. Capacity about 5 acre feet.
Accessibility, good. Range, poor.
Looks as though Indians have built up dam. No desilting plot.
Has silted rather badly.
Clean out reservoir and fence desilting plot.

3A-162 Reservoir, temporary 3/23/37
111 15' x 36 30' 4 1/4 S x 13 1/2 W
2 1/2 miles west of Gap
Has about 1 1/2' water now. Will hold 10'. Dam 75' long.
Capacity approx. 4 acre feet.
Accessibility, good. Range, fair to good.
Has nearly washed out. Small spillway. No desilting plot fenced.
Raise dam 2' to allow spillway and widen dam. Fence desilting plot 40 acres.

WR 7461 a

L. M. U. #3

3A-163 Reservoir, temporary 3/23/37 Project #122.3
111 30' x 36 30' 12 1/4 S x 6 3/4 W
Dry now. Will hold 6' water. Large spillway with about 3' free-board. Capacity about 1 1/2 acre feet.
Range and accessibility: fair
Was an old Indian reservoir built larger by E.C.W. Small drainage.
No recommendation.

3A-164 Reservoir, temporary Irri. 3/23/37
111 30' x 36 30' 11 1/4 S x 9 W
Has 1 ft. water now. Capacity 3/4 acre feet. Will hold 5' water.
Has no spillway.
Rang and accessibility: fair
Is silting up.
No recommendation. Too close to 3A-165 to warrant work.

3A-165 Reservoir, nearly permanent 3/23/37
111 30' x 36 30' 11 3/4 S x 9 1/4 W
Has 4 ft. water now. Capacity 30 acre ft. Is silting up. Has desilting plot fenced.
Range and accessibility: fair.
No recommendation.

3A-166 Reservoir temporary 3/23/37
111 30' x 36 30' 13 1/2 S x 11 1/2 W
Blue Moon
Has 5' to 8' water now. Will hold 12 to 15'. Capacity about 25 acre feet of water.
Range and accessibility: good.
Desilting plot fenced. Fence across dam. Dam riprapped on both sides.
No recommendation.

3A-167 Reservoir, temporary E. C. W. 2/23/37
111 45' x 36 15' 2 S x 2 3/4 W
Junction of Little and Big Colo.
Has 1' water now. Has been full. Will hold 12' water. Capacity 12 1/2 acre feet.
Range and accessibility: good.
Desilting plot fenced, about 40 acres. Fence along dam. Dam riprapped on both sides.
Salt at this reservoir to facilitate tramping.

WR 7462

L. M. U. #3

3A-168 Reservoir, temporary E. C. W. 3/23/37 Project #122.4
111 30' x 36 30' 16 3/4 S x 12 1/4 W
2 1/2 mi. So. of Blue Moon Reservoir
Dry now. Sandy drainage. Has been full but has only 6' of water.
Range and accessibility: good.
No desilting plot fenced. Will hold water only about 2 weeks.
No recommendation.

3A-169 Reservoir, temporary E.C.W. 3/24/37
111 30' x 36 30' 13 1/2 S x 3 1/4 W
Has about 4' water now. Will hold 10 to 14'. Capacity 3 to 5 acre ft.
Range, poor. Accessibility, fair.
Good desilting plot fenced. Dam riprapped on both sides. Wide spillway with 3' freeboard.
No recommendation.

3A-170 Reservoir, nearly permanent 3/24/37 Project #1-Q
111 30' x 36 30' 16 3/4 S x 7 1/2 W
Bodaway House Reservoir
Has about 5 or 6' water now. Will hold approx. 15'. Capacity 10 acre feet.
Good spillway 35' with 3' freeboard. Desilting plot fenced.
Widen spillway to 50'

3A-171 Reservoir, temporary 3/24/37
111 30' x 36 30' 16 S x 7 3/4 W
Masonry dam at Bodaway House
Masonry dam about 3' high in canyon. Dry now. Probably dry 90% of time.
Range and accessibility: good.
Has filled with silt about 1/4 of capacity.
No recommendation.

3A-172 Reservoir, temporary E.C.W. 3/24/37 Project #1-OO
111 30' x 36 15' 1 3/4 S x 10 W
Dry now. Has had 4' water. Will hold 12'. Capacity about 4 acre feet. No desilting plot fenced.
Range and accessibility: good
Check dam with level to see if west end hasn't sunk.

3A-173 Reservoir, temporary E.C.W. 3/24/37
111 30' x 36 30' 14 1/4 S x 9 W
2 mi. NW of Bodaway House
Has 3' water now. Will hold 12 to 15'. Capacity about 4 acre ft.
Range and accessibility: good
No desilting plot fenced. About 3 1/2 to 4' freeboard.
Desilting plot with gully plugs to prevent silting.

WR 7463

L. M. U. #3

3A-174 Reservoir, temporary E. C. W. 3/24/37
111 45' x 36 36 30' 12 1/4 S x 3 1/3 W
Dry now. Will hold about 25 acre feet. 3000 to 5000 acre drainage
Range and accessibility: good
No desilting plot fenced.
Fence desilting plot.

3A-175 Reservoir, temporary E. C. W. 3/24/37
111 45' x 36 30' 10 1/4 S x 4 3/4 W
Has 2' water now. Will hold 12'. Capacity about 15 acre feet of water.
Range and accessibility: excellent
Condition, good. No desilting plot fenced.
Fence desilting plot.

3A-176 Reservoir, temporary E.C.W. 3/24/37 Project # 1 M
111 45' x 36 30' 7 1/2 S x 1/2 W
Has about 3 or 4' water now. Will hold 12'. Capacity about 25 or 30 acre feet.
Range and accessibility: fair to good.
No desilting plot fenced. Spillway 30' wide, 3 1/2' freeboard.
Fence desilting plot (about 80 acres)

3A-177 Reservoir, temporary Irrigation 3/24/37
111 30' x 36 30' 7 3/4 S x 7 1/2 W
Has about 1' water now. Will hold 5 feet. Capacity 3 acre ft.
Range and accessibility: fair to good.
Has silted up and greatly reduced capacity.
Raise dam 4' and allow spillway. Fence desilting plot.

3A-178 Reservoir, nearly permanent 3/24/37
111 30' x 36 30' 8 1/4 S x 6 W
Has about 6' water now. Will hold 12'. Fence along dam. Desilting plot fenced. Capacity 20 acre feet.
Range and accessibility: poor range; accessibility, good.
Condition, fair. Has a check dam to check silt deposition in reservoir 3' freeboard. Wide spillway.
No recommendation.

3A-179 Reservoir, temporary (T-) ECW 3/24/37 Project #1-I
111 30' x 36 30' 7 S. 1 1/2 W
At Cedar Ridge T. P.
Dry - dry 95% of time. Will hold 7' water. Has capacity 1 1/2 acre ft.
Poor range and accessibility.
Desilting plot fenced. Cannot be counted on as a water supply.
No recommendation.

WR 7464

L. M. U. #3

3A-180 Reservoir, temporary 3/24/37
111 30' x 36 30' 8 1/8 S x 3/4 W
Will hold 4' water, is full now. Capacity 1/2 acre ft.
Poor range and accessibility.
Good condition.
No recommendation.

3A-181 Reservoir, temporary E.C.W. 3/24/37
111 30' x 36 30' 8 1/4 S x 5/8 W
1 1/2 mi. so. of Cedar Ridge T. P.
Will hold 10' water. Has 8' now. Capacity 3 1/2 acre feet.
Poor range and accessibility.
Good condition. No desilting plot fenced.
No recommendation.

3A-182 Spring, temporary 3/24/37
111 30' x 36 30' 8 1/2 S x 1/2 W
1 -16' x 2' x 1' concrete trough. Has been an old Irrigation Terrace development.
Poor range and accessibility.
Poor cut-off wall broken. Water not in pipe. Small flow.
No recommendation.

3A-183 Well, permanent 3/24/37
111 30' x 36 30' 2 3/4 S x 1/16 W.
Willow Spring Wash above the Gap.
1 - 16 x 3 x 1 1/2 concrete trough. L hand suction pump. About 6' to water.
Poor range and accessibility.
Good condition.
No recommendation.

3A-184 Well and windmill, permanent 3/25/37
111 15' x 36 30' 13 1/4 S x 11 5/8 W
Gap T. P. and dipping vat.
2 - 6' windmills with masonry cribbed walls and 15,000 gal. concrete storage tank.
Accessibility, good; range, poor.
Good condition. 3 sets of concrete troughs.
No recommendation.

3A-185 Reservoir, temporary E.C.W. 3/25/37
111 30' x 36 30' 1/2 S x 4 1/2 W
Dry now. Has had 4' water. Small shale drainage, 3 1/2' freeboard. Will hold water 10 to 12' deep.
Poor range and accessibility.
No desilting plot fenced but only sparse vegetation. Capacity 2 acre feet.
No recommendation.

WR 7464a

L. M. U. #3

3A-186 Reservoir, temporary E. C. W. 3/25/37
111 45' x 36 30' 1 S x 1 1/8 W
Has 2' water now. Will hold 8'. No desilting plot fenced.
Capacity 3 acre feet. 3 1/2 ' freeboard with wide spillway.
Good range and accessibility.
Good condition.
No recommendation.

3A-187 Windmill, permanent 2/25/37
111 30' x 36 45' 8 1/4 S x 9 W
8' windmill and 10,000 gal. concrete storage with two 16 x 2 1/4 x 1 concrete troughs.
Fair range and accessibility.
Good condition.
No recommendation.

3A-188 Spring, permanent E. C.W. 3/25/37
111 30' x 36 45' 5 1/8 S x 8 1/8 W
Bitter seeps.
1 - 16 x 2 1/2 x 1 1/2 concrete trough (Irrigation) and 2 - 6 x 1 x 1 concrete trough. (E.C.W.)
Range and accessibility: poor to fair.
Pipe into troughs broken.
Re-place pipe and cover same.

3A-189 Spring, permanent E. C.W. 3/25/37
111 30' x 37 00' 15 3/4 S x 5 3/4 W
Navajo Spring.
2 - 20' x 1' x 1' concrete troughs. Flow about 3/4 gallons per minute.
Range and accessibility: poor to fair.
Troughs not level.
No recommendation.

3A-190 Reservoir, temporary E.C. W. 3/25/37
111 30' x 36 45' 7 1/4 S x 13 W
Dry now. Has had 4' water. Will hold 8 to 10'. Dam riprapped on both sides.
Range and accessibility: fair to good.
Good condition. No desilting plot fenced but not needed.
No recommendation.

WR 7465

L. M. U. #3

3A-191 Reservoir, temporary E. C. W. 3/25/37
111 30' x 36 45' 12 1/4 S x 13 3/4 W
Dry now. Has had 8' water. Will hold 12 to 15'. Capacity 20 to 30 acre feet.
Good range and accessibility.
Desilting plot fenced. Natural spillway with about 4' of freeboard.
No recommendation.

3A-192 Reservoir, temporary E. C. W. 3/25/37
111 30' x 36 45' 14 S x 11 W
Dry now. Has had 5' water. Will hold 10'. Drainage does not furnish large.
Good range and accessibility.
Run-off. No desilting plot fenced. 3 1/2 freeboard but small spillway.
No recommendation.

3A-193 Well, permanent E. C. W. 3/27/37
111 15' x 36 30' 11 1/2 S x 5 1/2 W
1 - 20 x 2 x 1 concrete trough concrete cribbed and one hand suction pump.
Range and accessibility: poor to fair.
Good condition. About 8 to 10' to water.
Build 20,000 gallon storage tank and install 6 or 8' windmill and troughs.

3A-194 Well, permanent E. C. W. 3/27/37
111 15' x 36 30' 11 3/4 S x 4 1/4 W
About 3' to water in concrete cribbed well. Hand suction pump and 16' concrete trough.
Range and accessibility: poor to fair.
Handle gone from pump. Has been an old Irrigation Service well with E. C. W. work on it.
Re-place pump handle.

3A-195 Spring, temporary undeveloped 3/27/37
111 15' x 36 30' 12 1/2 S x 3 1/4 W
Spring in rock. Flow could not be determined.
Accessibility, good. Range, poor.
No recommendation.

3A-196 Well, temporary 3/27/37
111 15' x 36 30' 15 1/4 S x 2 W
Has been cribbed with rock. 1 wooden trough present. Well full of sand.
Range and accessibility: fair to good.
Dry about 30% of time.
No recommendation.

WR 7466

L. M. U. #3

3A-197 Spring, permanent undeveloped 3/27/37
111 15' x 36 30' 16 5/8 S x 1 5/8 W
Large basin in rocks fills with water. Not enough fall to have
spring developed.
Range and accessibility: poor to fair.
Develop into well.

3A-198 Spring, permanent 3/27/37
111 15' x 36 15' 3/4 S x 3 1/4 W
Not visited but shown on range maps.

3A-199 Well, permanent 3/27/37
111 15' x 36 30' 15 S x 6 W
Not visited but shown on range maps.

3A-200 Well, permanent 3/27/37
111 15' x 36 30' 15 S x 7 1/8 W
Not visited but shown on range maps.

3A-201 Well, shallow E. C. W. permanent 2/2/37 Project # 1 AA
111 15' x 36 15' 1 3/4 S x 8 1/4 W
Masonry crib 1 - 20 x 1 x1 concrete trough. 1 hand suction
pump. 4' to water. About 5' water in well.
Range, poor. Accessibility, fair.
Handle of pump broken.
Re-place pump handle.

3A-202 Spring, (For highway Dep't.) 2/2/37
111 15' x 36 15' 3 3/4 S x 7 3/4 W
2 - 8000mgal. galvanized iron storage tanks.
NOT FOR RANGE USAGE

3A-203 Spring, permanent E. C. W. 2/2/37
111 15' x 36 15'
Willow Spring
Flow of about 3 to 4 gallons per minute. 2 - 2 x 2 x 1 1/2
concrete troughs.
Range, poor. Accessibility, fair.
Poor condition. Water is washing troughs badly.
Clean out around troughs and put in concrete or rock apron.

3A-204 Spring, permanent undeveloped 2/2/37
111 15' x 36 15' 5 S x 7 1/8 W
Flow about 1/2 to 3/4 Gal. per min. more potential possible water.
Range and accessibility: poor.
No recommendation.

WR 7467

L. M. U. #3

3A-205 Spring, permanent undeveloped 2/2/37
111 15' x 36 15' 6 1/4 S x 6 1/8 W
Same as 3A-204
No recommendation.

3A-206 Spring, permanent undeveloped 2/2/37
111 15' x 36 15' 6 1/4 S x 6 W
Same as 3A-204

3A-207 Reservoir, temporary ECW 2/2/37
111 50' x 36 15'
Dam riprapped all over. Has about 2' water. Will hold 10'.
Small drainage. No desilting plot.
Fair range and accessibility.
Fair condition. Has never run out spillway. Capacity about 2 acre feet. 3 1/2' freeboard 30' wide.
No recommendation.

3A-208 Reservoir, temporary E. C. W. 2/3/37
111 30' x 36 15' 1/2 S x 5 W
About 12' deep. 3 1/2 to 4' freeboard. Spillway 30' wide.
No desilting plot. Small drainage. Capacity about 4 acre feet.
Range and accessibility: fair to good.
Good condition. Not enough vegetation on drainage to warrant desilting plot. Dam not fenced.
No recommendation.

3A-209 Well, shallow ECW 2/2/37
111 15' x 36 30' 15 3/4 S x 9 3/4 W
Masonry crib with 1 - 20 x 1 x 1 pump.
Range, poor. Accessibility, fair.
Handle on pump broken. Rubber diaphram leaking. 6' to water.
4' water in well.
Handle on pump and replace diaphram.

3A-210 12/10/36 Project # 1 X
111 15' x 36 15' 1 1/4 S x 6 W.
Concrete and rock cribbing. Hand suction pump. Concrete trough.
Range and accessibility: poor to fair.
Good condition. 4' to water. Diaphram leaking.
Repair diaphram.

WR 7468

L. M. U. #3

3A-253 Drilled well, proposed 3/11/37
111 00' x 36 15' 15 S x 4 W
West of Tuba City Coal Mine
Need for water in this area is evident. Geologists are doubtful as to possibility of well.
Range and accessibility: F.A.F. .14 to .20
Further study on the area should be made and if at all possible water developed.

3A-255 Reservoir, proposed 3/11/37
111 30' x 36 15' 7 S x 5 W
Water is needed in this area to obtain distribution and proper range use.
Range and accessibility: F.A.F. .06 to .12
Construct reservoir if location can be found within 1 1/2 miles of this location.

3A-256 Reservoir, proposed 3/11/37
111 30' x 36 15' 12 1/4 S x 4 1/2 W
Water is needed in this area to obtain proper range use.
Range and accessibility: F.A.F. .04 to .18
Construct reservoir if suitable location can be found in vicinity.

3A-257 Reservoir, proposed 3/11/37
111 30' x 36 15' 6 S x 13 3/4 W
A reservoir is needed in this area.
Range and accessibility: F.A.F. 18 to 24
Construct reservoir if suitable location can be found in this area.

3A-258 Reservoir, proposed 3/11/37
111 30' x 35 45' 2 S x 11 1/2 W
On mesa north of Needmore Tank
Water is needed in this area. No suitable location was found but further study should be made.
Range and accessibility: F.A.F. 15 to 24
If suitable location can be found within 1 1/2 miles of this location, construct reservoir.

3A-259 Reservoir, proposed 3/11/37
111 30' x 35 45' 5 S x 6 1/2 W
An old dam is at this location but has washed out. A large fill of about 25' is required.
Range and accessibility: F.A.F. .12 to .18
Geologists report possibility of drilled well and should be investigated first. If no drilled well can be made, construct reservoir here. This supply should be permanent.

WR 7469

L. M. U. #3

3A-260 Reservoir, proposed 3/11/37
111 30' x 35 45' 5 1/2 S x 3 1/2 W
To obtain better livestock distribution a reservoir should be constructed here.
Range and accessibility: F.A.F. .07. to .15
An Indian reservoir is reported here but could not be found.
Construct reservoir if suitable site is located.

3A-262 Reservoir, proposed 4/1/37
111 45' x 36 30' 4 S x 3 1/2 W
This area needs a permanent water supply. Drilled wells are impossible.
A large dam constructed on this long drainage should furnish a permanent supply.
Construct reservoir.

Estimated yardage, 18,000 yds.
Estimated cost, $ 5,200.00

WR 7470

WATER DEVELOPMENT
L. M. U. #3
WORK PROJECTS

(Listed in order of priority)

3A-203 (Willow Springs) Permanent
111° 15' 36° 15'
Water has washed troughs badly. Clean dirt around troughs and put in rock and concrete aprons.

12½ yds. rock & concrete @ $12.00 . . . $150.00

3A-62 Well, permanent ECW (5G)
111° 15' 36° 00' 17"S x 8¼"W
This well is located just off the Reservation. Remove hand suction pump to be used on a well in Reservation. No estimate of cost.

3A-17 Spring, permanent ECW (4B)
111° 00' 36° 15' 16-3/4"S x 14"W
Rock apron around the trough of this spring needs repairing.
6 yds. rock @ $6.00 . . . . . $ 36.00

3 A-21 Windmill, permanent ECW
111° 00' 36° 30' 6-3/4"X x 9½"W
Drill hole connecting the two troughs low down so second trough can fill and still have float valve work. No estimate of cost.

3A-27 Windmill, permanent ECW
111° 00' 36° 00' 1/2"S x 5-3/4"W
Rebuild or repair troughs with connecting pipe between the two at the bottom. Install float valve.

2 troughs @ $60.00	120.00
Rock and masonry apron . . .	150.00
	$270.00

3A-28 Windmill, permanent ECW
111° 00' 36° 00' 6¼ x 9" W (West side of back pasture)
Repair troughs with connection pipe at bottom. Pour two troughs for use in buck pasture.

4 troughs @ $60	240.00
2 aprons	300.00
(1 for each set of troughs)	$540.00

3A-149 Windmill, permanent ECW
111° 00' 36° 00' 3½S x 4-3/4"W (NW Corner Buck pasture)
Repair troughs. Pour troughs for buck pasture use with apron.

4 troughs @ $60.00	240.00
2 aprons @ $150.00	300.00
	$540.00

WP 7471

CV-6417-201 NN004196

3A-151 Windmill, permanent ECW
111° 00' 36° 00' 10" N x 5"W (SW side buck pasture)
Complete project. Install 50,000 gallon storage tank with two set troughs.

50,000 Gal. storage tank	675.00
4 troughs @ $60.00	240.00
2 aprons @ $150.00	300.00
	$1215.00

3A-153 Well, permanent ECW
110° 45' 36° 00' 14½ x 13-3/4
Well is drilled but windmill not yet constructed. 50,000 gal. storage tank and two 20' x 1 x 1½ concrete troughs in place. Put up windmill. No estimate of cost.

3A-60 Well, permanent shallow.
111° 15' 36° 00' 15' S x 8¼" W
Handle missing from pump and diaphram worn out.

Replace diaphram	5.00
Replace pump handle	2.50
Clean well, 2 yds @ $3.00 .	6.00
	$13.50

3A-154 Windmill, permanent ECW
110° 45' 35° 45' 1¼" S x 13" W
This well is to be deepened and then project completed.
No cost estimate.

3A-73 Reservoir, temporary ECW (On Gray Mountain)
111° 30' 36° 00' 12"S x 8¼"W
Dam washed out about a 20' fill. Rebuild dam.
1400 yds. @ 35¢ $490.00

3 A-88 Well, shallow, Permanent
111° 00' 36° 15' NW of Greasewood Lake
Concrete cribbed with large 20' trough. Install hand diaphram pump.
$35.00

3A-97 Well, permanent, Irrigation.
111° 00' 36° 30' 12¼" S x 3¼"W
Masonry cribbed with large 20' concrete trough. Install hand diaphram pump. $35.00

3 A-7 Well, shallow, permanent.
111° 00' 36° 15' 1/4" N x 12-3/4" W
Concrete cribbed with one 20' small trough. Has had hand pump but same has been removed. Install pump $35.00

WR 7472

CV-6417-201 NN004197

3A-162 Reservoir, temporary
111° 15' 36° 30' 14¼"S x 13 ½"W
Has nearly washed out. Small spillway. Raise dam 4' and allow spillway.

	800 yds. @ 35¢	280.00
Fence desilting plot	1/2 mi. fence @ $300	150.00
		$430.00

3A-167 Reservoir, temporary ECW
Junction of Big and Little Colorado Rivers
111° 45' 36° 15' 2" S x 2-3/4" W
Salt at this reservoir to facilitate tramping.
No cost estimate

3A-170 Reservoir, temporary ECW (1Q)
111° 30' 36° 30' (Bodoway House Res.)
Has small spillway with about 4000 acres drainage. Widen spillway 20 or 25 feet.
200 yds. @ 35¢ $70.00

3A-188 Spring, permanent ECW
111° 30' 36° 45' 5-1/8" S x 8-1/8"W (Bitter Seeps)
Pipeline at this spring is broken. 1 - 16' large concrete trough and 2 - 20' small troughs.
Repair pipeline and cover same so it won't wash out. Clean spring.

Excavation	30.00
Pipe	5.00
Pipeline	15.00
	$50.00

3A-194 Well, permanent ECW
111° 15' 36° 30' 11-3/4" S x 4½"W
Hand suction pump, masonry cribbing and one large 18' concrete trough. Handle of pump missing. Replace handle.
No cost estimate.

3A-201 Well, permanent, shallow ECW (1AA)
111° 15' 36° 15'
Masonry cribbed with one small 20' concrete trough and hand suction pump. Handle of pump missing. Replace pump handle.
No estimate of cost.

3A-209 Well, shallow ECW
111° 15' 36° 30' 15-3/4"S x 9-3/4" W (Below Gap on Willow Springs Wash).
Masonry cribbed with small 16' concrete trough and hand diaphram pump. Handle broken and diaphram worn out. Replace pump handle and diaphram.
No cost estimate.

WR 7473

CV-6417-201 NN004198

3A-210 Well, permanent ECW
111° 15' 36° 15' 1¼"S x 3"W
Concrete cribbing with small 16' concrete trough and diaphram pump. Diaphram worn badly. Replace diaphram.
No cost estimate

3A-71 Reservoir temporary ECW. Jones Reservoir on Gray Mountain.
111° 30' 36° 00' 13½"S x 9½"W
Small drainage with good possible diversion possibility.
500 yds. dirt on dam @ 35¢ 175.00
Diversion ditch 30 yds. long. Masonry or concrete diversion to make partial or entire diversion 20 yds. @ $15.00 . . . . .300.00
$475.00

3A-70 Reservoir, temporary ECW
111° 30' 35° 45' 1/4"S x 10"W
Masonry dam only 5' high. Raise dam 5' to ensure greater capacity.
30 yds. masonry work or concrete @ $15.00 $450.00

3A-259 Reservoir proposed.
111° 30' 35° 45' 5" S x 6½" W
Geologists report possibilities of drilled well near foot of Gray Mountain. This should be checked. If no drilled well is possible, a large reservoir is recommended here. A reservoir at this site has washed out but was not constructed high enough. Natural spillways on either end of dam can be made. Fill would be 25' to 30'.
10,000 yds. @ 35¢ 3500.00
Desilting plot,
2 mi. fence @ $300 . . . 600.00
$4100.00

3A-258 Reservoir, proposed
111° 30' 35° 45' 2" S x 11½"W
Water is needed in this area. No suitable location was found on the study but if suitable location can be found within 1½ miles of this location, construct reservoir. $1750.00

3A-257 Reservoir, proposed
111° 30' 36° 15' 6" S x 13-3/4" W
Water is needed in this area. If suitable location can be found in this area, construct reservoir. $1500.00

3A-253 Drilled well proposed.
111° 00' 36° 15' 16" S x 4" W 3 miles west.
2 miles west of Tuba City Coal Mine, 1/2 mile north of Coal Mine Road. Water is needed in this area. Geologists are doubtful about drilled wells. The soil is too sandy for res-

WR 7474

CV-6417-201 NN004199

ervoirs. This area should be rechecked by geologists to ascertain possibliities. If at all possible, a drilled well is proposed.

Estimated cost $5000.00

3A-255 Reservoir proposed.
111° 30' 36° 15' 7" S x 5"W
Water is needed in this area. If suitable location can be found, a reservoir is proposed.

$1500.00

3A-256 Reservoir, Proposed
111° 30' 36° 15' 12¼"S x 4½"W
Water is needed in this area. If suitable location is found, a reservoir is recommended.

$1500.00

3A-260 Reservoir, proposed.
111° 30' 35° 45' 5½"S x 3½" W
To obtain better livestock distribution, a reservoir is proposed if suitable location can be found. An Indian Reservoir was reported in this area but could not be located.

$1000.00

3A-261 Reservoir proposed.
111° 45' 36° 30' 4" S x 3½"W
In the area west of Echo Cliffs there is a decided lack of permanent water. Further, possibilities of obtaining permentnt water in drilled wells is remote, due to the depth of canyons both on the west and south. Permanent water possibilities lie only in large reservoirs constructed on long drainages. This proposed site is on a drainage about 20 miles long with a drainage area of about 40,000 or 50,000 acres. An average fill of about 27' will put water out a natural spillway. Such a fill will provide a capacity of 100 or 125 acre feet. Approximately 18,000 yards of dirt will be required. In moving this amount of dirt heavy equipment will be necessary and unit cost on yardage should be reduced to about 25¢ per yard. Estimated cost on this basis, with desilting plot, is $5200.00

3A-59 Spring piped to Cameron Vat.
111° 15' 36° 00' 9" S x 9-3/4"W (Cameron Vat)
Repair bursted pipe.

$15.00

3A-148 Reservoir temporary ECW (4EE)
111° 00' 36° 15' 2 mi. east of Coal Mine.
Fence desilting plot at this reservoir.
1/2 mi. fence $150.00
Small drainage but reservoir furnishes a good deal of water.

WR 7475

CV-6417-201 NN004200

3A-152 Spring, permanent, undeveloped
111° 00' 36° 00' 15½" x 5" W
Gold Spring. Flow about 1/4 to 1/2 gallon per minute. This spring is recommended for development in order that better range usage might result.

Excavation	125.00
Cut-off walls	75.00
Troughs	120.00
Apron on troughs	150.00
	$470.00

3A-76 Reservoir, Temporary ECW
111° 30' 36° 00' 8½" S x 7-3/4"W (Smiley Reservoir on Gray Mountain.
Will hold about 10' of water, 5 acre feet capacity. Desilting plot is fenced but in water run the posts have been torn down. Need wooden posts in water runs.

Repair fence $75.00

3A-75 Reservoir temporary ECW (Gray Mountain).
111° 30' 36° 00' 9¼" S x 10½" W
Will hold 10' to 12' water. Desilting plot fenced. 2½ to 3' actual freeboard. Widen spillway

250 yds. @ 50¢ $125.00

3A-72 Reservoir temporary ECW (5CC)
111° 30' 36° 00' 12" S x 11¼"W
Will hold 12' water. Capacity 3 to 5 acre feet. Spillway 25 wide with 3½ freeboard. Spillway needs to be widened 20' and desilting plot is recommended.

Excavation @ 75¢	225.00
Fence @ $300 per mile . .	300.00
	$525.00

3A-54 Spring, permanent, undeveloped
111° 00' 35° 45' 7½" S x 11¼" W Badger Spring
Flow about 1/4 to 1/2 gallon per minute. Indians have done some excavation and are dipping water out for use. No water close to this area. Forage factor low .01 to .09. Recommend spring development.

Excavation	50.00
Cribbing & crosscut walls	150.00
Two concrete troughs . . .	120.00
	$320.00

3A-54 Reservoir, temporary, Indian.
111° 30' 36° 00' 1¼" E x 8¼"W
Reservoir is silting and has no spillway. An important water supply. Clean reservoir. 500 yds. @ 35¢ 175.00
Raise dam 4' and provide spillway 150.00

WR 7476

CV-6417-201 NN004201

3A-53 Reservoir, Indian, Temporary
111° 30' 36° 15' 16¼"S x 8¼"W
Dam about 6' high rocked on both sides. An important water supply in this area. Is silting.

Clean reservoir 500 yds. @ 35¢	175.00
Raise dam 2 or 3'	150.00
	$325.00

3A-35 Spring, permanent, Indian
111° 15' 35° 45' 5½"S x 2-3/4"W
Has one wooden trough and wooden cribbing. Flow about 1/4 to 1/2 gallons per minute. This spring is recommended for development.

Excavation and cribbing . .	175.00
2 troughs @ 60.00	120.00
1000 gallon storage . . .	175.00
	$470.00

3A-66 Reservoir, Temporary, ECW
111° 30' 35° 45'
1¼ mile northwest of Lockett Tank.
Charco type dam with diversion ditch. Ditch in poor condition. Holds 12 to 15' water, 2½ to 3 acre feet capacity.

Repair & enlarge diversion	50.00
Fence desilting plot, 1 mile fence @$300.00	300.00
	$350.00

3A-174 Reservoir, Temporary, ECW
111° 45' 36° 30' 12¼"S x 3-1/3"W
Large capacity and deep, 3000 to 5000 acre drainage. New construction. Recommend desilting plot.

1 mile fence $300.00

3A-175 Reservoir, temporary ECW
111° 45' 36° 30' 10¼" S x 4-3/4"W
Has 2' water now. Will hold 12' to 15' water capacity, large. Recommend desilting plot.

1 mile fence $300.00

3A-176 Reservoir, temporary ECW (1M)
111° 45' 36° 30' 7½"S x 1/2" W

Has 3 or 4 feet water now. Will hold 12'. Capacity 20 or 30 acre feet. No desilting plot fenced. Recommend desilting plot.

1-1/2 mile fence $450.00

WR 7477

3A-177 Reservoir, temporary, Indian Service
111° 30' 36° 30' 7-3/4" S x 7-1/2"W
Has about 1' water now. Capacity 1½ acre feet. Is silting.
Recommend raise dam, 4' @ 35¢ yard 275.00
Fence desilting plot, 1 mile fence 300.00
$575.00

3A-197 Spring, permanent, undeveloped
111° 15' 36° 30' 16-5/8"S x 1-5/8"W
Water flows into rocks but becomes polluted so that stock won't drink it. Very sandy area. Has been an old supply. Recommend developing into well with hand pump.
Excavation & cribbing. . . 200.00
2 troughs @ $60.00 . . . . 120.00
Hand pump 35.00
$355.00

3A-198 Well, permanent ECW
111° 15' 36° 30' 11½"S x 5½"W
Hand pump on concrete cribbed well with one 20' small concrete trough. The area is lacking in water supplies for loose stock (cattle & horses).
Recommend 6' windmill . . 325.00
15,000 ga. storage tank . 450.00
2 troughs @ 60.00 . . . 120.00
$895.00

3A-30 Spring, permanent, ECW
111° 00' 36° 00' 15-1/2"S x 12-3/4W
Masonry cribbed with one 20' small concrete trough. Flow about 1/4 gallon per minute. Poor to fair range. Cribbing to spring leaking so only a portion of the water is being caught.
Repair cribbing $75.00

3A-32 Spring, permanent, ECW
111° 00' 35° 45' 3½S x 10" W
Masonry cribbed with one 20' small concrete trough. Flow about 1/2 gallon per minute. Pipeline washed out and water washing cribbing.
Repair pipeline and divert water around spring $150.00

3A-173 Reservoir, temporary, ECW
111° 30' 36° 30' 14¼"S x 9" W (2½ miles northwest of Bodoway House).
Has 3' water now. Will hold 12' to 15', capacity about 4 acre feet. Recommend desilting plot.
1-1/2 mile fence $450.00

WR 7478

3A-160 Reservoir, temporary, irrigation
111° 30' 36° 30' 3 "S x 8-3/4" W
Has 2' or 3' of water. Will hold 12', capacity 9 acre feet. East end of dam has settled. No desilting plot fenced. Recommend east end of dam raised.

500 yds. @ 35¢	175.00
Desilting plot, 1 mi. fence	300.00
	$475.00

3A-161 Reservoir, Temporary, Irrigation
111° 30' 36° 30' 12½"S x 1/4"W
Has 2' water now. Will hold 10', silted so capacity is reduced. No desilting plot fenced. Recommend cleaning tank.

750 yds. @ 35¢	275.00
Desilting plot, 1 mi. fence	300.00
	$575.00

3A-55 Reservoir, ECW, temporary
111° 30' 36° 00' 0"S x 2-3/4"W
Has 4' of water now, will hold 9'. No desilting plot fenced. Recommend desilting plot 1 mi. fence. $300.00

3A-16 Spring, Permanent, ECW (4BB)
111° 00' 36° 15' 10-3/4"S x 8-1/2"W
One 20' small concrete trough. Flow about 1/2 gallon per minute. Sand has blown in around trough until it has completely covered trough. Clean sand out around trough.
Cost. $10.00

3A-65 Reservoir, Temporary ECW (123,56)
111° 30' 35° 45' 0'S x 2-3/4"W
A natural lake bed with diversion ditch. Very shallow. Will hold adequate water. Diversion ditch broken.
Repair diversion ditch . .$250.00

3A-144 Spring, permanent ECW and irrigation
111° 00' 36° 15' 7½"S x 6½"W
One small 20' trough and one 20' large concrete trough. Flow 1/2 to 3/4 gallons per minute. Large trough broken until only a small amount of water gets into small trough.
Repair trough $25.00

3A-64 Reservoir, temporary
111° 30' 36° 00' 15-1/8" x 2" W (2 mi. west of Poverty Tank)
Masonry dam 8 to 10' high, will hold 4' water. Has silted badly. Clean reservoir or build dam up 4'
30 yds. Masonry @ $16 . . $480.00

3A-77 Reservoir, temporary, Indian
111° 30' 36° 00' 9"S x 6"W
Good range, small tank. Accessibility good. Recommend dam be raised to enlarge water supply.
700 yds. dirt @ 35¢ . . . $250.00

WR 7479

CV-6417-201 NN004204

3A-69 Reservoir, Temporary
111° 30' 35° 45' 5-3/8" E x 12" W (Needmore Tank)
Dam about 18' fill. Has about 8' water now. Capacity 15 to 20 acre feet. Has silted. Recommend cleaning reservoir, if cost can be reduced to about 15¢ per yard $1000.00

3A-67 Reservoir, temporary
111° 30' 35° 45' 3-1/8" S x 5-3/4" W (Lockett Tank)
Masonry dam about 8' high. Has silted until only about 2' of water is caught. If cost can be reduced so as not to be prohibitive, this tank should be cleaned. $1000.00

3A-155 Well, shallow, permanent
111° 00' 35° 45' 4-1/8 x 6" W
Masonry cribbed well. One 16' concrete trough. Well is in wash and has filled with sand. Recommend well be cleaned. . . $25.00
Install hand pump 35.00
$60.00

3A-18 Spring, permanent, irrigation
111° 00' 36° 15' 6-3/4" S x 13-1/2" W
Just north of Tuba City. An old irrigation service development. One 20' large concrete trough. Pipeline broken. Repair pipeline and clean spring $50.00

WR 7480

CV-6417-201 NN004205

RANGE IMPROVEMENT SURVEY
L. M. Unit #5

DIPPING VATS

Dipping vats located within the Unit include Gap, Tuba City, and Cameron.

Gap Dipping Vat: Located at Gap T. P. 50' concrete vat with crowding pens, drain pens, and corrals. Water supply is a 6' windmill with 10,000 gallon storage tank. Quarters are at vat. Corrals and vat in good condition. No repair necessary.

Cameron Vat: Located three-fourths of a mile southwest of Cameron, with good corral system and drain pens. Water supply piped two miles from Tappan Spring. Quarters at vat. Boiler, vat, and corrals in good condition. This is one of the best dipping vats seen on the Reservation. No repairs needed.

Tuba City Vat: Located one and one-half miles east of Tuba at the mouth of Pasture Canyon. 50' concrete vat with corrals, drain pens and boiler. Corrals in poor condition. Need repairing. Vat is built in valley with live water and fills with water from seepage. Another location in this vicinity is not practical. Recommend repair corrals.

There are two abandoned dipping vats, one at Poverty Tank (cattle vat) and one at Needmore Tank (sheep vat). Neither of these are recommended to be repaired and put into working condition.

Ultimately a dipping vat located four miles west of Shinamo Alter at proposed reservoir 3A-261 would be advisable.

At present the existing vats will serve the needs of the Unit.

WR 7481

RANGE IMPROVEMENT SURVEY
L. M. Unit #3

STOCK TRAILS

Stock trails in this area include two on Gray Mountain and a few into some canyons. These are in fair condition and need no more work.

A stock trail across Porter Canyon into Lower Basin is proposed. There is already existing a trail across here but improvement of the existing trail from Lower Basin (winter range) to Needmore (summer range) is recommended. Approximately half a mile of the trail needs to be improved. Estimated cost $2000.00.

WR 7482

PRESENT LIVESTOCK MOVEMENT
on
DISTRICT No. 3

By
Albert B. Sombrero

The livestock movements in Land Management Unit No. 3 were obtained primarily by Albert B. Sombrero and Edison Bowman.

Movements were obtained by questioning Indians and representing same on a livestock movement map in order that present movement might be studied and an idea as to the present need for boundary changes in the Unit might be obtained.

In certain cases where the Range Management Division did not contact the people, the Social and Economics Division's information was obtained and used.

The write-up numbers, number of sheep, cattle and horses all correspond with numbers on livestock movement map.

WR 7483

CV-6417-201 NN004208

1-30-37
1. Ah-doe-tsosie - 350 sheep:

Summers along the north fence of Moenave D. A. and in winter moves towards Tuba Butte.

Winters from Oct. 15th to May 1st Belongs to Tuba City Chapter, trades and dips at Tuba City.

1-30-37
2. Chin-se-zin-nie - 120 sheep:

Winters Nov. 1st to May 1st, northwest of Tuba City about three miles and in summer moves inside of Moenave D. A. has a farm there; move sheep towards Gap. Belongs to Tuba City Chapter, trades and dips at Tuba.

1-30-37
3. Jack and Sister - 200 sheep:

In summer live with No. 2 and in winter move to Gap from Nov. 1st to May 15th. Belong to Gap Chapter, trade at Tuba and Gap. Dip at Gap.

2-1-37
4. Claw-zad-ha-laini -300 sheep:

In winter south at foot of White Point and in summer move to Dog Spring or head of Pasture Canyon, and very occasionally move to Gray Mountain and Gap. Belongs to Tuba Chapter, trades and dips at Tuba.

Winter at White Point from Nov. 1st to May 1st.

2-1-37
5. Hosteen-deel-nic-bega- and mother - 200 sheep:

Winter southeast near foot of Red Mesa and in summer move to head of Pasture Canyon, May 1st to November 15th. Belong to Tuba Chapter, trade and dip at Tuba.

2-1-37
6. Se-gie-ne-tso's wife - 350 sheep:

Winter on the north portion of Coal Mine Mesa from Nov. 1st to March 1st, in summer move to Se-gie-ne-tso Spring on the west side of Little White Mesa. Belongs to Tuba Chapter, trades and dips at Tuba.

2-4-37
7. Charley Brown - 350 sheep:

WR 7484

CV-6417-201 NN004209

Lives yearlong east of Tuba City dipping vat. Belongs to Tuba Chapter, trades and dips at Tuba.

2-6-37
8. Bill Sawyer - 500 sheep:

Lives five miles west of Moencopi Village down in Moencopi Wash. Lives there yearlong, has a farm there and sheep on Coal Mine Mesa yearlong, along the west portion of Mesa. Belongs to Tuba Chapter, trades and dips at Tuba and also trades at Kerly's.

2-9-37
9. Dick Sampson - 700 sheep:

Winters on the north side at foot of Red Mesa from Nov. 30th to May 1st, and in summer moves to head of Pasture Canyon.

Belongs to Tuba Chapter, trades and dips at Tuba.

2-20-37
10. Da-gah-ne-tas-se-gie - 100 sheep, 10 cows:

Winters at Cedar Mountain from Nov. 1st to May 1st, and in summer moves to Coal Mine Mesa south of Tuba City.

Belongs to Cameron Chapter, trades and dips at Cameron, and in summer when on Coal Mine Mesa trades at Tuba.

10 head of cows on Coal Mine Mesa yearlong.

2-20-37
11. Us-son-deel - 100 sheep:
12. Anna and Sarra - 250 sheep:
13. Dan - 50 sheep:

Winter together at Cedar Mountain from November 15th to May 1st. All children of No. 10. Belong to Cameron Chapter, trade and dip at Cameron.

2-20-37
14. Na-Kai-aush-kee -- 800 sheep:

Winter at Cedar Mountain November 1st to May 15th, and in summer move to southeast of Gray Mountain. Belongs to Cameron Chapter, trades and dips at Cameron.

2-20-37
15. Bah-Alth-Chin-Laini - 600 sheep:

Winters from Nov. 1st to May 1st at Cedar Mountain and in summer moves to east side of Gray Mountain. Belongs to Cameron Chapter, trades and dips at Cameron.

WR 7485

CV-6417-201 NN004210

2-21-37
16. Da-gah-yazzie - 900 sheep:

Winters from Nov. 30th to May 1st at Cedar Mountain and in summer moves southeast of Gray Mountain near Cameron. Belongs to Cameron Chapter, trades and dips at Cameron.

2-21-37
17. Ol-ta-ie-nez - 200 sheep:

Winters three miles east of West Reservation boundary along the highway to Grand Canyon Oct. 1st to May 1st. In summer moves on the east side of Gray Mountain. Belongs to Cameron Chapter, trades and dips at Cameron.

2-21-37
18. Maxwell Yazzie - 150 cows:

Lives yearlong five miles west of Cameron along the highway to Grand Canyon. Has no sheep. Cattle on the east side of Gray Mountain yearlong. Occasionally on top of Gray Mountain. Belongs to Cameron Chapter, trades and dips at Cameron.

2-21-37
19. Hush-kon-ba-da-nie - 450 sheep:

Winters along the south reservation boundary fence, west of highway #89. In January moves northeast of Gray Mountain and in March moves to Cedar Mountain. Belongs to Cameron Chapter, trades and dips at Cameron.

2-22-37
20. Attcity Yazzie - 100 sheep:

Winters along the south reservation boundary fence, west of highway #89 from Oct. 1st to May 1st. In summer moves to northeast of Gray Mountain about 20 miles between the Grand Canyon highway and the little Colorado River. Belongs to Cameron Chapter, trades and dips at Cameron.

2-22-37
21. Ha-tal-le-deel - 200 sheep:

Winters on top of Gray Mountain Nov. 1st to March 30th and in summer moves off on the east side of mountain. Has a farm at Tuba down in Moencopi Wash. Belongs to Cameron Chapter, trades and dips at Cameron, and when at farm trades at Tuba.

WR 7486

CV-6417-201

NN004211

2-22-37
22. Ha-tal-be-deel-ba-da-nie - 30 sheep:

Lives with his father-in-law, moves to east rim of Gray Mountain Feb. 21, 1937. Moved away to live alone. Winters from Nov. 1st to March 1st and in summer moves off on the east side of Gray Mountain. Belongs to Cameron Chapter, trades and dips at Cameron.

2-22-37
23. Na-Kaid-tsue - 700 sheep:

Winters along the northeast rim of Gray Mountain from Oct. 1st to May 30th, and in summer moves off along the east side of Gray Mountain near highway #89. Belongs to Cameron Chapter, trades and dips at Cameron.

2-23-37
24. Na-Kail-tsosie - 500 sheep:

Winters about one mile east of #21 from Nov. 1st to May 1st. In summer moves off along east side of Gray Mountain near Cameron. Belongs to Cameron Chapter, trades and dips at Cameron.

2-23-37
25. Bah-Alth-Chin-laini-be-tsi - 400 sheep:

Winters on top of Gray Mountain Nov. 15th to May 1st and in summer on east side of Gray Mountain near Cameron.

Belongs to Cameron Chapter, trades and dips at Cameron.

2-23-37
26. Hosteen-Pash-le-kai - 300 sheep - 200 cattle:

Winters along at foot of Gray Mountain east side Nov. 1st to Feb. 1st and in summer moves south of Cameron along the Little Colorado River about eight miles. Belongs to Cameron Chapter, trades and dips at Cameron. Cattle yearlong on his summer range.

2-23-37
27. Charley-hush-kon - 300 sheep:

Winters on top of mountain from Nov. 1st to May 15th, and in summer moves off on the east side of mountain.

Belongs to Cameron Chapter, trades and dips at Cameron.

2-23-37
28. Pash-le-kai-be-tsi - 150 sheep:

Nov. 1st to May 1st on top of Gray Mountain. Summers on the east side of Gray Mountain. Belongs to Cameron Chapter, trades and dips at Cameron.

WR 7487

CV-6417-201 NN004212

2-23-37
29. Hush-kon - 400 sheep:

Winters near Red Mountain from Nov. 1st to Feb. 15th. Summers along south boundary fence seven miles west of highway #89. Belongs to Cameron Chapter, trades and dips at Cameron.

2-2-37
30. Hosteen Nez and Daughter-in-law - 500 sheep:

November to May on present area, and May to November east of Tuba Butte. Belongs to Tuba Chapter, trades and dips at Tuba. Has farm at Tuba.

2-2-37
31. Tsi-Na-ga-he-bi-tah - 400 sheep:

December to May on present area and May to December moves near Tuba City. Belongs to Tuba Chapter, trades and dips at Tuba.

2-3-37
32. Ah-Cathli - (Cowboy) - 1000 sheep:

Stays in Badeway area as long as possible and on dry spells when tanks go dry, they go to Willow Spring and towards Red Mesa. Used to belong to Tuba Chapter but now belongs to Gap Chapter. Trades and dips at Gap. Used to have farm at Tuba City.

2-3-37
33. Alvin Nez - 250 sheep:

From November to April about 3 miles east of No. 32. Uses range between the vat and White Mesa. Belongs to Tuba Chapter, trades and dips at Tuba. Has farm at Tuba City.

2-3-37
34. Tah-pah-he-yazzie - 350 sheep:

November to April at present location. Belongs to Tuba Chapter, trades and dips at Tuba. Has farm at Tuba.

2-3-37
35. Tsin-nah-jin-ni - 250 sheep:

West of No. 34 at Willow Spring from November to April. Trades at Tuba City Trading Post and dips at Gap.

2-3-37
36. Hosteen-Deel - 100 sheep:

Northwest of No. 34. Here from November to April, moves to Tuba Butte in summer. Belongs to Tuba Chapter, trades and dips at Tuba.

WR 7488

CV-6417-201 NN004213

2-3-37
37. Hosteen-Da-gah-ie - 300 sheep:

Here for about one or two months, then moves to Tuba Vat. Dips at Tuba or Cameron. Trades mostly at Cameron and usage on the area depends on the permanency of water. Belongs to Tuba Chapter.

2-4-37
38. Hosteen-Tso - 300 sheep:

Here on this area yearlong or west towards Tuba. Belong to Dennehbito Chapter, trades and dips at Dennehbito. Also trades at Tuba.

2-4-37
39. Tsi-ah-go-dy-Bega - 50 sheep:

At present location yearlong, depending on water. From Keams Canyon Jurisdiction. Trades and dips at Dennehbito.

2-4-37
40. Joe No-teeth - 700 sheep:

Here October or November to April on Tuba range, Greasewood Valley April to October or November. Used to go to Boadaway. First year in this vicinity. Has farm at Tuba. Belongs to Tuba Chapter, trades and dips at Tuba.

2-4-37
41. Tso-Alth-Cah-Ba-da-nie - 500 sheep (and 150 yearlong):

From October to April at present location, and from April to October towards White Mesa. 150 sheep yearlong at present location.

Belongs to Tuba Chapter, trades and dips at Tuba.

PROPOSED EXTENSION TO DIST. #3

3-20-37
42. Hosteen Nez - 30 sheep:

Yearlong east of Gap Trading Post four miles. Belongs to Gap Chapter, trades and dips at Gap.

3-20-37
43. Hosteen-Nez-bega - 100 sheep:

Yearlong east of Gap Trading Post six miles. Belongs to Gap Chapter, trades and dips at Gap.

WR 7489

CV-6417-201 NN004214

3-20-37
44. Da-gah-kla-ie - 150 sheep:

Winters along south side of Crooked Ridge May 1st to Nov. 1st, and in summer moves towards Tuba Butte. Belongs to Gap Chapter, trades and dips at Gap.

3-20-37
45. Tom-Charlie - 350 sheep:

Yearlong west side of Red Mesa. Occasionally towards White Point. Belongs to Tuba Chapter, trades and dips at Tuba.

3-21-37
46. Mike-Preston - 200 sheep:

Winters east of Echo Cliff four miles southeast of Gap. May 1st to Nov. 1st. In summer moves south of Tuba Butte. Belongs to Tuba Chapter, trades and dips at Gap and occasionally dips at Tuba.

3-21-37
47. Da-gah-ie-nie-betsi - 30 sheep (tribe - Piute):

Yearlong southeast of Gap Trading Post five miles on east side of Echo Cliff. Belongs to Tuba Chapter, trades and dips at Tuba. Also trades at Gap and dips there.

3-21-37
48. Ah-de-soo-ie-tsoi - (Piute) - 10 sheep:

Winters south of Crooked Ridge Nov. 1st to May 1st and in summer north side of Tuba Butte. Has a farm at Willow Spring. Belongs to Tuba Chapter, trades at Tuba and Gap. Dips at Gap.

3-21-37
49. Go-Nah-Yazzie - 30 sheep -(Piute):

Yearlong southeast of Gap Trading Post eight miles. Belongs to Tuba Chapter, trades at Gap and Tuba and dips at Gap.

3-21-37
50. 300 sheep:

Yearlong one and one-half miles north of #49. Belongs to Tuba Chapter, trades at Tuba and Gap. Dips at Gap.

WR 7490

CV-6417-201 NN004215

3-22-37
51. Da-gah-ie - 450 sheep:

Winters east of Colorado and Little Colorado Fork, and in summer moves east of Gap, south side of Crooked Ridge. Nov. 1st to May 1st Salt in summer time. Belongs to Gap Chapter, trades and dips at Gap.

3-22-37
52. Hosteen Gary Mt. - 350 sheep:

Winters northeast of Little Colorado and Colorado River Fork Nov. 1st to May 1st and in summer, moves east of Gap, south of Crooked Ridge. Belongs to Gap Chapter, trades and dips at Gap.

3-22-37
53. Se-lon-Be-dah - 325 sheep:

Winters northeast of Little Colorado and Colorado River Fork Nov. 1st to May 1st, and in summer moves east of Gap, south of Crooked Ridge. Belongs to Gap Chapter, trades and dips at Gap.

3-22-37
54. Us-son-nez - 1800 sheep, 45 horses, 20 cows:

Winters between Colorado River and Shinamo Alter. Winters close to rim of Colorado River Dec. 1st to March 1st. March 1st to June 30th moves towards Gap and June 30th to August 30th east of Gap, south of Crooked Ridge. After August returns to winter range. Belongs to Gap, trades and dips at Gap.

3-22-37
55. Ol-ta-ie-nez - 1600 sheep:

Winters south of #54, three miles Dec. 1st to March 1st farther south, and March 1st to June 30th, moves back to present location, and June 30th to August 30th, east of Gap, south of Crooked Ridge.

After August returns to winter range. Belongs to Gap, trades and dips at Gap.

3-22-37
56. John Walker - 2000 sheep:

Winters south of Shinamo Alter five miles. In winter uses range along Colorado River. Summer east of Gap halfway between Red Mesa and Gap. June 30th to August 30th. Belongs to Gap Chapter, trades and dips at Gap.

3-22-37
57. Hosteen Nez-nie-bega - 450 sheep:

WR 7491

CV-6417-201 NN004216

Winters west of Cedar Ridge near Colorado River Dec. 1st to March 1st, and March 1st to June 30th west of Cedar Ridge three miles. June 30th to August 30th at Willow Spring and after August returns to winter range. Belongs to Tuba Chapter, trades and dips at Gap and sometimes at Tuba.

3-23-37
58. Chee-she-nic-ba-da-nie - 120 sheep:

First year around Cedar Ridge. Used to dip at Red Lake, Tuba and Gap. Belongs to Tuba Chapter. Has a farm at Tuba. May 1st to Nov. 1st at Tuba. (at farm) Trades at all places (formerly Kaibito)

3-23-37
59. Haska-White Horse - 350 sheep:

Winters east at foot of Shinamo Alter Nov. 1st to May 1st, and summer moves to Willow Spring. Belongs to Tuba, trades at Gap and dips at Gap, and sometimes trades at Cedar Ridge.

3-23-37
60. Attcity-nic-Betsui - 450 sheep, 25 horses (Census #77586):

Winters west at foot of Shinamo Alter, and farther west of Shinamo Alter along Colorado River. March 30th to Nov. 1st south of Shinamo Alter ten miles. Has farm at Tuba. Belongs to Tuba, trades at Kerly's and Gap, and dips at Gap.

3-23-37
61. Da-gah-laini - 150 sheep, 40 horses, 30 cows:

Winters east of Shinamo Alter three miles Nov. 1st to May 1st. Summers moves east of Gap south of Crooked Ridge. Belongs to Tuba Chapter, trades and dips at Gap.

3-23-37
62. Hosteen-Tso - 600 sheep, 30 horses, 20 cows:

Winters one mile west of Shinamo Alter. Winter range along Colorado River west of Shinamo Alter and March 30th to August 30th moves west of Boad-do-may house. Belongs to Tuba, trades and dips at Gap. Has farm at Gap.

3-23-37
63. Tah-pah-ho-yazzie - 450 sheep:

Winters three miles north of Shinamo Alter and also uses range in winter along Colorado River. March 30th to Nov. 1st at Gap. Belongs to Gap, trades and dips at Gap.

WR 7492

CV-6417-201 NN004217

3-23-37
64. Haska-Bancroff - 800 sheep:

Winters five miles east of Shinamo Alter and also uses range west, along Colorado River March 30th to August 30th, at White Point. Has a farm there. Belongs to Tuba Chapter, trades at Tuba and Gap. Dips at Gap.

3-23-37
65. Ka-ie-son-ni-bega - 600 sheep:

Winters northeast of Shinamo Alter four miles and also uses range northwest of there along Colorado River. May 1st to Nov. 1st moves to Gap. Belongs to Tuba Chapter, trades at Tuba and Gap. Dips at Gap.

3-23-37
66. Willie Tee - 350 sheep, 12 horses:

Winters four miles west of Shinamo Alter Nov. 1st to May 1st, and in summer moves east of Gap, south of Crooked Ridge. Belongs to Gap, trades and dips at Gap.

3-23-37
67. Hosteen-Tsi-Cli-Gie-nic-bega - 130 sheep, 16 horses:

Winters northwest of Cedar ridge Nov. 1st to May 1st. In summer moves to Cedar Ridge. Has a farm there. Belongs to Gap, trades at Cedar Ridge and Gap. Dips at Gap.

3-23-37
68. Hosteen-Deel - 800 sheep, 30 horses:

Winters one mile north of #67. Nov. 1st to May 1st. Has farm at Cedar Ridge. In summer moves to east of Gap, south of Crooked Ridge. Belongs to Gap, trades at Cedar Ridge, Gap and Tuba, dips at Gap.

3-23-37
69. Dash-chee-ney - 150 sheep:

Winters seven miles northwest of Cedar Ridge Nov. 1st to May 1st and in summer moves to Cedar Ridge, has a farm there. Belongs to Gap, trades at Cedar Ridge and Gap. Dips at Gap.

3-23-37
70. John Y - 150 sheep:

Winters one mile northwest of #69 Nov. 1st to May 1st. In summer to Copper Mine. Belongs to Gap, trades at Cedar Ridge and Gap. Dips at Gap.

WR 7493

CV-6417-201 NN004218

3-25-37
71. Hosteen-ah-yo-ah-nill-deel - 600 sheep:

Winters west of Gap nine miles Nov. 1st to May 1st. In summer moves east of Gap. Has farm at Tuba, down in Moencopi Wash. Salts sheep in summer time. Belongs to Tuba, trades and dips at Gap.

3-25-37
72. Be-la-geshe - 40 sheep:

Winters one mile east of #71 Nov. 1st to May 1st. Summer south of Willow Spring, has a farm there. Sheep at Salt Point. Belongs to Gap, trades and dips at Gap.

3-25-37
73. Hosteen-toh-shon-ie - 80 sheep, 20 cows:

Winters one mile west of #71 Nov. 1st to March 30th and in summer moves to Salt Point. Has farm at Tuba in Moencopi Wash. Belongs to Gap, trades and dips at Gap. Salts sheep occasionally.

3-25-37
74. Shum Oskey-Bio-be-toh-ney-tsosie - 150 sheep:

Winters northwest of Cedar Ridge Nov. 1st to May 1st. Summers at Cedar Ridge, has a farm there. Occasionally moves to Copper mine on account of water. Belongs to Gap, trades at Gap, Cedar Ridge, Lee's Ferry and occasionally at Tuba, dips at Gap.

3-26-37
75. Na-ni-cady-bega - 75 sheep, 8 cows (Census #71316):

Winters west of Shadow Mountain Nov. 1st to March 30th and in summer moves to Shadow Mountain. Belongs to Tuba, trades at Cameron and dips at Tuba.

3-26-37
76. Sam Spencer - 75 sheep, 8 cows:

Winters west of Shadow Mountain Nov. 1st to March 30th and in summer moves to Shadow Mountain. Belongs to Tuba, trades at Cameron and dips at Tuba.

3-26-37
77. Bash-ni-ah-ney - 70 sheep:

Winters west of Shadow Mountain along Little Colorado River Nov. 1st to March 30th, and summer northwest of Shadow Mountain. Belongs to Tuba, trades at Cameron and dips at Tuba.

WR 7494

CV-6417-201 NN004219

3-26-37
78. Hosteen Yazzie - 70 sheep:

Winters west of Shadow Mountain along Little Colorado River Nov. 1st to March 30th, and summers northwest of Shadow Mountain. Belongs to Tuba, trades at Cameron and dips at Tuba.

3-26-37
79. Jerry Na-Tsosie - 350 sheep, 20 cows, 15 horses:

West of Willow Spring yearlong, and occasionally moves to Boad-do-way or Gray Mountain. Belongs to Tuba, trades at Tuba and Kerly's, dips at Tuba.

3-26-37
80. Tsi-gish-ney-te-kis - 500 sheep, 8 cows, 10 horses:

Winters Nov. 1st to March 15th at Gray Mountain and summers at Willow Spring, has a farm there. Trades at Cameron and dips at Cameron and Tuba. Belongs to Tuba Chapter.

3-26-37
81. Sam Clone-Be-zad-ha-laini - 170 sheep, 7 horses, 5 cows:

Winters northeast of Cedar Mountain, nine miles, Nov. 1st to May 1st, and summers at Pasture Canyon. Has farm at Pasture Canyon. Belongs to Tuba, trades and dips at Tuba.

3-26-37
82. Da-gah-tsosie - 1500 sheep, 40 cows, 30 horses:

Winters one mile west of #81 Nov. 1st to May, and summers at Pasture Canyon. Has farm down in Moencopi Wash. Belongs to Tuba, trades and dips at Tuba.

3-26-37
83. Na-Kai-de-nah-ie - 600 sheep, 60 cows, 20 horses:

Winters two miles west of #82 Nov. 1st to May 1st, summers northeast of Shadow Mountain six miles. Belongs to Tuba Chapter, trades and dips at Tuba.

3-21-37
84. Fred-Bin-be-toh-ney - 230 sheep:

Winters along Colorado River Oct. to April and in summers moves to Gap. Belongs to Gap, northeast nine miles. Trades and dips at Gap.

WR 7495

CV-6417-201 NN004220

3-21-37
85. Bin-be-toh-ney-nez - 450 sheep:

Winters along Colorado River October to April and in summer moves to Gap, northeast two miles. Belongs to Gap, trades and dips at Gap.

3-21-37
86. Nakai-be-clin-likai - 400 sheep:

Winters north of Cedar Ridge four miles October to April, and in summer moves to northeast of Gap eight miles. Belongs to Gap, trades and dips at Gap.

3-21-37
87. Hosteen-begban-w[illegible]ishie - 100 sheep:

Winters one and one-half miles north of #86 October to April and in summer moves to White Point. Belongs to Gap, trades and dips at Gap.

3-21-37
88. Na-kai-de-nahie - 300 sheep:

Winters three miles north of #87 October to April and in summer moves to Farmers Wells. Belongs to Gap, trades at Cedar Ridge and dips at Gap.

WR 7496

CV-6417-201 NN004221