MARSHALL MESA
Natural Area Study

Department of Geography / University of Colorado

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NATURAL AREA STUDY

James Biggins and Max H. Dodson

Editors

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FOREWORD

This report is one of six undertaken this year in the Department of Geography at the University of Colorado. It has become almost a tradition for the graduate seminar in land use to initiate a project in the local area in cooperation with an agency of the Boulder community on either the municipal or county level, sometimes both.

These studies achieve a number of objectives. The participating students undertake a realistic project which they are able to plan, execute, and publish within the brief span of one semester. Also, these studies provide new information for municipal and county officials and citizen groups concerned with planning and guiding the growth and development of the City of Boulder and Boulder County. In short, these are professional training exercises for graduate geographers and are a serious effort in providing new planning perspectives in the interest of public service.

In response to a suggestion by the Natural Areas Committee of the University of Colorado, the land use seminar elected to study and analyze a number of natural sites in the Boulder Valley. The group was also joined in the endeavor by the graduate field seminar of the Department of Geography.

The cooperative base within the Boulder community was wider than usual this year. The sites chosen for study seemed to have potential for a variety of uses beyond their present development. These included instruction of public school and university students, scientific research, recreation, greenbelt, and open space. The graduate students involved worked in cooperation with the resident property owners, the Parks and Recreation Department and the Planning Office of the City of Boulder, the Department of Development and the Parks and Open Space Advisory Committee of Boulder County, the Boulder and Longmont Offices of the Soil Conservation Service, the Science Director of the Boulder Valley RE-2 School District, the Planning Office and the Natural Areas Committee of the University of Colorado, and the Denver Regional Council of Governments.

Sometimes the graduate researchers felt that they would have liked to pursue certain themes in greater depth if there had been more time available. Nonetheless, they join me in expressing the hope that this report provides informative insights on a fascinating part of Boulder County.

The various chapters which appear in this study were originally submitted as special reports by the individuals indicated. They represent the endeavors and views of the authors and in no way should be interpreted as the official views of the Department of Geography or any other cooperating agency or organization previously mentioned. Because of this independence from official views, the participants in this project are especially grateful to the Graduate School of the University of Colorado, the City of

Boulder, the Boulder County Commissioners, the Boulder Valley RE-2 School District, and the University of Colorado Foundation for sharing the costs of printing this report.

This is the collective and individual effort of a group of dedicated geographers concerned about the quality of the local environment and its attendant stresses. Boulder County residents, students, and local officials may gain understanding from this report that will assist them in their efforts to perpetuate the Boulder area as a pleasant and attractive place to live.

Donald D. MacPhail, Ph.D.
Professor of Geography

Boulder, Colorado
June, 1970

ACKNOWLEDGMENTS

We wish to thank everyone who supplied information, allowed access to information, or assisted in the preparation of this report. Mr. Samuel L. Rudd gave permission to enter his property which contains Marshall Mesa, Mrs. Joanna C. Sampson supplied historical and contemporary information, Dr. John W. Marr gave technical advice and permitted the use of his files, Mr. Larry Blick informed us of some aspects of the Boulder Greenbelt Plan, Mr. Lawrence T. Paddock of the Boulder Daily Camera gave permission to use the J. B. Sturtevant photographs. Personnel in the following offices were very helpful: Boulder Soil Conservation Service, Department of Agriculture, Boulder County Assessor's Office, Boulder County Clerk and Recorder's Office. Without the help of these people, this report would have been the result of no more than cursory, remote examination. Nor could it have appeared in its present form without the assistance of Mrs. Sue Middleton who typed the report and Mrs. Nancy Stonington who designed the cover. We are indebted to Mr. Wilbert J. Ulman for his work with the copy camera and contact printer in the final preparation of the maps for publication.

James Biggins
Max H. Dodson

CHAPTER I. INTRODUCTION

James Biggins

Max H. Dodson

The Marshall Mesa natural area is on the northwest-facing slope that overlooks Marshall. The site is about four and one-half miles south of Boulder and can be easily approached via Colorado Highway 93 (South Foothills Highway or Boulder-Golden road) and Colorado Highway 170 (Marshall-Superior road) (Figure 1).

"Marshall Mesa" designates in this report the elongated ridge just west of Marshall Lake. This northeast-trending landform is not named on any modern topographic maps, but it has been referred to as part of "Lake Mesa," as "Belmont Bluff," and "Pine Ridge" by different authors. This discrepancy in nomenclature was noticed by the environmental study team, John L. Harper, Michael R. Tripp, and Dean G. Wilder; the other names that have been used for the landform appeared in the literature that was referred to by this team.

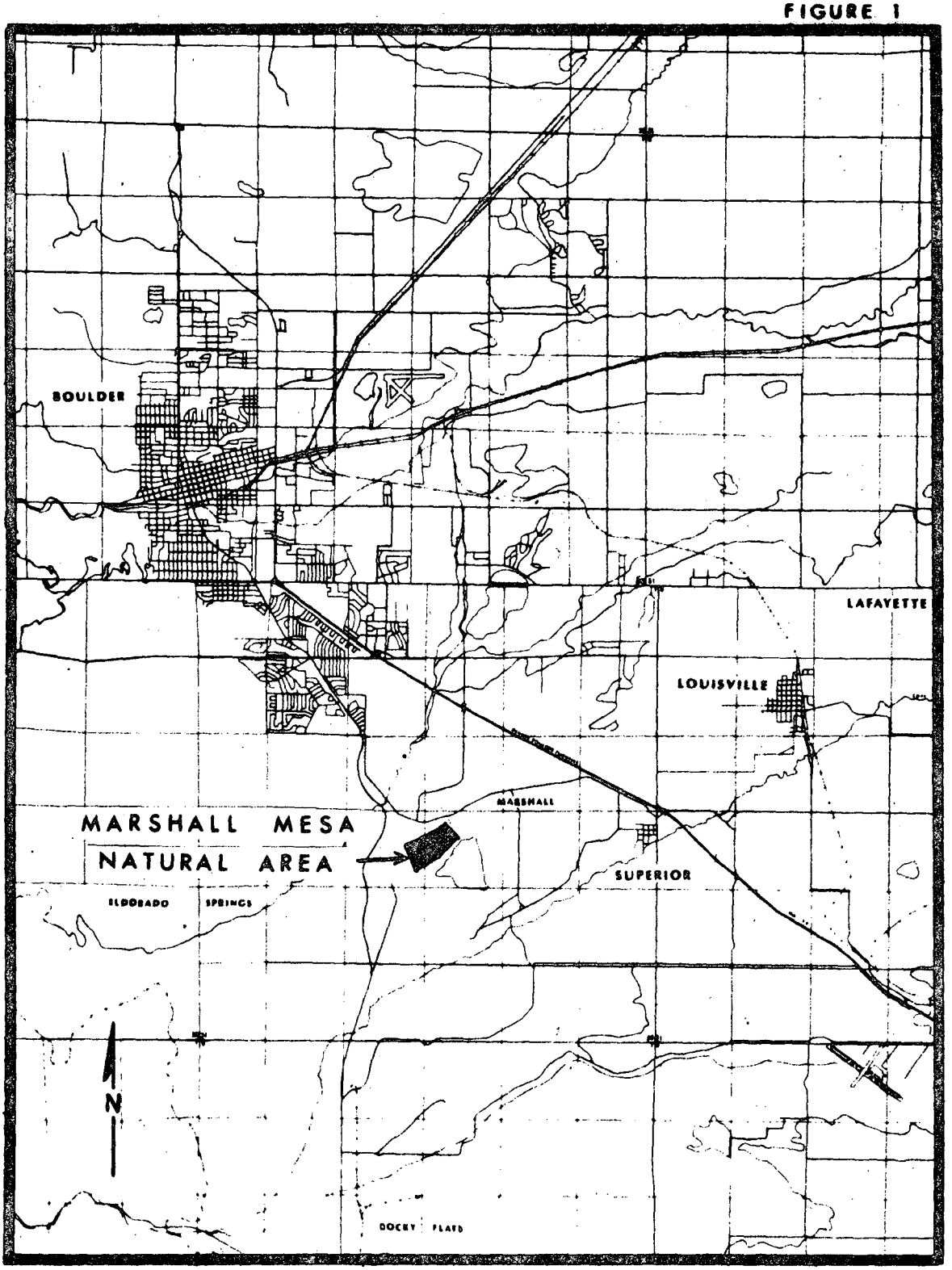
The site proper is an attractive pine-covered sandstone shelf or terrace, part way up the slopes that form the northern edge of the Rocky Flats pediment. The conjunction of several physical phenomena at this particular place has resulted in a distinctive array of interesting features. Among these is the occurrence of coal, which was extensively mined for several years. The mining resulted both in an important and complex local history and a residue of prospect pits and collapsing tunnels that would be a potential hazard for prospective residents.

The information in this report was collected by study teams who made their investigations during the winter season of 1970. Because of the necessary brevity of the investigations and the season of the year, the information that was collected is certainly only a beginning. Thus, besides its aesthetic appeal, the Marshall Mesa area has rich potential for a variety of research. The site and adjacent sectors have been studied intermittently for several years by geologists from the University of Colorado. More recently, biologists have made studies in this locality. Further geologic and biologic investigations, and research in climatology, historical geography, geomorphology, and soil science should be quite productive.

An important aspect of the area is that of change, as indicated in the following pages. Coal produced from the Marshall field was historically significant in the Denver area. Soon after the turn of the century, coal mining languished and the population of Marshall dwindled. Most of the land was given over to cattle grazing. Now the area may become included in

SITE LOCATION

FIGURE 1



1 INCH = 2 MILES

the residential expansion of Boulder, but not without considerable alteration of the environment and potential risks for housing developers and occupants.

The results of the studies that were made of the physical and cultural landscape in the Marshall Mesa area are presented in the following chapters, along with conclusions drawn from these studies.

Fig. 2 Marshall Mesa

View from north-northwest of shelf in the central portion of the Marshall Mesa area.

Fig. 3 Marshall Mesa

West face of shelf dominating the central portion of the Marshall Mesa area.

Fig. 4 Marshall Mesa

Looking north from Marshall Mesa across shelf toward Boulder. Note flat meadow-like area on shelf top.

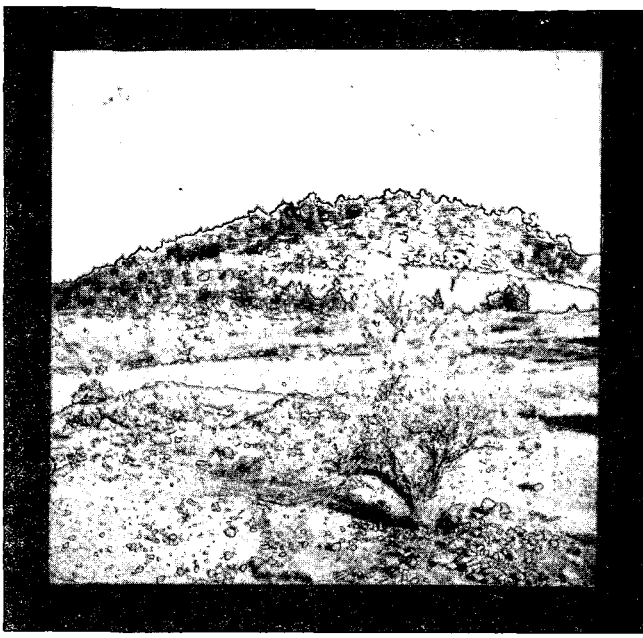


Figure 2

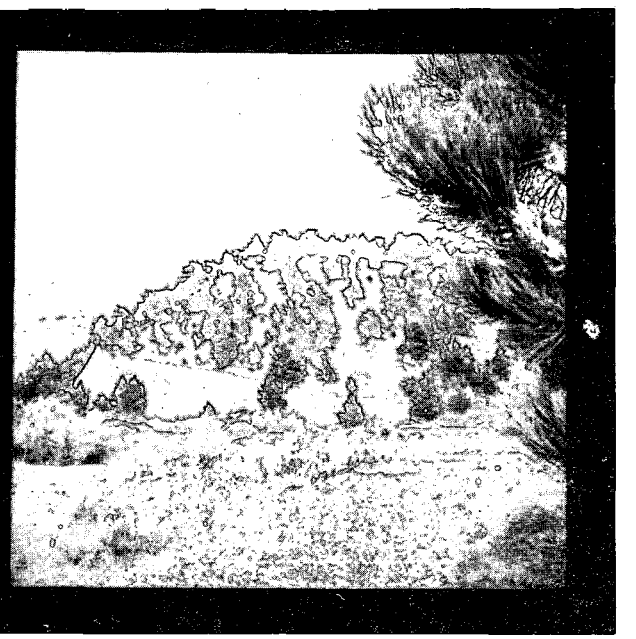


Figure 3

Figure 4

CHAPTER II. ENVIRONMENTAL SURVEY

John L. Harper
Michael R. Tripp
Dean G. Wilder

Physical Character

Relief

The relief of the Marshall Mesa area is about 300 feet. Elevations range from around 5,500 feet in the northern, lower part of the area to over 5,300 feet along the summit of the Mesa. The maximum elevation of the prominent shelf in the center of the area is 5,700 feet (Figure 5).

Topography

Although it varies considerably, the topography of the area can be divided into three general categories.

Slopes in the lower elevations range from 2 to 7 degrees and form a gently rolling surface, which is littered with colluvial deposits derived primarily from the bedrock of the area (Figure 6). The bedrock is also exposed at the surface (Figure 7). A northwest-facing outcrop of well-jointed sandstone rises abruptly in this area; the joints form a polygonal pattern.

A prominent shelf dominates the central part of the Marshall Mesa area. Along its western edge, the shelf is bounded by a cliff about 20 feet high. Above the cliff, the slope to the top of the shelf approximates 30 degrees. Along the north side of the shelf, the slopes range from 13 to 25 degrees. The top of the shelf is nearly level, with a maximum inclination of 3 degrees. The sloping sides are covered with talus derived from the Laramie bedrock; some of these rock fragments are quite large. The top of the shelf is veneered with stream-deposited gravels and weathered fragments of the sandstone bedrock (Figure 8).

In the higher parts of the study area, the surface is a series of faint steps, with slopes ranging from 7 to 20 degrees. The summit is a linear, nearly flat surface approximately 100 feet wide. South of the summit, the surface slopes at 70 degrees. A thick gravel deposit of boulders and cobbles covers the summit and the adjacent slopes (Figure 8). The lower slopes of the upper part of the Mesa are also covered with a gravel deposit, but it is not as deep or extensive as the gravel on the upper slopes.

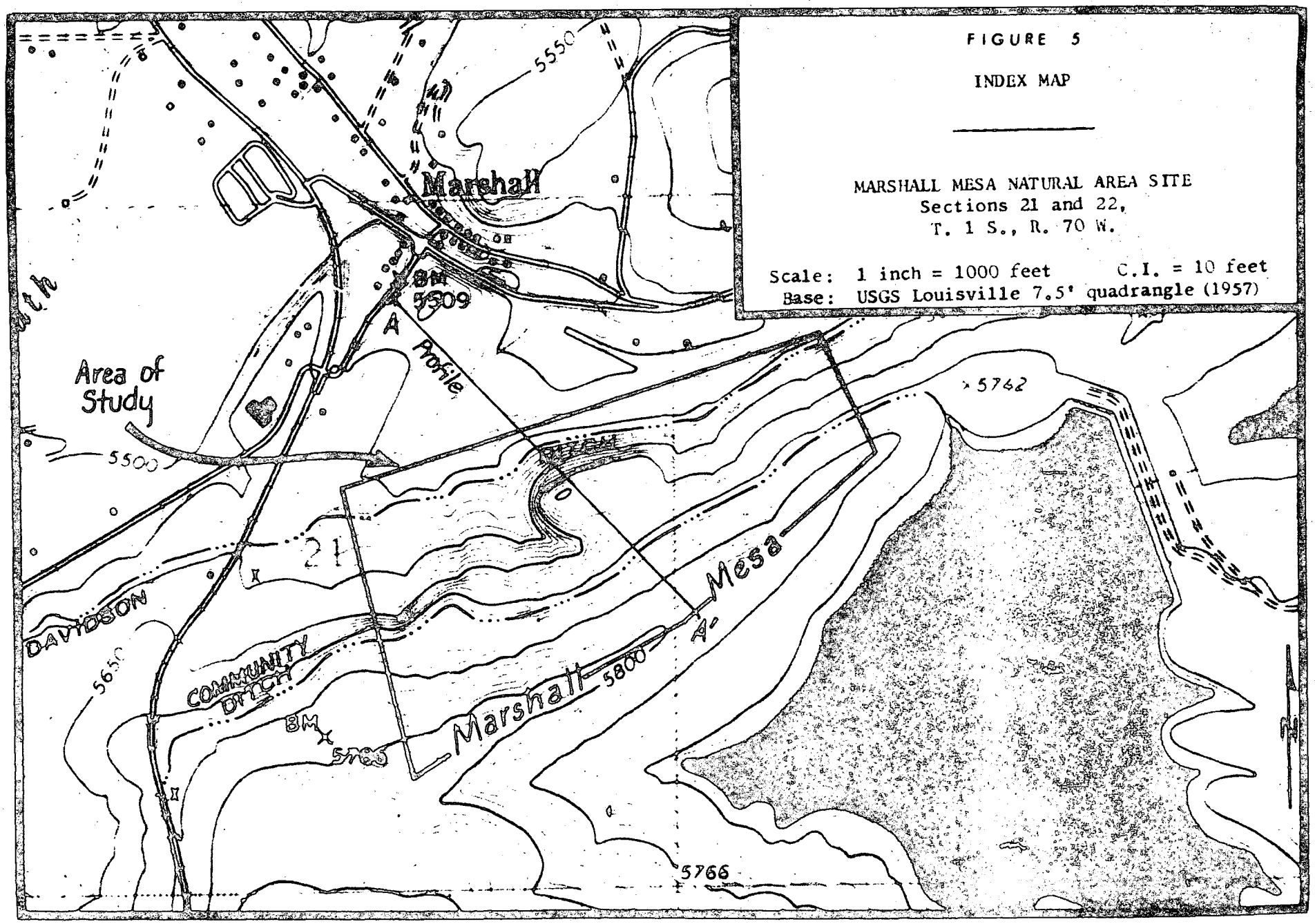
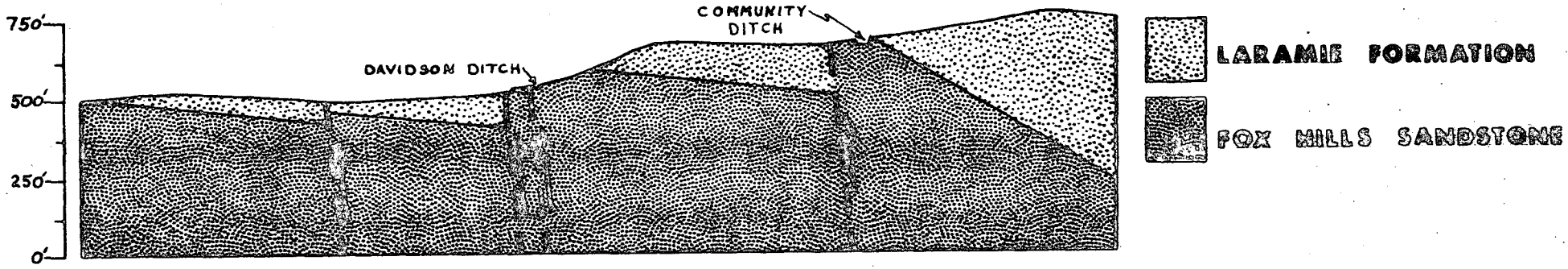
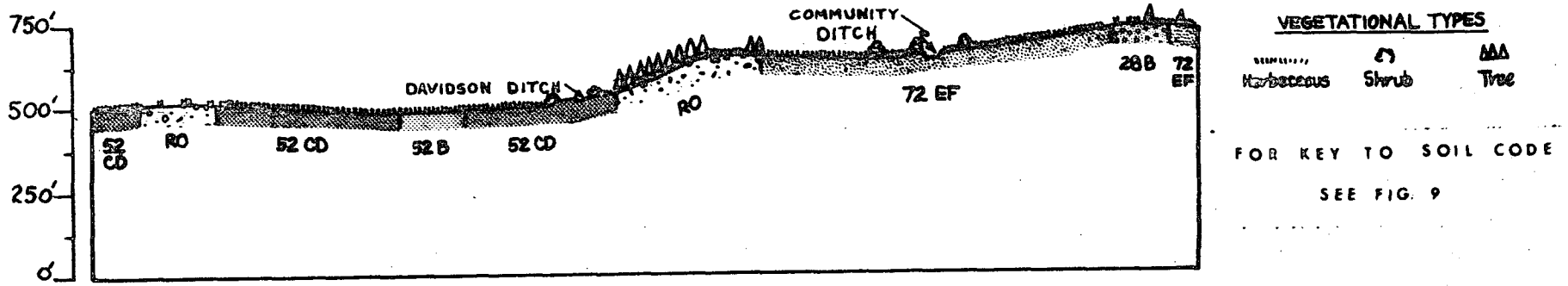


FIGURE 5
INDEX MAP
MARSHALL MESA NATURAL AREA SITE
Sections 21 and 22,
T. 1 S., R. 70 W.
Scale: 1 inch = 1000 feet C.I. = 10 feet
Base: USGS Louisville 7.5' quadrangle (1957)
Marshall
5550
BM 5509
A
A' Profile
Area of Study
5500
5742
21
22
Mesa
DAVIDSON
5650
COMMUNITY DITCH
BM 5765
Marshall
5800
A'
5766



GEOLOGIC RELATIONSHIPS

H and V SCALES: 1" = 500'



VEGETATIONAL TYPES

Herbaceous Shrub Tree

FOR KEY TO SOIL CODE SEE FIG. 9

SOIL - VEGETATION RELATIONSHIPS

PROFILE A-Á MARSHALL MESA AREA

FIGURE 6

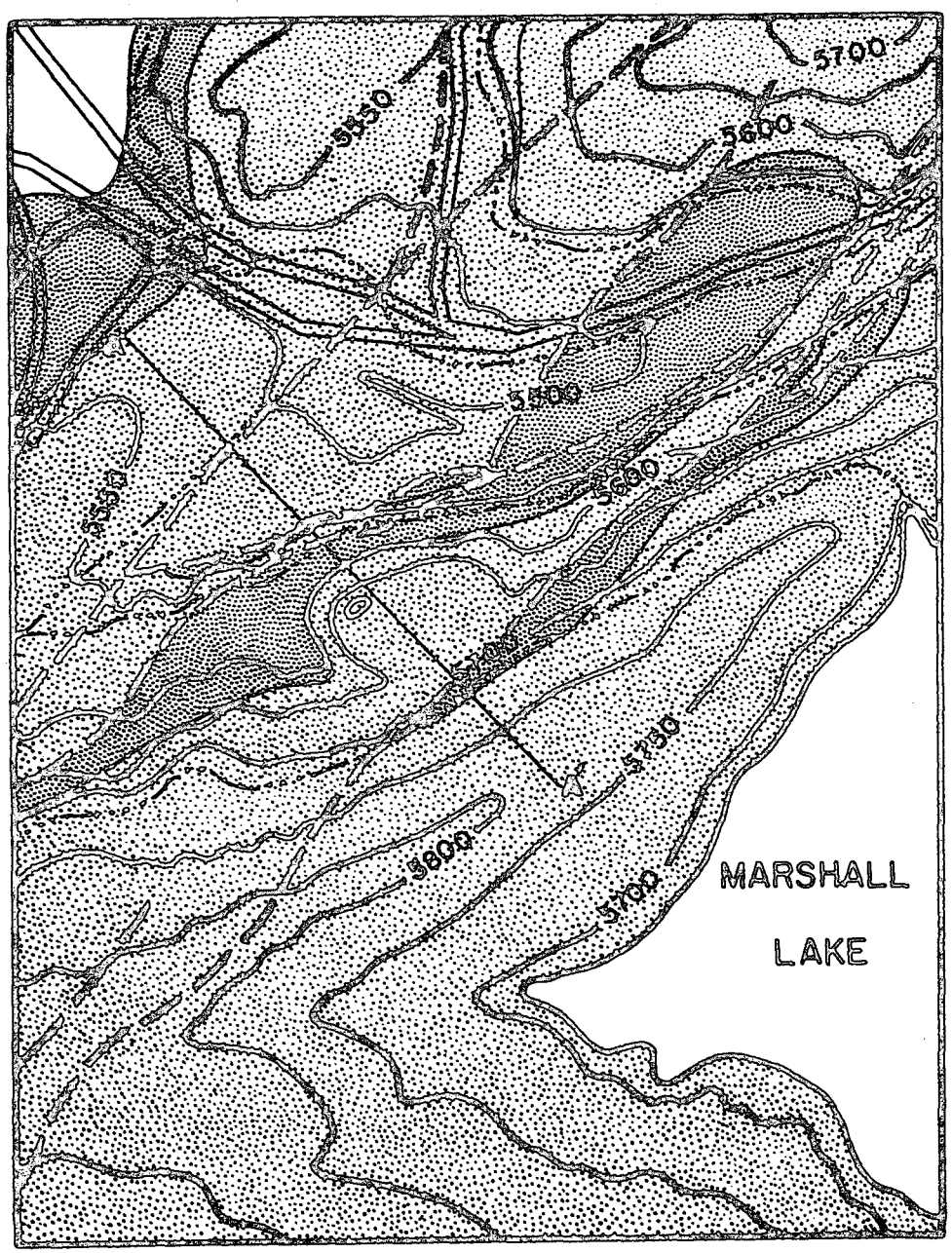


FIGURE 7

BEDROCK GEOLOGY
MARSHALL MESA AREA

EXPLANATION

LARAMIE FORMATION

FOX HILLS SANDSTONE

CONTACT

FAULT

SCALE 1:12,000

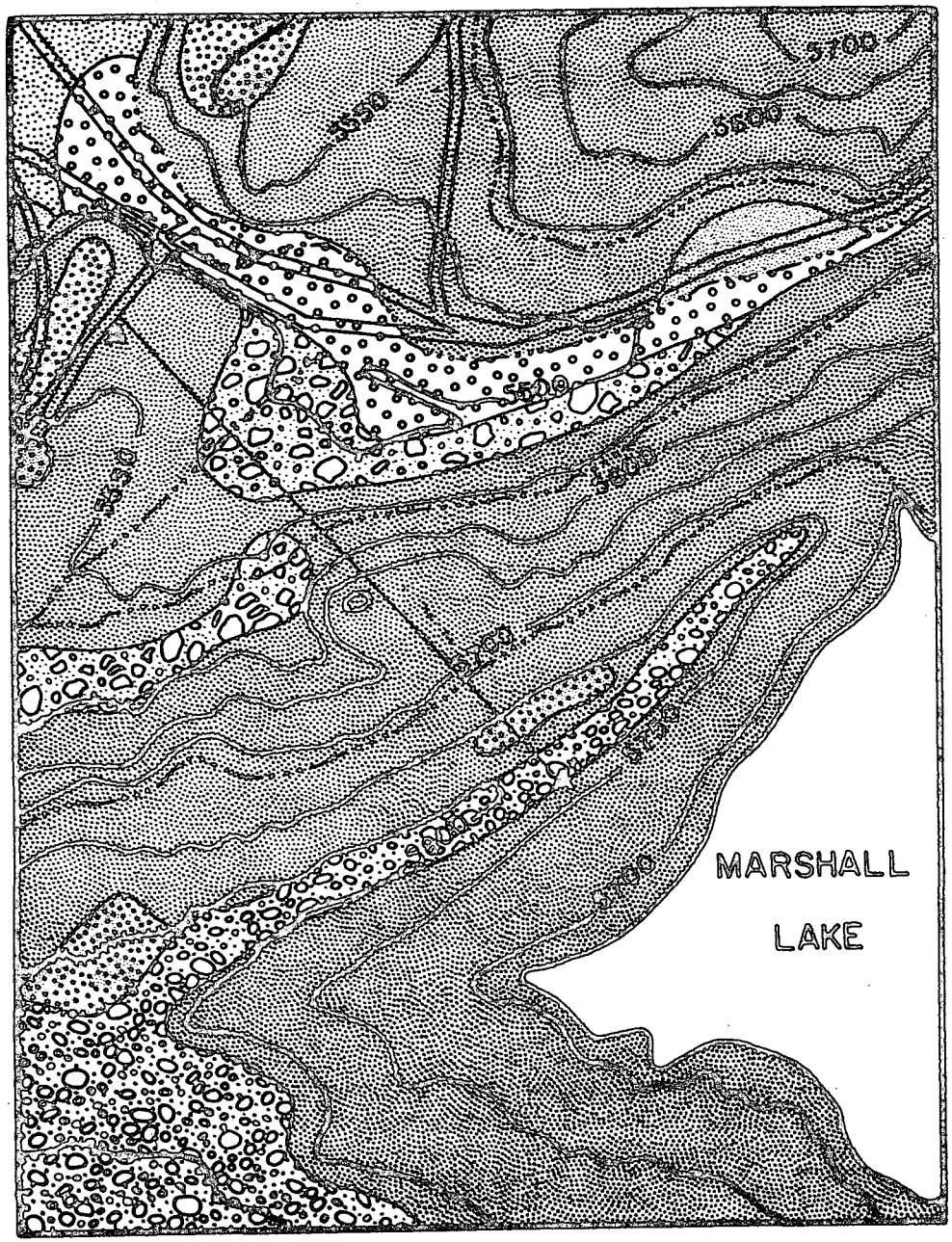
C.I.=50 FEET

SOURCE: AFTER F. SPENCER

DW

FIGURE 8

SURFICIAL GEOLOGY
MARSHALL MESA AREA



EXPLANATION

- PINEY CREEK ALLUVIUM
- COLLUVIUM
- GRAVEL FILL
- EOLIAN SILT AND SAND
- UNDIFFERENTIATED DEPOSITS
- UPLAND GRAVEL
- UNDIFFERENTIATED BEDROCK

C.I. = 50 FEET

SCALE 1:12,000

SOURCE: AFTER H. MALDE

DW.

Drainage

The natural drainage is interrupted by two large irrigation ditches that traverse the area. Davidson ditch is along the base of the shelf and intercepts the flow of three springs (Figure 9). The middle spring is the only one with sustained flow; it issues from an opening into a large gully just southwest of the shelf. The opening may be natural but appears to have been modified by man, perhaps during the coal mining period. The stream from this spring has cut only a shallow channel. It empties into Davidson Ditch at the northwest base of the shelf. A dark red stain on wet surfaces near the stream suggests that the water is rich in iron oxides.

Higher on the slope Community Ditch nearly parallels the contours. Outside the study area it crosses the summit of Marshall Mesa and empties into Marshall Lake (Figure 5).

Geology

Stratigraphy

Formations that represent several geologic ages and rock types underlie the Marshall Mesa area. The two youngest formations are the Fox Hills and the Laramie (Figure 7).

The Fox Hills formation is a massive, cross-bedded and ripple-marked sandstone. The lower two-thirds of the formation is a fine to coarse-grained, yellow to greenish-buff sandstone. It contains numerous iron-stained concretions which range in length from 2 to 14 feet; it also contains an abundance of the "fucoid," Halymenites major. The upper one-third of the formation is a fine to medium-grained, light gray to yellow sandstone. The Fox Hills is believed to be of marine or brackish water origin. In the Marshall area,the formation is more than 160 feet thick (6).

The Laramie formation overlies the Fox Hills sandstone. Four key beds are recognized in the Laramie formation: B, M, C, and D, in ascending order (2).

The top of bed B is about 100 feet above the base of the Laramie formation. Bed B is a fine-grained, massive, white sandstone composed almost entirely of quartz grains. The sandstone weathers into semi-spheroidal forms. The best exposure of bed B is at the base of the west end of the prominent shell. A 2-foot coal bed overlies bed B. Between the coal and the base of bed M are several feet of alternating shale and sandstone.

Bed M is a fine-grained, white sandstone about 10 feet thick. The bed is an aggregate of several layers 6 to 12 inches thick, some of which contain considerable iron oxide. Coal beds lie between beds M and C. The lower bed is 2 feet above bed M and the upper coal bed, which is 6 feet thick, is 15 feet above the lower coal and 15 feet below bed C. Alternating shales and sandstones make up the intervening sequence.

Bed D, above bed C, is nearly identical lithologically to bed B. The shelf in the center of the area is capped by remnants of bed D.

Structure

The general strike of the bedding in these formations is approximately N. 40° E. The regional dip is southeasterly, but it is modified locally by folding and faulting (2).

A system of faults comprising three major faults and two branch faults forms the principal structural feature of the area (Figure 7). Minor structural features consist of a northwest-plunging anticline, a southeast-plunging syncline, and a southwest-plunging anticline. The latter, the Marshall anticline, is quite prominent.

Surficial deposits

At least six different kinds of deposits mantle the surface of the Marshall Mesa area (Figure 8). They vary from very fine-grained wind-deposited sand and silt to very coarse stream-deposited gravel.

The youngest deposit in the area is Piney Creek alluvium. Most of it is fine silty sand and clayey silt, but it also includes gravel lenses at its base. In most places it is more than 10 feet thick. The alluvium was deposited in relatively narrow, deep arroyos, which indicates that an interval of erosion preceded deposition. The deposit was later gullied (3).

Colluvial deposits cover most of the gentle slopes (Figure 8). These deposits are less than 2 feet thick in most places. They vary in composition from stoney to clayey depending on the nature of the source material upslope. Their occurrence is the result of downslope slumping of loose material.

A gravel fill covers the floodplain of South Boulder Creek north of the study area. The fill consists of very well-rounded pebbles and cobbles and has a maximum depth of 14 feet.

Eolian (wind-deposited) silt and sand more than 2 feet thick cover two small parts of the area (Figure 8). The distribution of these deposits indicates that they were blown from a source area to the west. The source was probably floodplains of large streams.

Undifferentiated upland deposits mantle the sloping valley sides and are preserved in discontinuous outcrops on bedrock hills and as low mounds surrounded by finer materials. These deposits include alluvium, colluvium, and wind-blown deposits of several ages. Gravel is the most abundant material in these deposits.

The uppermost surface of the area is covered with upland gravel (Figure 8). The coarseness of the deposit depends upon the source from

KEY TO SOIL CODES, FIGURE 9

28-B Unnamed cobbly sandy loam, on 1-3% slopes.
Surface 6" cobbly sandy loam; subsoil 10-15" cobbly clay loam (non-calcareous); high water-intake rate, moderate holding capacity; slow surface runoff with slight erosion hazard.

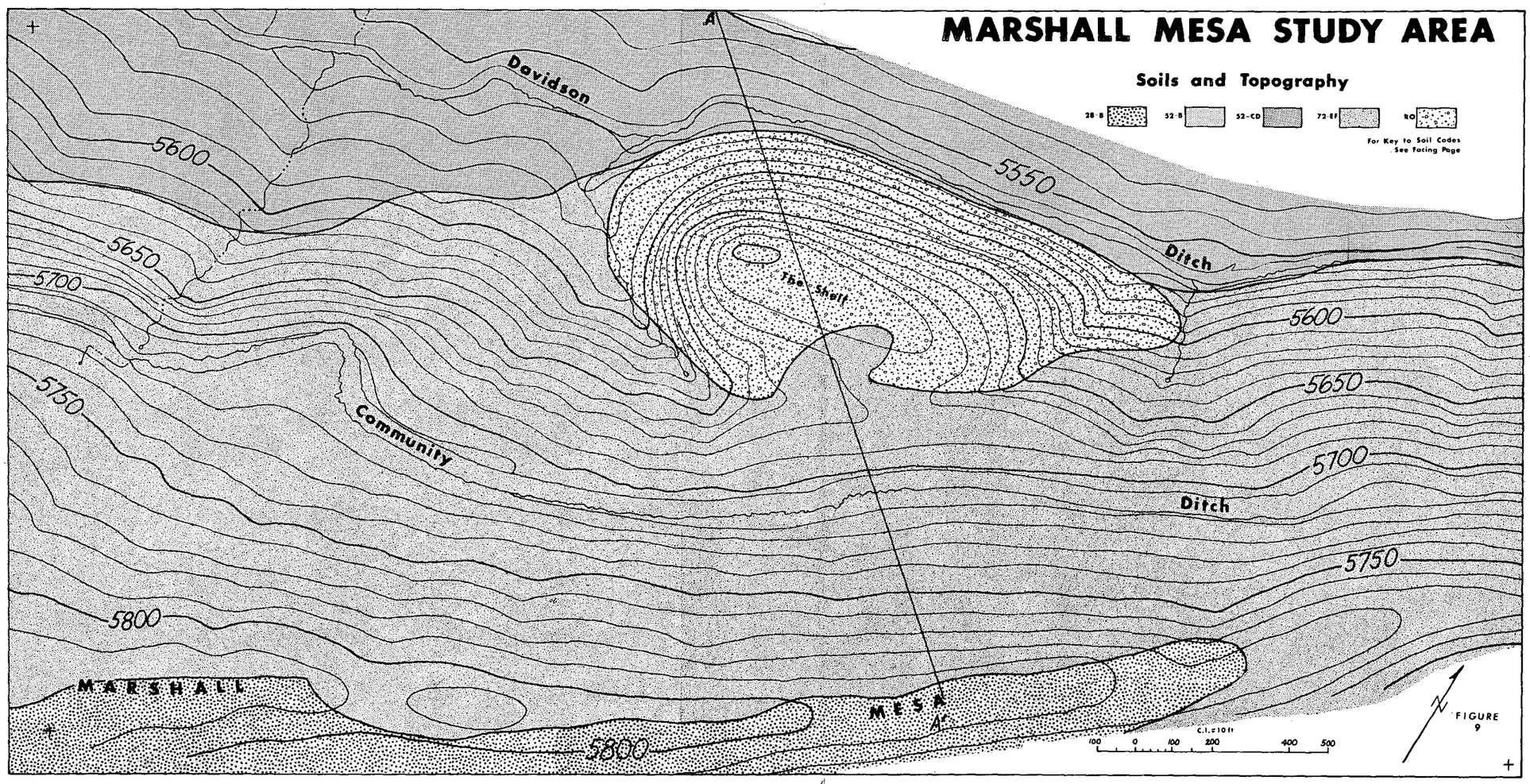
52-B Unnamed fine sandy loam, on 1-3% slopes.
Surface 6" fine sandy loam; subsoil 9-15" fine sandy to clayey loam; sandstone at depths of 20-40"; includes small areas of more shallow bedrock or outcrop.

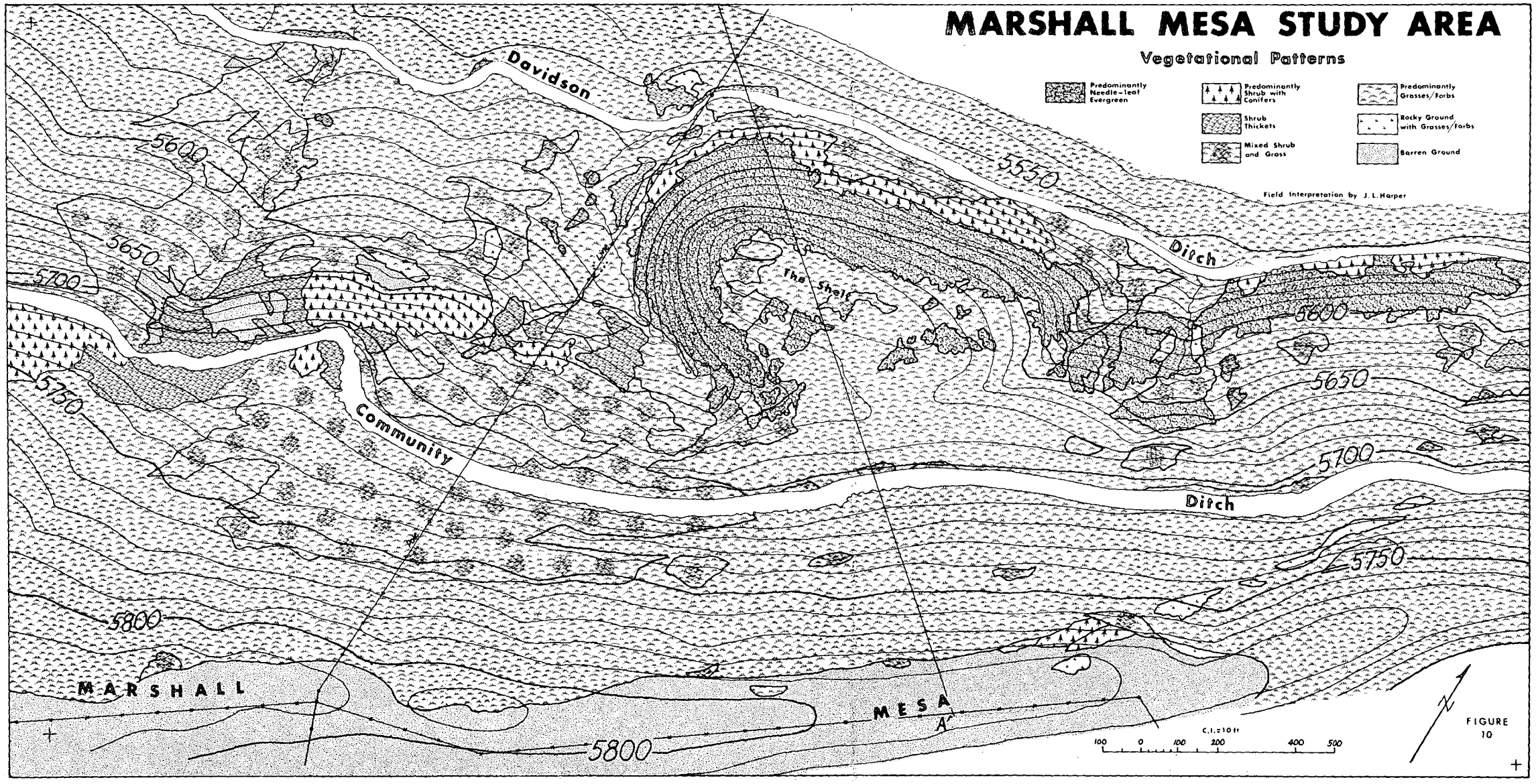
52-CD Unnamed fine sandy loam, on 3-9% slopes.
Surface 6" fine sandy loam; subsoil 12" fine sandy to clayey loam; sandstone at depths of 20-40"; surface runoff moderate; water/wind erosion moderate; moderately rapid infiltration and water-holding capacity.

72-EF Steep cobbly land, with undifferentiated soils on side slopes of old outwash pediments with 15-40% slopes. Shallow cobbly material over shale or sandstone; deeper near the base of slopes with added colluvium; intake rates influenced by stoniness; water-holding capacity limited by soil depth moderate to severe erosion.

RO Nearly bare sandstone areas, some grass; sloping to steep with rapid runoff; erosion moderate to severe on the periphery.

Source: SCS, Boulder County Soil Survey, 1967.


MARSHALL MESA STUDY AREA
Soils and Topography
28-B
52-B
52-CD
72-EF
RO
For Key to Soil Codes See Facing Page
A
A'
Davidson
Ditch
The Shelf
Community
Ditch
MARSHALL
MESA
5550
5600
5650
5700
5750
5800
C.I. = 10 ft
100 0 100 200 400 500
FIGURE 9


MARSHALL MESA STUDY AREA
Vegetational Patterns
Predominantly Needle-leaf Evergreen
Predominantly Shrub with Conifers
Predominantly Grasses/Forbs
Shrub Thickets
Rocky Ground with Grasses/Forbs
Mixed Shrub and Grass
Barren Ground
Field interpretation by J. L. Harper
Davidson
Ditch
The Shelf
Community
Ditch
MARSHALL
MESA
A
A'
5600
5650
5700
5550
5600
5650
5700
5750
5800
5350
5800
C.I. = 10 ft
100 0 100 200 400 500
N
FIGURE 10

which the gravel was derived. The abundance of large rock fragments and the composition of the gravel indicate that the gravel was derived from the mountains. The gravel deposits are composed of subangular quartzite and sandstone boulders as much as 3 feet across and rounded granitic and gneissic cobbles as much as 10 inches in diameter. The deposit is generally less than 5 feet thick and is deeply weathered.

Origin of the Planar Surfaces

A prominent landscape feature in the region is a series of rather extensive accordant surfaces. The summit of Marshall Mesa is one of these. Fenneman believed that the surfaces are remnants of fluvial terraces formed by streams which carried glacial and post-glacial runoff across exposed bedrock areas (1). Degradation of the bedrock was accompanied and followed by aggradation of stream gravels. The resulting surfaces closely approximated in eastward slope the profile of the streams responsible for planation and deposition. The highest accordant surfaces today are farthest from present stream courses and the lowest ones are nearest the present streams. This relationship is identical to that of modern terrace development on floodplains.

Soils

A soil survey of Boulder County was concluded by the U. S. Soil Conservation Service in 1967. The Marshall Mesa area was mapped on air-photos at a scale of 1:10,000, and the soils in the study area were categorized in five types (Figure 9). Two of these are fine sandy loams found mostly north of Davidson Ditch; they differ primarily in slope angle and in water holding capacity. Much of the slope south of Davidson Ditch is classified as steep cobbly land having shallow soils of varied nature. Some nearly level surfaces are practically devoid of soil, although the summit of Marshall Mesa is mapped as supporting a cobbly sandy loam. In the vicinity of the springs and a few minor seeps at some sandstome exposures, local boggy variations of these general soil types can be found.

The five soil types shown in Figure 9 are accompanied by brief summaries of the Soil Conservation Service descriptions of their respective soil properties.

The Biotic Community

From a physiognomic viewpoint, the plant community in the Marshall Mesa natural area provides an unusually rich variety of landscape-modifying elements in a relatively small space. A rather complex mosaic of plant-associational units (see Figure 10) reflects the sensitive response of the flora to climatic, topographic, geologic, edaphic, and hydrologic influences on a micro-environmental scale. Floristically, the species composition of the tree and shrub layers is quite simple and uniform, although

notable isolated exceptions do occur. The herbaceous stratum is more diverse in species, but the study team felt incompetent to analyze this layer in detail because field study was made in the winter.

Seven categories of vegetational association, based principally on dominant life-form in rather broad synusia, are shown in Figure 10 to indicate the degree of variability within the plant community. These categories are:

1) predominantly needle-leaf evergreen trees,
2) predominantly shrub with scattered conifer trees,
3) shrub thickets,
4) mixed shrub and grass,
5) predominantly grasses/forbs,
6) rocky ground with some grasses/forbs, and
7) barren ground.

Ponderosa pine (Pinus ponderosa Laws.) is distinctly the most common species of tree, although a few individuals of Juniperus spp., Douglas fir (Pseudotsuga menziesii [Mirbel] Franco) and assorted broadleaf deciduous species were noted.

The most common shrub in the area is skunkbrush (Rhus trilobata Nutt.). Wax current (Ribes cereum Dougl.) dominates under the ponderosa pine canopy and is found sparingly elsewhere.

Hackberry (Celtis reticulata Torr.) is both a tree and a shrub, but it is not common. Of the herbs, the blue grama grass (Bouteloua gracilis [HBK] Lag.) and buffalo grass (Buchloe dactyloides [Nutt] Engelm.) are the most common native species. Muhlenbergia sp. is less prominent. Other grass and forb species in winter conditions were not recognizable to the team. Two common associates of the grasses are yucca (Yucca glauca Nutt.), found extensively wherever the top soil horizon is relatively coarse and well-drained, and prickly pear cactus (Opuntia rafinesquei Engelm.), which favors a habitat similar to yucca but is less common.

Ecology students under the direction of Professor John W. Marr, University of Colorado, have compiled in an unpublished report some data relating to the ponderosa pine stand on and about the shelf in the center of the study area (4). Quadrats of 100 meters^2 were sampled and increment borings were taken. The mature trees on the north-facing slope of the shelf make up a uniformly even-aged stand, the oldest individual sampled being 80 years. Regeneration is apparent throughout the study area.

The anomaly of a well-established, vigorous stand of pine at this site, about 3 miles east of the Rocky Mountain front and 2 miles from the nearest continuous pine forest in the forest-grassland ecotone, was not studied in depth because of its potential as a research effort. Presumably, peculiarities of edaphic, hydrologic, and micro-climatic conditions favor the perpetuation of ponderosa pine at this site well into the dominant grassland regional ecosystem. A few old, gnarled individuals within the stand may be descendants from a once-continuous woodland that

may have extended southeastward from the existing forest that blankets the upper slopes of Shanahan Hill (in close accordance with the shelf surface at Marshall Mesa) just south of Boulder. Downcutting by South Boulder Creek could have isolated the Marshall Mesa stand.

Faunal elements of the natural area site were not investigated. Birds typical of the forest-grassland ecotone and of the Colorado piedmont were either observed or would be expected to visit the site. No nesting areas were seen. Likewise, no small mammals other than rabbits were observed, and evidence of burrows and dens were meager. Throughout the study area, evidence of rather intense browsing of shrubs, deciduous tree branches below 7 feet above ground level, and even of yucca blades was noticeable; some of the browsing may have been by deer, but most of it can probably be attributed to overstocking of a poor range with cattle.

Ant colonies were not observed as much as expected, although one large active hill was seen at the summit of the shelf in the center of the study area.

Environmental Quality

The Marshall Mesa area has long been exposed to littering by man and over-grazing by cattle. Below Davidson Ditch, the spoils of coal mining activity are still prominent. The grounds in this low-lying part of the area are strewn with litter, and little semblance of natural habitat remains. West of the prominent shelf, the litter problem is moderate to severe; much of the litter has been blown by prevailing west winds from the highway and frontage areas one-half mile away. The site of the abandoned Pine Ridge Mine is seriously disturbed. Prospect hole areas east of it and on the north flanks of the shelf are similarly altered; ruins of a small building just across Davidson Ditch from the shelf are scattered in a shrub stand. Crossing the study area from southwest to northeast, immediately north of Davidson Ditch, a recent pipeline right-of-way has dissected a meadow with a continuous barren strip 30 feet wide.

With the exception of the withering remains of a few old vehicle trails, the upper slopes of the study area are relatively undisturbed, although the sizeable ditch banks lining the lower sides of both irrigation ditches have especially altered the drainage and soils. The upper portion of Community Ditch has been recently maintained and deepened. This has provided a habitat for pioneering exotic plant species scattered along the ditch banks.

The shelf and immediate surroundings retain a character sufficiently little-disturbed to be valuable to researchers of several disciplines. The generally deteriorated environmental quality of the northern and western peripheral parts of the study area is not found on the shelf. With natural-area management it is felt that the shelf environment could be restored to a fairly reasonable facsimile of the native habitat.

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CHAPTER III. PAST, PRESENT, AND FUTURE LAND USE

George R. Greenbank
Robert E. Key
Scott Mernitz

Introduction

This study depended on several sources of information: field reconnaissance, personal interviews, county records, air photographs furnished by the City of Boulder and the Soil Conservation Service in Boulder, and ground photographs dated prior to 1900.

The following figures show land use during the time indicated: Figure 11, the coal mining era (1885-1915); Figure 12, the agricultural impact (1922); Figure 13, the transition from mining to agriculture (1940); and Figure 14, current land use (1970). A prediction of future land use appears in Figure 15.

To obtain a perspective of trends in the area, land use was mapped not only for the study area itself, but also for the surrounding area.

The land use classification code of the Inter-County Regional Planning Commission (also called Denver Regional Council of Governments - DRCOG) was used in order to standardize the mapping (see Tables 1 and 2).

Past Land Use

Most of the information regarding past land use was acquired by William R. Callahan and Manik Hwang.

Coal mining dominated the early history of land use in the area. "Joseph M. Marshall was the 'company' of Langford and the original discoverer of the exposures of coal deposits on South Boulder Creek" (4). Augustine Langford controlled a large portion of the area during the 1870s. He chose the name "Langford" for the community and persuaded the photographer to use this name on the early photographs (Figures 16 and 17). However, "Langford" was never accepted, and "Marshall" became the official and popular name (3).

"The coal mines at Marshall were developed in the early 1860s and soon were supplying the entire region with coal" (2). Joseph Marshall retired before 1900 and his holdings in the area were transferred to the Northern Coal and Coke Company. This company held both surface and subsurface rights to the land until 1911. At this time, labor problems and the discovery of anthracite in Wyoming caused Colorado lignite to diminish rapidly in importance (1). Northern Coal and Coke was consolidated into the larger and more prosperous Rocky Mountain Fuel Company. However,

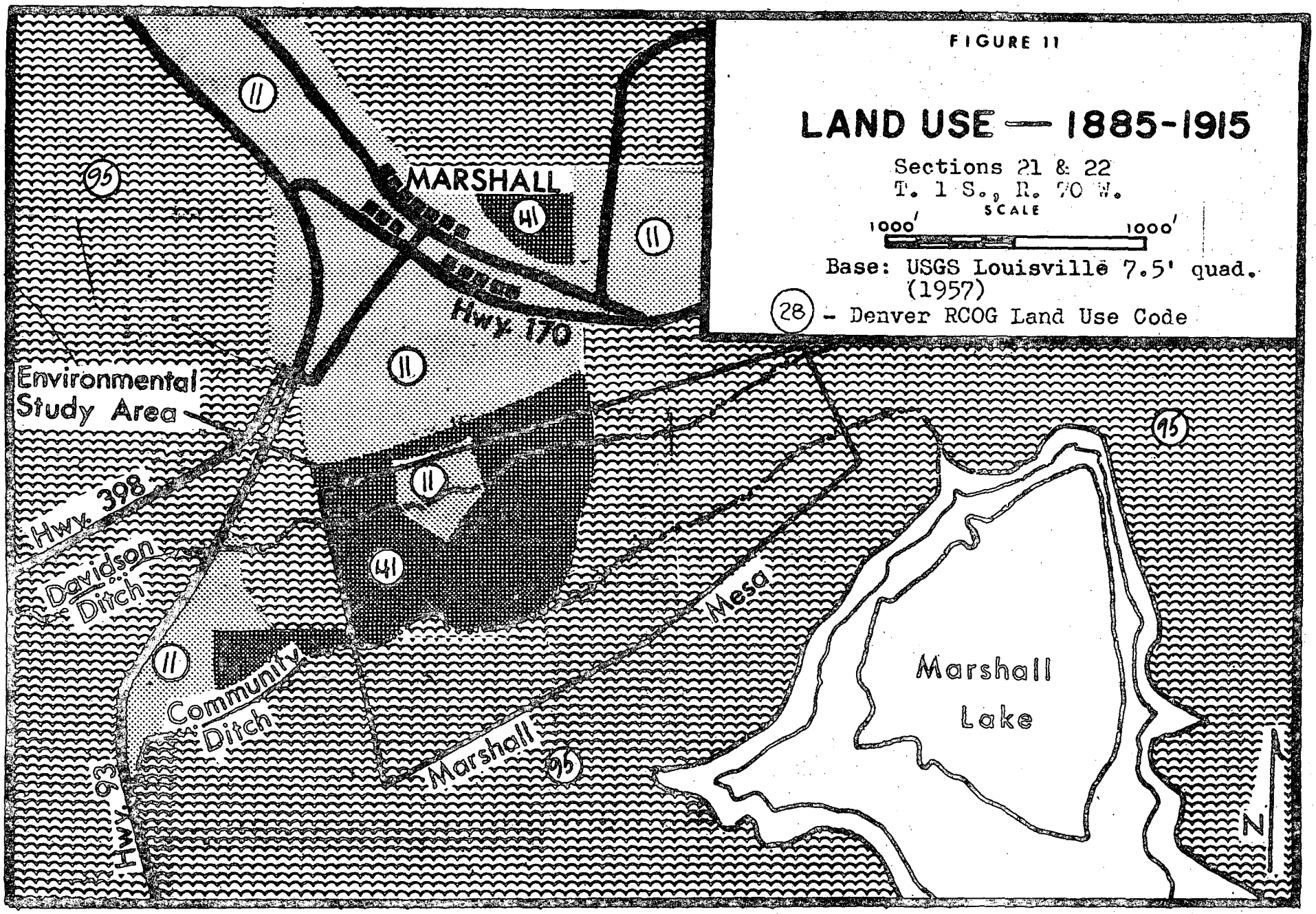


FIGURE 11
LAND USE — 1885-1915
Sections 21 & 22
T. 1 S., R. 70 W.
SCALE
1000'
1000'
Base: USGS Louisville 7.5' quad. (1957)
(28) - Denver RCOG Land Use Code
MARSHALL
Hwy. 170
Environmental Study Area
Hwy. 398
Davidson Ditch
Community Ditch
Marshall Mesa
Marshall Lake
Hwy. 36
95
11
41
N

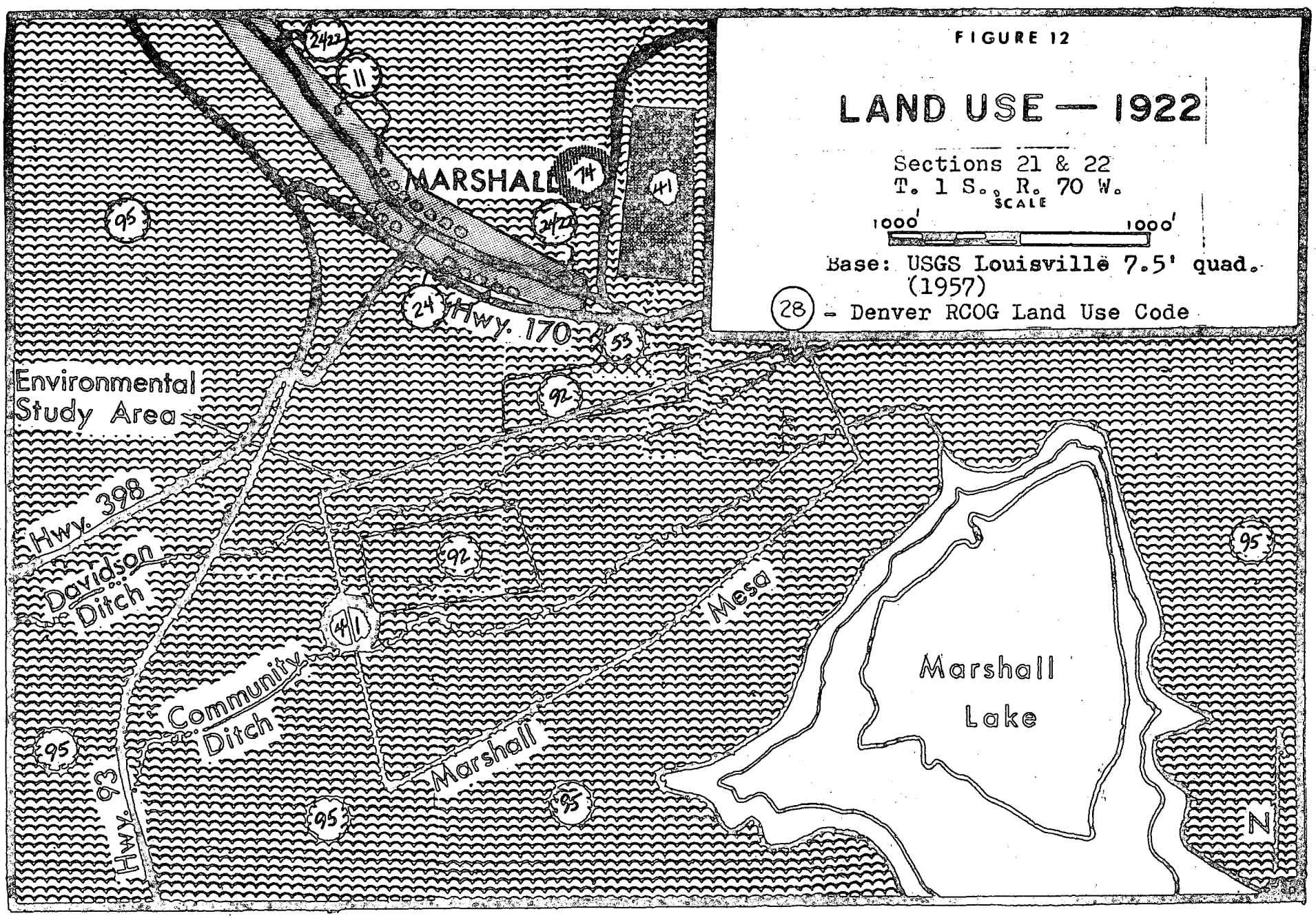


FIGURE 12
LAND USE — 1922
Sections 21 & 22
T. 1 S., R. 70 W.
SCALE
1000'
1000'
Base: USGS Louisville 7.5' quad. (1957)
(28) - Denver RCOG Land Use Code
MARSHALL
Hwy. 170
Environmental Study Area
Hwy. 398
Davidson Ditch
Community Ditch
Hwy. 63
Mesa
Marshall
Marshall Lake
N
2422
11
74
441
95
24
53
92

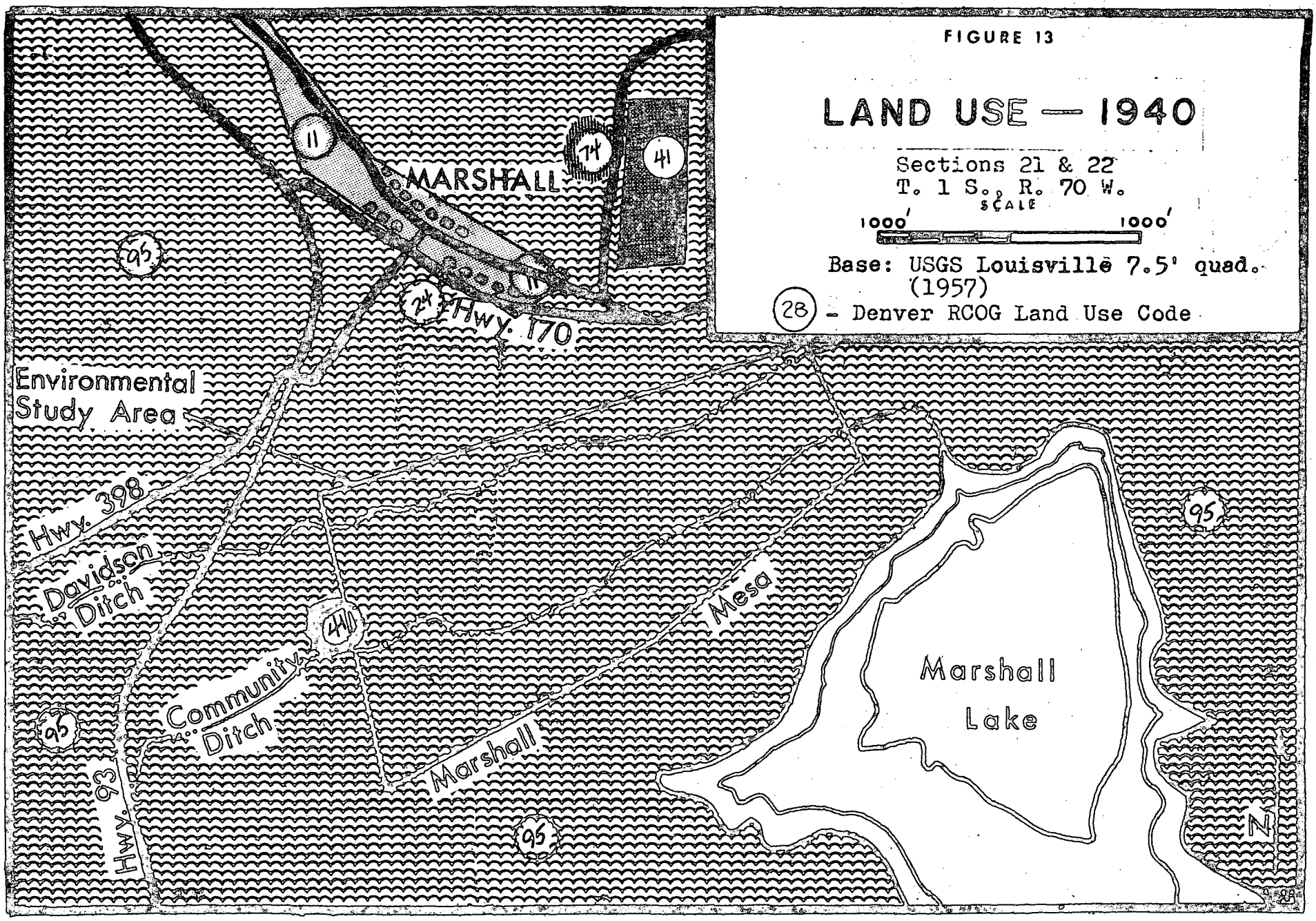


FIGURE 13
LAND USE — 1940
Sections 21 & 22
T. 1 S., R. 70 W.
SCALE
1000'
1000'
Base: USGS Louisville 7.5' quad. (1957)
(28) - Denver RCOG Land Use Code
MARSHALL
Hwy. 170
Environmental Study Area
Hwy. 398
Davidson Ditch
Community Ditch
Marshall
Mesa
Marshall Lake
Hwy. 93
11
74
41
95
24
441
N

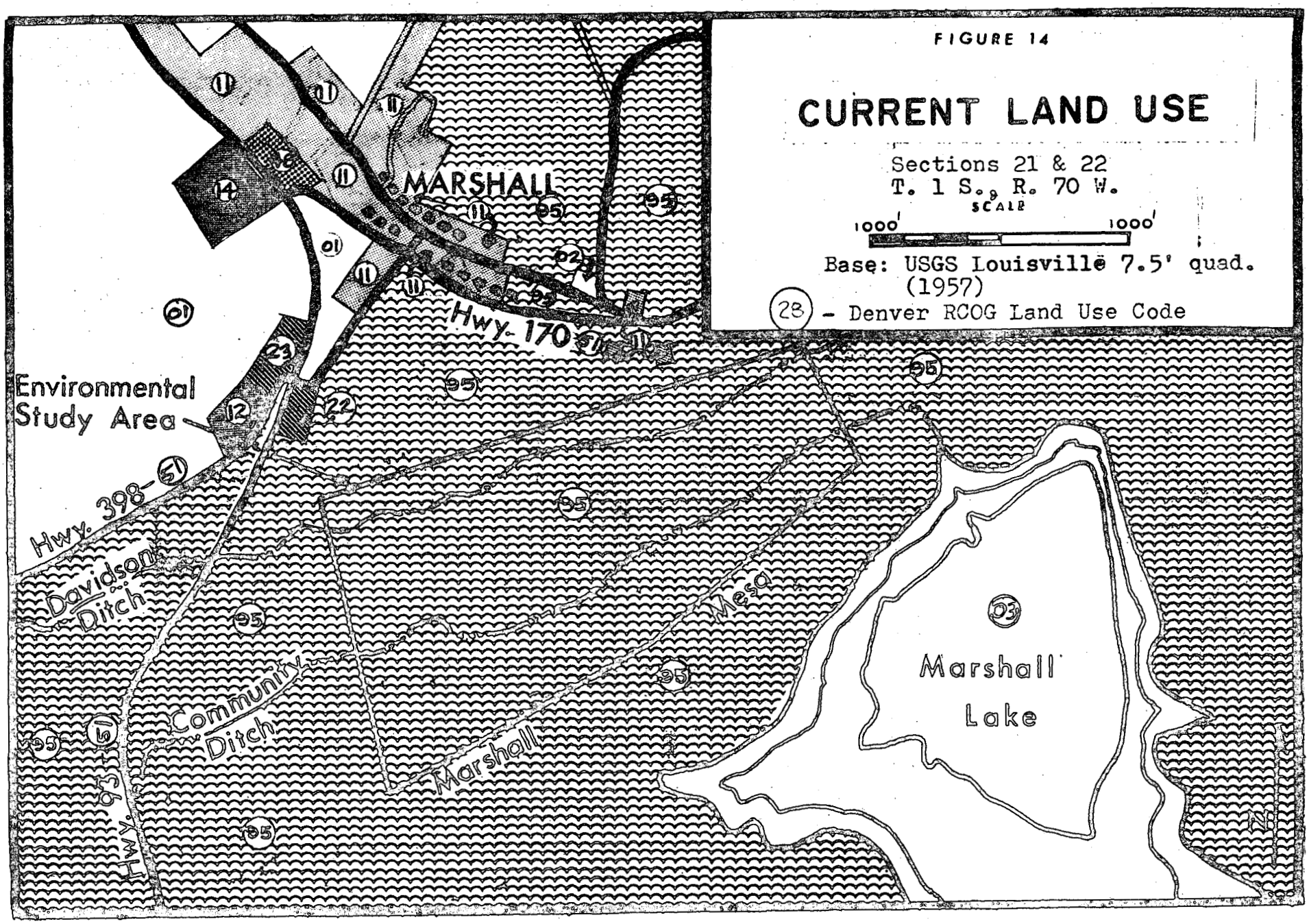


FIGURE 14
CURRENT LAND USE
Sections 21 & 22
T. 1 S., R. 70 W.
SCALE
1000'
1000'
Base: USGS Louisville 7.5' quad. (1957)
(28) - Denver RCOG Land Use Code
MARSHALL
Hwy. 170
Environmental Study Area
Hwy. 398
Davidson Ditch
Community Ditch
Marshall Mesa
Marshall Lake
Hwy. 42

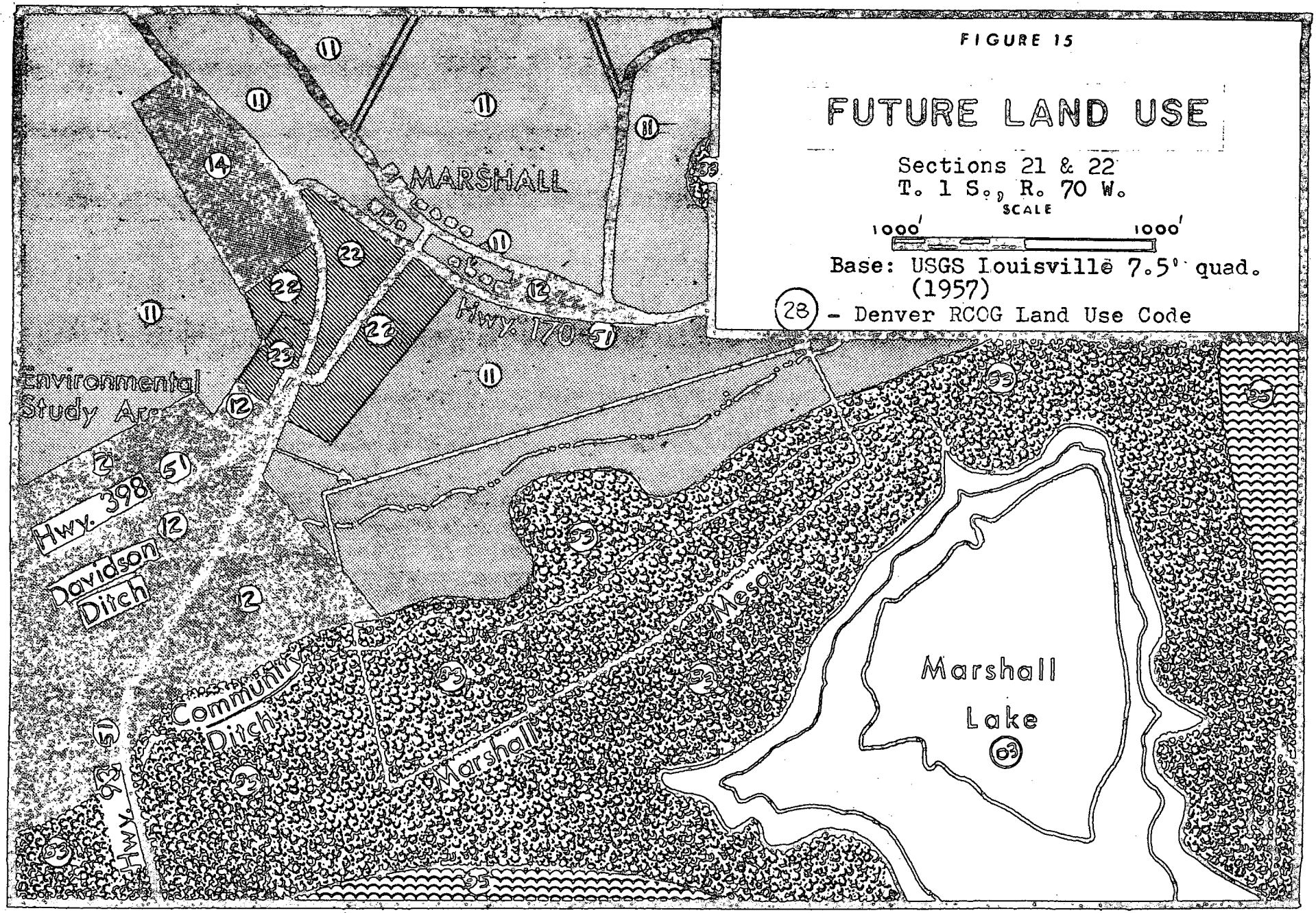


FIGURE 15
FUTURE LAND USE
Sections 21 & 22
T. 1 S., R. 70 W.
SCALE
1000'
1000'
Base: USGS Louisville 7.5' quad.
(1957)
(28) - Denver RCOG Land Use Code
MARSHALL
Hwy. 170-51
Environmental
Study Ar
Hwy. 398
Davidson
Ditch
Community
Ditch
Marshall
Mesa
Marshall
Lake
HWY.

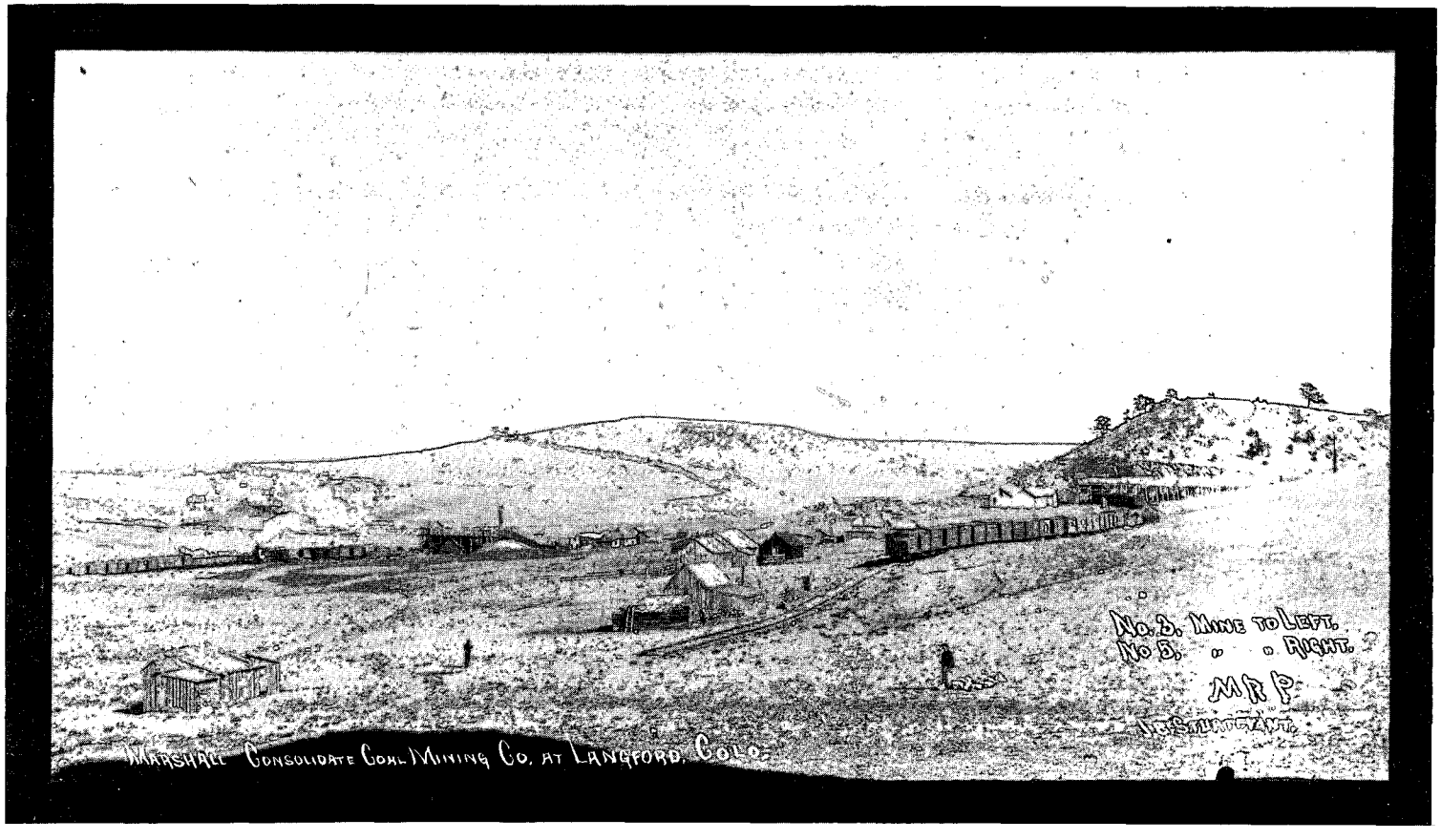


Figure 16 The Marshall Consolidate Coal Mining Co. at "Langford" Colorado. Photo dated prior to 1900. Marshall Mesa is shown at the right background.

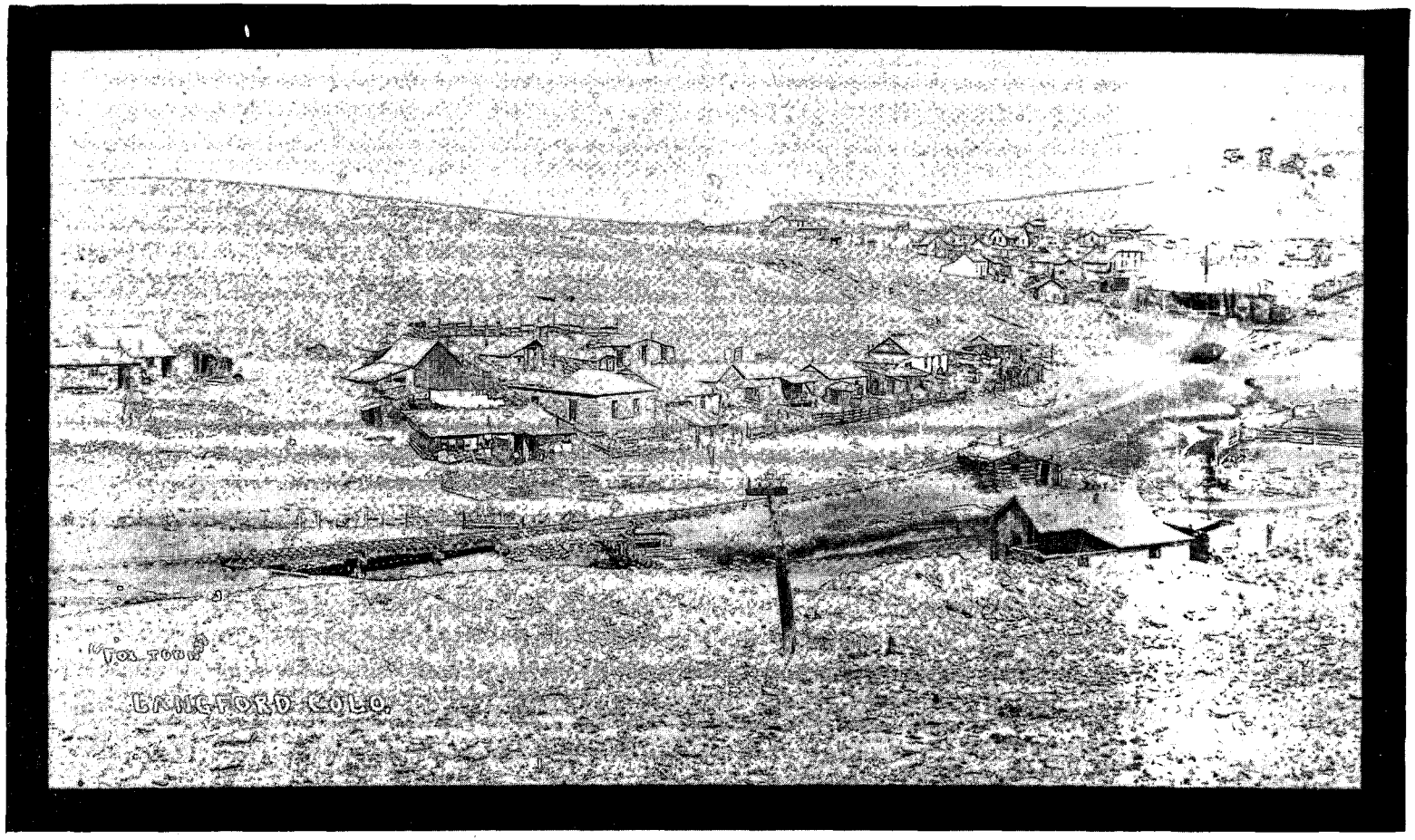


Figure 17 "Langford," Colorado. The historic site of the present community of Marshall. Photo dated prior to 1900.

coal mining in the Marshall area continued to decline and the Rocky Mountain Fuel Company eventually became just a land holding company.

Except for livestock grazing, agriculture was not practiced to a noticeable degree until the 1920s (Figure 12) when crop production was attempted from land in and near the study area.

Present Land Use

Figure 14 shows present land use in the Marshall area. Grazing is the only agricultural land use in and around the study area. Land use in the community of Marshall is almost entirely residential; only a small portion of the land is used for industrial and commercial purposes.

Future Land Use

The future land use map (Figure 15) is speculative. However, it seems to be a reasonable forecast in terms of the city of Boulder's present Greenbelt plans. Wind is a significant natural hazard on top of the Mesa and because of the absence of utilities in the area, it appears that open space uses will continue.

On the eastern end of the study area, recent spring precipitation has caused new cave-ins and ground slumpings over abandoned coal mines. Davidson Mesa, north of the study area, has fires that continue to burn at low intensity in several of the abandoned mines. Because of this and ground slumping new home construction has been hindered.

TABLE 1. TWO-DIGIT CLASSIFICATION CODE (DRCOG)

1. Residential

   11 Single-Family Dwelling
   12 Multi-Family Dwelling
   13 Group Quarters
   14 Mobile Home Dwelling

2. Commercial

   21 Commercial Residential
   22 General Retail Business
   23 Personal, Commercial Services
   24 Intensive Business

3. Services

   31 Administrative Services
   32 Finance, Insurance, Real Estate Services
   33 Business Services
   34 Professional Services
   35 Wholesaling Services, Without Stock
   36 Miscellaneous Services

4. Industrial

   41 Extractive
   42 Primary Products Manufacturing
   43 Secondary Metal Products Manufacturing
   44 Secondary Non-Metal Products Manufacturing
   45 Wholesaling, With Stock
   46 Non-Manufacturing, Warehousing
   47 Non-Manufacturing, Open Storage
   48 Construction, Contractors Storage

5. Transportation

   51 Transportation R.O.W.
   52 Passenger Terminal
   53 Freight Terminal
   54 Transportation Equipment Maintenance
   55 Transportation Services
   56 Automobile Parking

(continued)

TABLE 1. TWO-DIGIT CLASSIFICATION CODE (DRCOG)

(continued)

6. Communication and Utilities

61 Telephone and Telegraph Communications System
62 Radio, Television Communication
63 Postal Communications
64 Gas, Electric Utility System
65 Water Supply Irrigation System
66 Sewerage System
67 Disposal Facilities

7. Public and Quasi Public

71 Correctional, Protective Facilities
72 Cultural Facilities, Civil Organizations
73 Religious Facilities
74 Educational Facilities
75 Medical and Related Facilities
76 Cemeteries, Mausoleums
77 Military Bases, Installations

8. Parks and Recreation

81 Indoor Sporting, Recreation Facilities
82 Outdoor Sporting, Recreation Facilities
83 Open Space Parks and Recreation Areas
84 Unimproved Forest Land

9. Agricultural

91 Specialty Crop Production
92 Crop Production
93 Animal Production
94 Animal Husbandry Services
95 Pasture, Grazing Land

0. Vacant

01 Land
02 Structure
03 Water Area

References

1. Parnall, Mark. Descendent of an early Colorado coal miner. Telephone interview, April 2, 1970.

2. Perrigo, Lynn I. "A condensed history of Boulder, Colorado." The Colorado Magazine. Vol. XXVI, No. 1, 1949, p. 41.

3. Sampson, Mrs. Joanna C. Marshall area resident. Personal interview, March, 1970.

4. Sanford, Albert B. "The First Iron Manufacturing in Colorado." The Colorado Magazine. Vol VIII, No. 4, 1931, p. 143.

CHAPTER IV. LAND OWNERSHIP AND LAND TENURE

William G. Callahan
Manik Hwang

Present Land Ownership

A summary of present land ownership is shown in Table 3 and the complete present land ownership record is shown in Appendix A. Figure 18 is an ownership (plat) map of the Marshall area.

In Sections 21 and 22 there are six major land owners with holdings of over 65 acres. Fourteen persons have holdings between 2 and 12 acres, which are designated by tract numbers.

The larger properties are located south of the community of Marshall on or near the mesa and the smaller properties are concentrated in or around Marshall where the topography is less undulating, the degree of slope is not as great, and transportation facilities are numerous. The largest holding is owned by Samuel A. Rudd who owns 45 per cent or 578 acres of the total 1,280 acres in Sections 21 and 22. Approximately 28 per cent or 356 acres of the total acreage is owned by two irrigation and reservoir companies.

Present Land Tenure

There are three major classes of tenure in Sections 21 and 22: full owner (one who owns all the land he operates), manager (one who operates land for someone else on a salary basis), and cash tenant (one who pays rental in cash as a lump sum or on a per acre basis).

With six exceptions all the land designated by tract numbers (Appendix A) is owner operated. Tract 2514-A is a trailer court, and most of it is occupied by cash tenants. The portion of the tract which is occupied by the owner is small. In terms of tenure, therefore, this tract is classified as cash tenant. Four tracts, 2154, 1428, 1421-A, and 1423-A, are occupied by tenants who rent for cash.

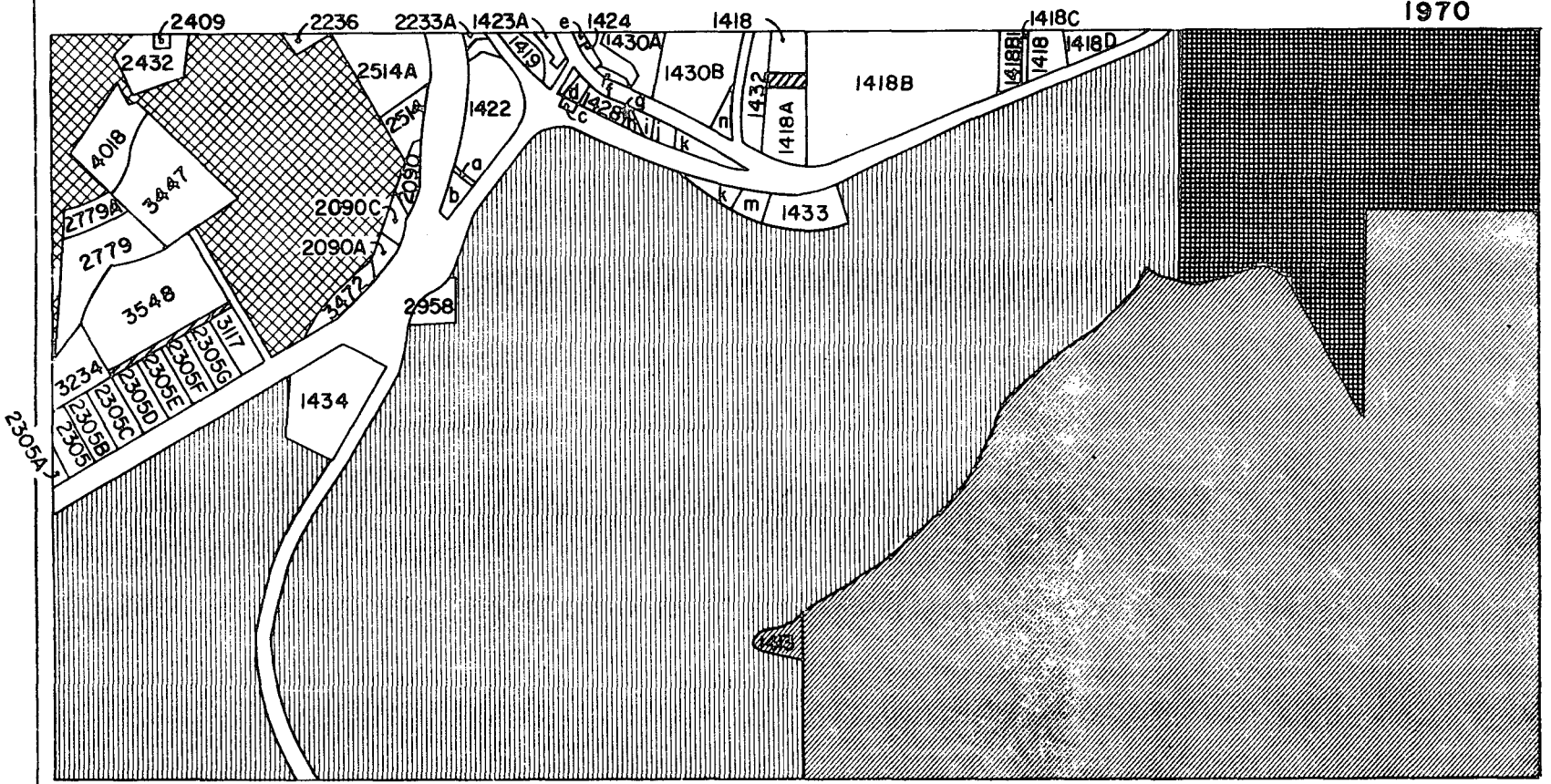
Tract 1434 contains a small house which is rented to a University of Colorado student. The remainder of this tract, however, is unused due to the owner's desire that the land be allowed to return its natural state (3). Because of this, tract 1434 is owner operated.

Of the total acreage, 747 acres, or 58.2 per cent of the land is rented for grazing on an annual basis to farmers who own land in the immediate vicinity. These farmers are, in effect, cash tenants in Sections 21 and 22. The Rudd, Thomas, and Debacker properties are classified,

CADASTRAL MAP OF MARSHALL MESA AREA

FIGURE 18

1970



therefore, as cash tenant land. Both Mrs. William J. Thomas' and Mrs. Harold L. Debacker's holdings were owner operated recently. The owners are now widows, who intend to sell their holdings if zoning is changed to permit sewers and other utilities to serve the area (2).

TABLE 2. PRESENT LAND OWNERSHIP (1)

Name	No. of Tracts	Acres	Per cent of Total
Samuel L. Rudd	-	578.18	45.1%
Community Canal and Reservoir Company	-	236.02	18.4
Farmers Reservoir and Irrigation Company	-	120.00	9.4
Mrs. Harold L. Debacker	-	103.07	8.0
Mrs. William J. Thomas	-	65.75	5.1
County and State Roads and Easements	-	65.45	5.1
William S. Jeske	2	6.40	7.2%
Wesley Conda	3	4.50	
Carmella Gabriella	1	9.01	
E. L. Smith	1	6.66	
E. L. Rose	1	11.79	
San Soucie Trailer Court	1	3.00	
C. E. Shannon	3	3.00	
Robert Keefer	5	10.50	
Town of Lafayette	2	2.20	
William T. Bullard	1	2.37	
Vincent Theis	1	3.00	
Jack Taylor	2	10.80	
Robert Sisemore	1	2.10	
Joanna F. Sampson	2	16.00	
Remaining	25	20.20	1.7
Totals	51	1280.00	100.0

The remainder of the land, 356 acres, is managerially operated. Mr. Maynard Ludwig is employed by the Farmers Reservoir and Irrigation Company and by the Community Canal and Reservoir Company. Although his job title is "Marshall Lake Tender," he is actually in charge of the entire holdings of these two firms. As partial payment for the responsibilities he has undertaken, he is allowed to run cattle on the land. Mr. Ludwig is thus both a manager and a tenant, but because his primary duties are managerial, the land is classified as under manager tenure. However, the lake is leased to the Louisville Rod and Gun Club, so that three of land tenure actually exist on the same parcel of land. Mr. Ludwig is a cash tenant and manager for land which is leased, in part, to another party.

Past Ownership and Tenure

Past land use was described in the land use study, where it was emphasized that coal mining dominated in the area until the market for coal collapsed. While coal was mined, land ownership consisted in large holdings. Since the decline of coal mining the trend has been toward smaller ownerships. Evidence of this trend is apparent in comparison of the 1949 and 1970 cadastral maps (Figures 18 and 19).

Comparison of these maps also demonstrates that land ownership patterns on the mesa and in the surrounding area have remained intact since 1949. However, the Thomas property of 1949 has become divided among 23 owners.

In 1930, a few tracts of land in Section 21 were sold by the Rocky Mountain Fuel Company to Nick Conda, Tom Gabriella and son, and Wilbert Hale. All three parties and their descendants still live in the vicinity.

Marshall Lake has been owned by the Community Consolidated Canal and Reservoir Company since 1900. The Farmers Reservoir and Irrigation Company bought their holdings in 1925.

The Thomas property was a farmstead that was purchased from the Rocky Mountain Fuel Company in 1946 and was eventually subdivided into six separate properties by 1958. Eighteen more tracts, totaling nearly 40 acres, were partitioned from the farmstead between the present and 1969.

Samuel Rudd did not purchase his holdings until 1963-64. At that time the entire Bixler property (see Figure 19) and more than 400 acres of the Debacker farmstead were transferred.

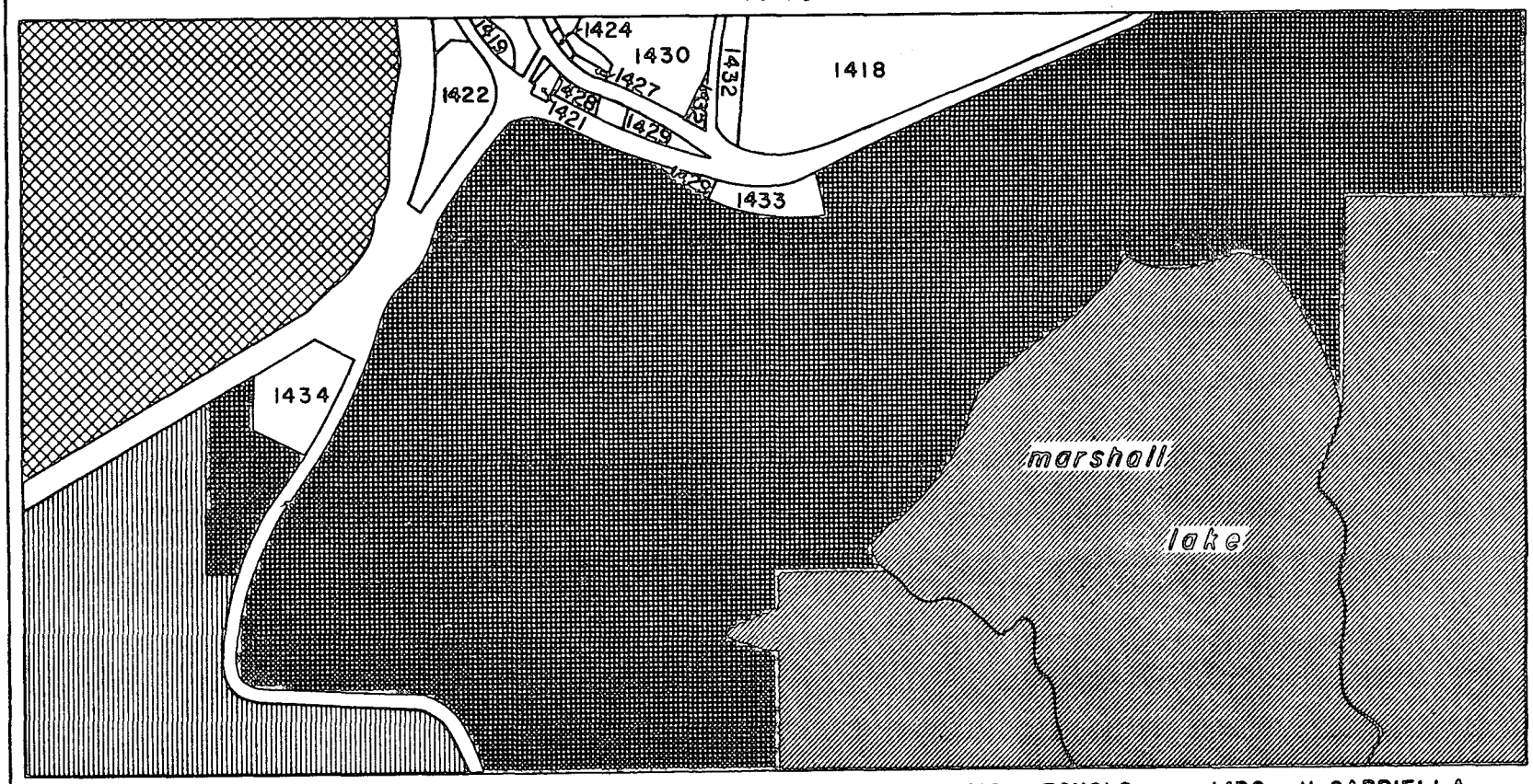
Future Ownership and Tenure

A large portion of the area around Marshall Mesa may be included in the Boulder greenbelt system in the future. If this change in land use occurs, a significant change in land ownership and tenure will probably occur. If these plans do not formulate, it seems reasonable to project that current land use patterns will fade into rural residential and corresponding commercial patterns as land owners, such as Mrs. William J. Thomas, continue to sell accessible strips of their farms to people with these intentions.

PAST CADASTRAL MAP OF MARSHALL MESA AREA

FIGURE 19

1949



SEC. 21 & 22
OF
R. 70W, TOWNSHIP 1 S.

SCALE
1000 0 1000 ft.

PROPERTY OF BIXLER
PROPERTY OF DEBAKER
PROPERTY OF THOMAS.
PROPERTY OF FARMERS R. & I. CO. AND COMMUNITY C. & R. CO.
VARIOUS OWNERS

1418 – ECHOLS
1419 – HALE
1421 & 1422 – CONDA
1424 – BRIERLEY
1427 – MILLER
1428 – WILLIAMSON
1429 – H. GABRIELLA
1430 – J. GABRIELLA
1432 – BUSHEFF
1433 – ECHOLS
1434 – ROSE

References

1. Boulder County Assessor's Office Land Book, 1970. Sections 21 and 22, T 1 S R 70 W.

2. Debacker, Mrs. Harold L. and Mrs. William J. Thomas, Marshall area land owners. 1970. Telephone interviews, March.

3. Rose, Edward L. Marshall area land owner. 1970. Telephone interview, March 24th.

CHAPTER V. LAND ECONOMICS

Gary A. Heaslet
Wil. Ulman
Helen Young

Methodology

This study compared land values in 1946 and 1970. The year 1946 was chosen because it reflects the immediate post-World War II land values. Both assessed and actual market values of the land are listed in Appendix B and Appendix C, and the actual market value per acre is shown in Figures 20 and 21. Assessed value represents only a percentage of the land's actual market value. In 1946, the Boulder County Assessor's Office assessed land at 16 per cent of its actual worth, whereas in 1970 the rate was 30 per cent (2). Only data on assessed value were available from the Assessor's Office; therefore, market value was computed from assessed value.

Changing Land Values

In order to make more meaningful comparisons between land value in 1946 and 1970, the purchasing power of the U.S. dollar should be considered. In 1947 the worth of the retail dollar was $1.25, compared with $0.864 in 1968. The retail dollar is computed by dividing the national average price index for the 1957-1959 base period (100.00) by the price index for a given period and expressing the result in dollars and cents (6). The reduced value of the dollar is important in comparing change in land value. Maps of 1946 and 1970 land values in the Marshall Mesa area illustrate this change (Figures 20 and 21). For ease in plotting, the area was divided on the basis of six categories of actual market values per acre. Appendices B and C list each tract and the acreage, followed by a comparison of actual market value and assessed value of the entire tract. One problem in mapping was the lack of land value information for land around Marshall Lake, because the land is owned by canal and reservoir companies which are tax exempt.

Land values are closely related to accessibility and frontage location along arterial roads. The higher-priced property is in homesites along Eldorado Springs Drive, Marshall Drive, and Marshall Road, and businesses located on the South Foothills Highway (Colorado Highway 93). An interesting aspect of land values in the area is that some of the more expensive land in the NW 1/4 of Section 21 is within the probably 100-year flood limit (3). The aesthetic appeal of a water-base frontage apparently outweighs the danger of building within the floodline boundary.

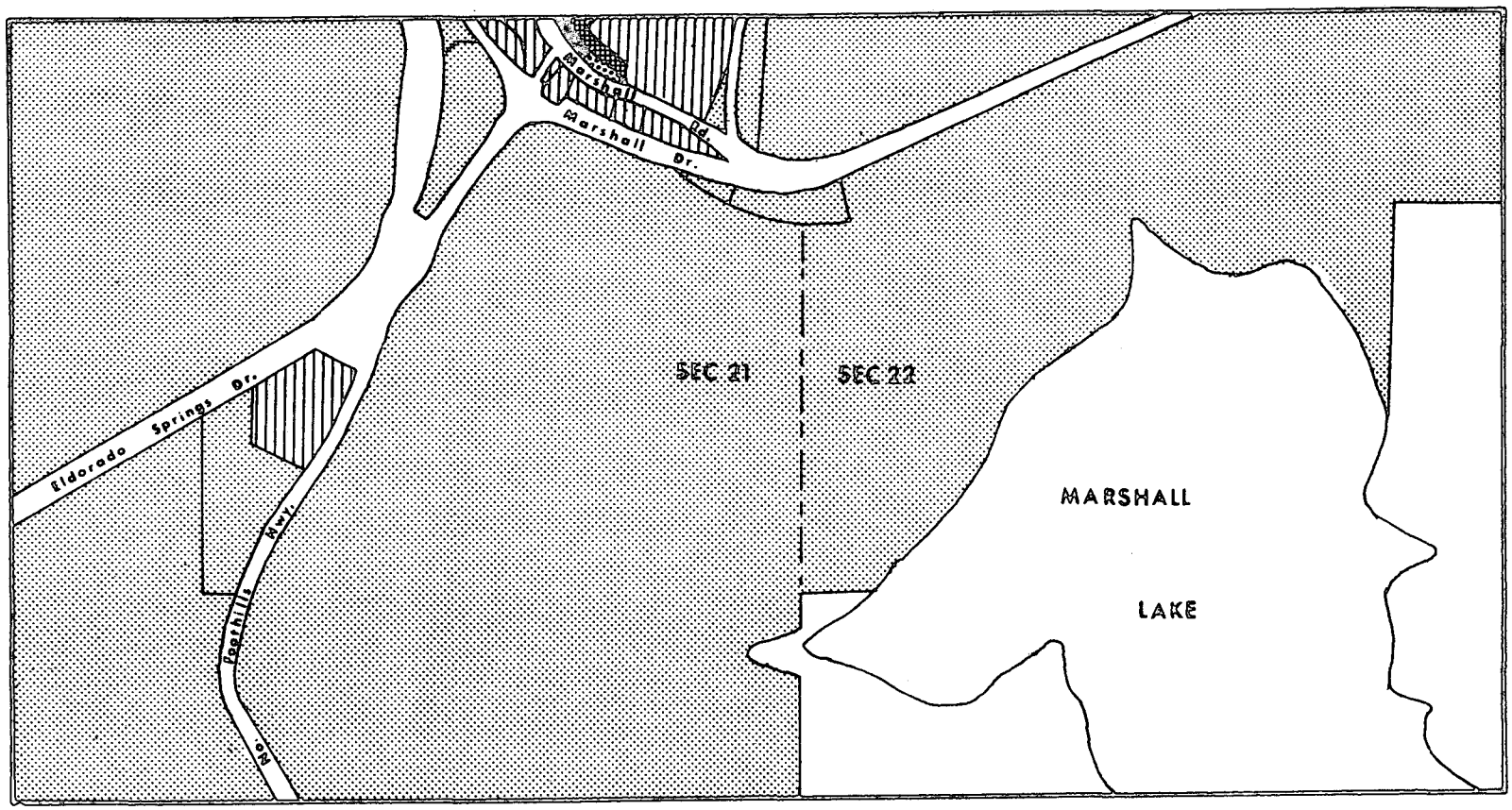


FIGURE 20

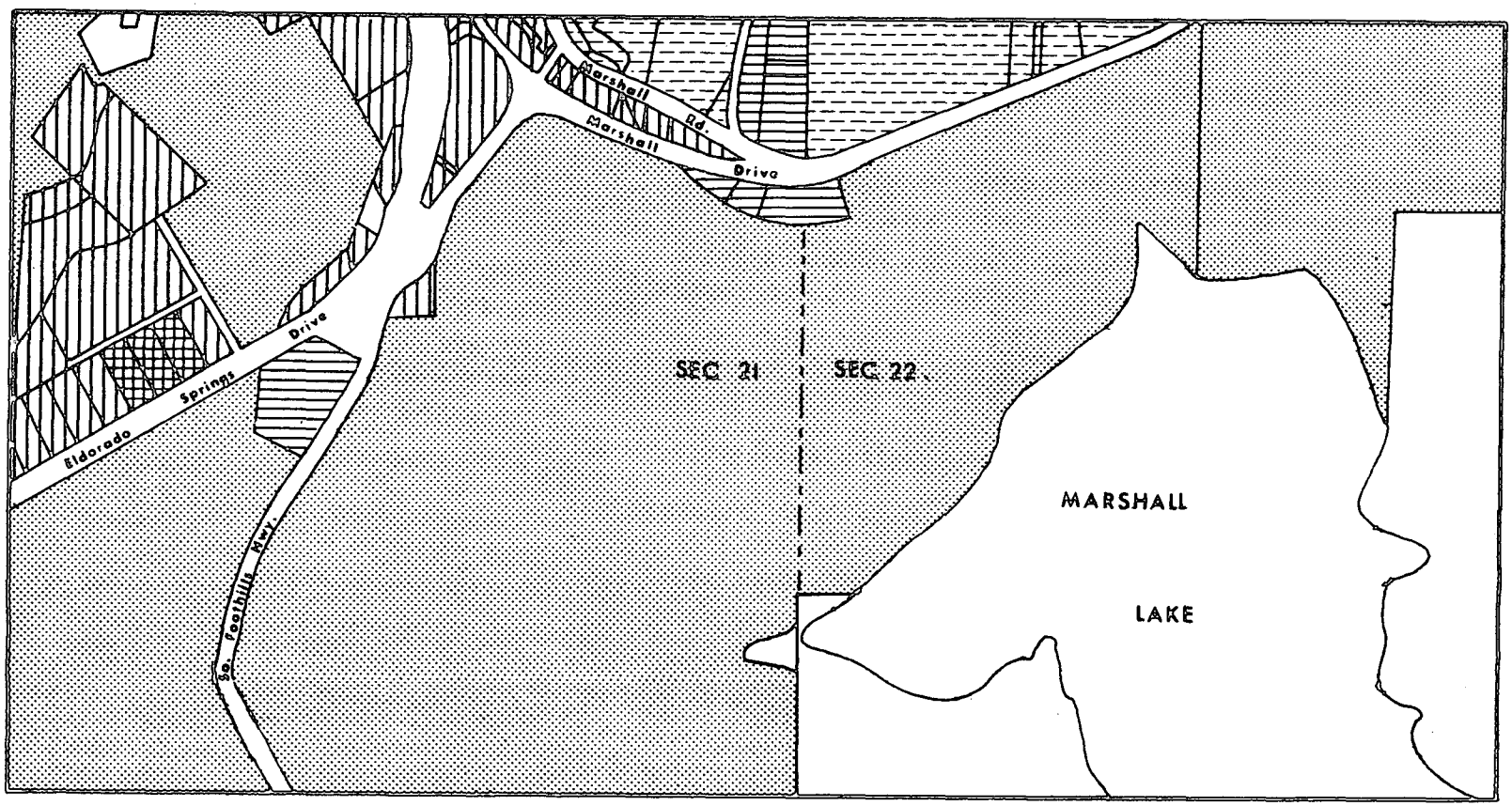
LAND VALUE

IN VICINITY OF

MARSHALL MESA

1946

M.J.U.



VALUE PER ACRE

- Tax Exempt
- $10 - 200
- $200 - 500
- $500 - 1000
- $1000 - 5000
- > $5000

N

SCALE 1000' 1000'

FIGURE 21

LAND VALUE

IN VICINITY OF

MARSHALL MESA

1970

Estimated property values (land plus improvements) Data source - Assessor's office, Boulder County, April 1970

W.J.U.

Future Economic Trends

Because the area is only 4 miles south of Boulder and is on the southern edge of Boulder's residential expansion, future growth with increasing land values may be expected. Accessibility presents no problem, as the area is well-supplied with all-weather roads. The recent widening of the South Foothills Highway may stimulate growth in the area. Since this is not a limited access highway, business along the highway probably will increase.

Field reconnaissance and interviews indicate that only two parcels of land are presently for sale in the area. A one-acre plot immediately south of the Matterhorn Restaurant, with 150 feet of frontage along the South Foothills Highway, is being offered through the Frank R. Komatz Agency in Denver, at $27,500. It has been for sale for some time (4). More than 250 acres belonging to Samuel Rudd and located south of the intersection of Marshall Drive and the South Foothills Highway and south along both sides of the highway, are for sale (5). Lack of data from which to infer the price of land and of details as to its location or sale prevent analysis of possible trends.

References

1. Boulder County Assessor's Office Land Books. 1956 and 1970.

2. Copeland, Harold, Bollder County Assessor's Office. 1970. Personal interview, April.

3. Kroeck, William, ed. 1968. South Boulder Creek: A Greenbelt Feasibility Study. Boulder City Planning Office and Department of Geography, University of Colorado, Boulder. Colorado.

4. Spokesman for Frank R. Komatz Realty Agency. 1970. Telephone Interview, Denver, Colorado, April.

5. Spokesman for office of Samuel Rudd. 1970. Telephone interview, Evergreen, Colorado, April.

6. The World Almanac. 1970.

CHAPTER VI. RECOMMENDATIONS

James Biggins

Max H. Dodson

The Marshall Mesa area is a micro-environment that has much research potential and educational value for biologists, ecologists, geologists, and geographers. Aspects of special interest include relative complexity in geologic structure, evidence of landform development, and diversity in vegetation. The site is particularly valuable because of proximity to the University and ease of access.

The following possible fields of research were suggested by the environmental study team (John L. Harper, Michael R. Tripp, and Dean G. Wilder):

1) biogeographical, plant ecological, and paleo-environmental studies to determine the origin and history of the ponderosa pine stand;

2) investigations of the complex of faults and associated structures;

3) genetic studies of the planar surfaces that form the summits of Marshall Mesa and the central shelf;

4) geomorphic studies of the shelf and the smaller bluff-like exposures of sandstone;

5) analyses of surface and subsurface hydrologic characteristics of the slope; and

6) micro-scale ecological and pedogenic studies on the shelf and its slope.

With respect to the last suggestion, the establishment of a series of permanent quadrats would be useful, in order to observe the relationships of the biota to a variety of topographic, edaphic, and micro-climatic situations and the rate of natural recovery of the area after protection is assured. The environmental study team also suggests that an automatically recording weather station, similar to those maintained by the Institute of Arctic and Alpine Research, would provide valuable data. The site could be used to great advantage by educational institutions in the Boulder area. It is believed that organized large groups would not damage the site.

However, damage of the natural environment and the risk of personal injury would incur with public use of the site. Cattle- and vehicle-proof peripheral fencing would be required to insure protection of the natural environment. The environmental study team noticed signs of littering, motorbike riding, overgrazing, and even camping. There also exists the danger of falls from steep escarpments and into old mining pits. Residential development of the area would have similar disadvantages, but with the added hazard of damage to houses in the event that underground

mine workings collapse. The companies that control Davidson and Community Ditches must maintain the ditches, but they should be impressed with the importance of preserving the landscape.

The Boulder Greenbelt Plan would be enhanced by acquisition of the Marshall Mesa natural area, providing that limitations are imposed on the use of the site. According to Mr. Larry Blick, Assistant City Manager of Boulder, the Marshall Mesa area has low priority in the greenbelt acquisition time table. Mr. Blick estimates that it will be at least five years before the area is actually considered for acquisition (1). In view of this, the City and the University should be constantly alert to any changes in land use of the area and to signs of possible change. If change in use become imminent, acquisition priority should be reviewed.

Mrs. Joanna F. Sampson, a resident of Marshall, believes that the community, especially the owners of small properties, are favorable towards greenbelt/open space uses (3). However, when and if the City, County, or University acquire rights to exclusive use of the site, they should be aware that Mr. Samuel L. Rudd, owner of the site and most of the adjacent land to the south, favors incorporation of the site in a greenbelt only if this would be "economically feasible." Mr. Rudd said that he would cooperate with any governmental or University officials in determining future uses of the area (2).

References

1. Blick, Larry N., Assistant City Manager of Boulder, Colorado. 1970. Telephone interview, May 11th.

2. Rudd, Samuel L., Land owner, Marshall area. 1970. Telephone interview, May.

3. Sampson, Joanna C., Resident and land owner, Marshall, Colorado. 1970. Personal interview, May.

APPENDIX A

LAND OWNERSHIP OF MARSHALL MESA AND SURROUNDINGS

T.1S., R.70W. SEC. 21 & 22

Section 21

1/4 Sec	1/4 1/4 Sec	Acres	Name Name
NW	NE (Less Tracts)	26.53	Lavina Thomas
	NW (Less Tracts)	26.33	Lavina Thomas
	SE (Less Tracts)	9.18	Lavina Thomas
	SW (Less Tracts)	3.71	Lavina Thomas
SW	NE (Less Tracts & Hwy.)	37.34	Samuel L. Rudd
	NW (Less Highway)	34.55	Samuel L. Rudd
	SE	40.00	Samuel L. Rudd
	SW (Less Highway)	40.00	Samuel L. Rudd
NE	NE (Less Tracts & Hwy.)	12.00	Samuel L. Rudd
	NW (Less Tracts)	23.00	Samuel L. Rudd
	SE	40.00	Samuel L. Rudd
	SW (Less Tract 2958)	37.50	Samuel L. Rudd
SE	NE	40.00	Samuel L. Rudd
	NW	40.00	Samuel L. Rudd
	SE (Less Tract 1413)	39.00	Samuel L. Rudd
	SW (Less Highway)	40.00	Samuel L. Rudd
Note: Mineral Reserves under Section 21		640.00	Rocky Mountain Fuel Company

LAND OWNERSHIP OF MARSHALL MESA AND SURROUNDINGS

Section 21

Tracts

1/4 Sec	1/4 1/4 Sec	Tract Number	Acres	Name
NE	NW	1421	0.14	Wesley Conda
NE	NE	1418-A	2.20	William S. Jeske
NE	NW	1421-A	0.20	Wilbert J. Hale
NE	NW	1419	1.00	William W. Bright
NE	NW	1422	4.16	Wesley Conda
NE	NW	1422-C	0.20	Gary J. Moon
NE	NW	1423-A	0.60	Louis A. Geolfos
NE	NW	1424	0.20	Wesley Conda
NE	NE	1427	0.25	Angelo Gabriella
NE	NW	1428	0.50	Mary J. Williams
NE	NE	1428-A	0.10	Angelo Gabriella
NE	NE	1431-A	0.20	Angelo Gabriella
NE	NE	1429	1.00	Henry Gabriella
NE	NE	1429-A	1.08	Vincent Gabriella
NE	NE	1430-A	1.20	Mary Vickery
NE	NE	1430-B	9.01	Carmella Gabriella
NE	NE	1431	0.20	Joe Gabriella
NE	NE	1432	4.20	William S. Jeske
NE	NE	1433	6.66	E. L. Smith
NE	NE	1433-A	0.60	Lester E. Whetstine
NW	SE	1434	11.79	E. L. Rose
NE	NW	2036	0.80	Gary J. Moon
NW	NE	2090	1.30	B. P. Miller
NW	SE	2090-A	0.70	Evergreen Girls Ranch, Inc.
NW	NE	2090	*	Terrace Swimming Company
NW	SE	2090	*	The Chimes, Inc.
NW	SE	2090-C	1.00	Supernac Oil Company
NW	NE	2514-A	3.00	San Soucie Trailer Court
SW	NW	2305	3.00	C. E. Shannon
SW	NW	2305-C		C. E. Shannon
SW	NW	2305-D		C. E. Shannon
SW	NW	2305-A	1.00	Arnold E. Ingram
SW	NW	2305-B	1.00	Michael Harris
SW	NW	2305-E	1.00	Robert Keefer
NW	SW	2305-F	2.00	Robert Keefer
NW	SW	2305-G		Robert Keefer

LAND OWNERSHIP OF MARSHALL MESA AND SURROUNDINGS

Section 21

Tracts

(Contd.)

1/4 Sec	1/4 1/4 Sec	Tract Number	Acres	Name
NW	NW	2409	0.30	Town of Lafayette
NW	NW	2432	1.90	Town of Lafayette
NW	NE	2514	1.70	Montford Whiteley
NW	SW	2779	10.50	Robert Keefer
NW	SW	2779	10.50**	G. A. Belding
NW	SW	2779-A	1.50	Alberta M. Kingery
NW	SE	2958	2.37	William T. Bullard
NW	SW	3117	1.003	Henry Hogan
NW	SW	3234	3.00	Vincent Theis
NW	NW	3447	7.40	Jack Taylor
NW	SE	3472	2.084	Robert Sisemore
NW	SW	3548	5.00	Robert Keefer
NW	NW	4018	3.40	Jack Taylor
SE	SE	1413	1.00	Community Canal & Res. Co.

* Improvements Only

** Mineral Rights

LAND OWNERSHIP OF MARSHALL MESA AND SURROUNDINGS

Section 22

1/4 Sec	1/4 1/4 Sec	Acres	Name
NW	NE (Less Tracts)	30.00	Samuel L. Rudd
	NW (Less Tracts)	24.00	Samuel L. Rudd
	SE	25.00	Samuel L. Rudd
		15.00	Community Canal & Res. Co.
	SW	40.00	Samuel L. Rudd
SW	NE	37.00	Community Canal & Res. Co.
		3.00	Samuel L. Rudd
	NW	32.79	Samuel L. Rudd
		7.21	Community Canal & Res. Co.
	SE	40.00	Community Canal & Res. Co.
	SW	40.00	Community Canal & Res. Co.
NE	NE	40.00	Mrs. H. L. Debacker
	NW	40.00	Mrs. H. L. Debacker
	SE	40.00	Farmers Res. & Irrigation Co.
	SW	16.93	Community Canal & Res. Co.
		23.07	Mrs. H. L. Debacker
SE	NE	40.00	Farmers Res. & Irrigation Co.
	NW	38.88	Community Canal & Res. Co.
		2.12	Chicago Title & Trust
	SE	40.00	Farmers Res. & Irrigation Co.
	SW	40.00	Community Canal & Res. Co.
Note: Mineral Reserves under Section 22		640.00	Rocky Mountain Fuel Company

LAND OWNERSHIP OF MARSHALL MESA AND SURROUNDINGS

Section 22

Tracts

1/4 Sec	1/4 1/4 Sec	Tract Number	Acres	Name
NW	NE	1418-D	1.00	Ira Albert
NW	NW	1418-B	16.00	Joanna F. Sampson
NW	NW	1418-C		Joanna F. Sampson
NW	NE	1418-B1	1.06	Gale R. Horsman
NW	NW	1418	0.50	Luke Echols
			0.125	Linda Harris
			0.125	Phyllis Echols
			0.125	Galdys Frye
			0.125	Mary Pease

APPENDIX B

ACTUAL AND ASSESSED LAND VALUES - 1946

Section 21

Legal Description or Tract Number	Acreage	Assessed Value	Actual Value
1418 & 1433	24.7	$200.00	$1,250.00
1432	4.18	50.00	312.50
1430 & 1431	26.38	500.00	3,125.00
1422	4.88	50.00	312.50
1421	0.31	50.00	312.50
1423	0.42	30.00	187.50
1424	0.12	50.00	312.50
1419	0.36	20.00	125.00
NE¼, NE¼	12.0	60.00	375.00
NW¼, NE¼	8.0	80.00	500.00
NW¼, NE¼	23.0	120.00	750.00
1426	0.59	50.00	312.50
1427	0.30	50.00	312.50
1428	0.96	50.00	312.50
SE¼, NE¼	40.0	180.00	1,125.00
SW¼, NE¼	40.0	180.00	1,125.00
NE¼, SE¼	40.0	180.00	1,125.00
NW¼, SE¼	40.0	180.00	1,125.00
SE¼, SE¼	39.0+	180.00	1,125.00
SW¼, SE¼	40.0	180.00	1,125.00
property in NW¼ (Thomas property)	113.0	640.00	4,000.00
property in NW¼ (Debacker property)	11.0	50.00	312.50
1434	6.0	200.00	1,250.00
NE¼, SW¼	34.0	140.00	875.00
NW¼, SW¼	40.0	180.00	1,125.00
SE¼, SW¼	28.0	130.00	812.50
SE¼ SW¼	12.0	50.00	312.50
SW¼, SW¼	40.0	180.00	1,125.00
1429	7.17	150.00	937.50

ACTUAL AND ASSESSED LAND VALUES - 1946

Section 22

Legal Description or Tract Number	Acreage	Assessed Value	Actual Value
NE¼, NW¼	30.0	$200.00	$1,250.00
NW¼, NW¼	24.0	180.00	1,125.00
SE¼, NW¼	25.0	180.00	1,125.00
SW¼, NW¼	40.0	270.00	1,687.00
NE¼, SW¼	40.0	no tax	----
NW¼, SW¼	45.3	310.00	1,937.00
SE¼, SW¼	40.0	no tax	-----
SW¼, SW¼	40.0	no tax	----
NE¼, NE¼	40.0	270.00	1,687.50
NW¼, NE¼	40.0	270.00	1,687.50
SE¼, NE¼	40.0	no tax	----
SW¼, NE¼	23.0+	290.00	1,812.50
SE¼	160.0	no tax	----

APPENDIX C

ACTUAL AND ASSESSED LAND VALUES - 1970

Section 21

Legal Description or Tract Number	Acreage	Assessed Value	Actual Value
property in NW¼ (Thomas property)	66.75	$ 2,820.00	$ 9,298.00
property in SW¼ (Rudd property)	151.89	1,570.00	5,181.00
property in NE¼ (Rudd property)	112.50	1,330.00	4,379.00
property in SE¼ (Rudd property)	159.0	1,240.00	4,412.00
1421	0.14	270.00	891.00
1418-A	2.20	490.00	1,617.00
1421-A	0.20	270.00	891.00
1419	1.00	270.00	891.00
1422	4.16	1,320.00	4,356.00
1422-C	0.20	110.00	363.00
1423-A	0.60	270.00	891.00
1424	0.20	160.00	528.00
1427	0.25	120.00	396.00
1428	0.50	330.00	1,089.00
1428-A & 1431-A	0.30	270.00	891.00
1429	1.00	500.00	1,650.00
1429-A	1.08	330.00	1,089.00
1430-A	1.20	380.00	1,254.00
1430-B	9.01	880.00	2,904.00
1431	0.20	270.00	891.00
1432	4.20	490.00	1,617.00
1433	6.66	550.00	1,190.00
1433-A	0.60	270.00	891.00
1434	11.79	2,000.00	6,600.00
2036	0.80	770.00	2,541.00
2090	1.30	1,920.00	6,336.00
2090-A	0.70	no tax	---
2090-C	1.00	1,510.00	4,420.00
2514-A	3.00	15,630.00	51,579.00
2305, 2305-C & D	3.00	1,970.00	6,501.00

ACTUAL AND ASSESSED LAND VALUES - 1970

Section 21

(Contd.)

Legal Description or Tract Number	Acreage	Assessed Value	Actual Value
2305-A	1.00	$ 820.00	$ 2,706.00
2305-B	1.00	820.00	2,706.00
2305-E, F, & G	3.00	14,820.00	48,906.00
2409 and 2432	0.30	no tax	---
2514	1.70	1,320.00	4,356.00
2779	10.50	3,000.00	9,900.00
2779-A	1.50	880.00	2,904.00
2958	2.37	2,060.00	6,798.00
3117	1.003	820.00	2,706.00
3234	3.00	990.00	3,267.00
3447	7.40	2,500.00	8,250.00
3472	2.084	880.00	2,904.00
3548	5.00	1,100.00	3,630.00
4018	3.40	900.00	2,970.00
1413	1.00	no tax	---

Section 22

property in NW¼ (Rudd property)	119.0	$ 1,110.00	$ 3,663.00
property in NW¼ (Canal & Reservoir)	15.0	no tax	---
property in SW¼ (Rudd property)	35.79	400.00	1,320.00
property in SW¼ (Canal & Reservoir)	124.2	no tax	---
property in NE¼ (Debacker property)	103.0	920.00	6,660.00
property in NE¼ (Canal & Reservoir)	23.07	no tax	---
property in SE¼	121.00	no tax	---