

NEBRASKA NATURAL
RESOURCES COMMISSION

STATE WATER PLAN
PUBLICATION NUMBER 101A



Report on
THE FRAMEWORK STUDY

APPENDIX A

LAND INVENTORY

JUNE 1974



J. James Exon
Governor

*NEBRASKA'S
STATE WATER PLAN*

REPORT ON
THE FRAMEWORK STUDY

APPENDIX D
LAND INVENTORY

NEBRASKA NATURAL RESOURCES COMMISSION

JUNE, 1974

NEBRASKA NATURAL RESOURCES COMMISSION

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NEBRASKA'S STATE WATER PLAN

Nebraska Revised Statutes § 2-1507 (7) (Supp. 1967) directs the Nebraska Natural Resources Commission to "plan, develop, and encourage the implementing of a comprehensive program of resource development, conservation and utilization for the soil and water resources of this state in cooperation with other local, state and federal agencies and organizations."

Legislative Resolution 5, of the 1967 Legislature, (Reaffirmed by L.R. #72 -- 1969 Session) specifically directed the Nebraska Natural Resources Commission to "...prepare a comprehensive water and related land plan for the State of Nebraska, such framework plan to be completed no later than June 30, 1971, and to be known as the State Water Plan." In addition to an analysis and evaluation of the state's water and land resources, the Resolution directed that the State Water Plan include an examination of legal, social, and economic factors associated with resource development.

Nebraska's State Water Plan, as established by the Commission, will consist of the following four sections:

Section 1. The Framework Study - The framework study is based on reconnaissance type investigations and makes use of presently available planning data in formulation of the framework plan. Basic objectives of the study were to assess the present quantity, distribution, quality, and use of Nebraska's water and land resources and to provide a broad, flexible guide to the best uses of these resources to meet current and future needs.

Section 2. Basin Studies - This section will consist of studies of individual river basins. The studies will be made in the detail necessary to identify potential projects, estimate project costs and benefits, suggest the order of development, show the relationship of each project to the state's framework plan, and recommend local action to accelerate resource development.

Section 3. Status Summary - Significant water resource development projects which have been proposed for future development are described in the Status Summary of Potential Projects. It will be updated periodically to reflect new proposals and progress in resource planning. The Status Summary section of the State Water Plan will also include a report summarizing the present status of water resource development in the State.

Section 4. Special Recommendations - This section consists of recommendations for action by the Legislature, Governor, and various units of government to improve the conservation, development, management, and utilization of Nebraska's land and water resources. The recommendations will be prepared as the need for action becomes apparent and are to include a thorough study of the legal, social, and economic aspects of major problems of resource development.

THE FRAMEWORK STUDY

The Framework Study is the central feature of Nebraska's State Water Plan. Results of the study are presented in a main report and four appendices. The appendices generally present summations of basic data and miscellaneous supporting material for the main report.

Appendix A, "Land Inventory," is an inventory of the land resources of the State. It presents all available data pertinent to water resources development, including:

- (1) a summary of physical characteristics, and
- (2) an inventory of land capability, land use, and land ownership.

This appendix was printed in preliminary form in June, 1969.

A summary of the water resources of the State is included in Appendix B, "Inventory of Water Resources". It deals with the location, quantity, quality, availability, and present use of the state's ground and surface water. It also summarizes those climatic factors related to water resource development. Appendix B was printed in final form in June, 1971.

Appendix C, "Land and Water Resources Problems and Needs," is an inventory of present and anticipated future water requirements and water related problems of the State. All of the various uses and problems concerning the water resource are considered. It was printed in final form in September, 1971.

Appendix D, "Survey of Nebraska Water Law," is a summary of federal and state laws, compacts and court decrees which are important to water resource development in the State. It was printed in final form in June, 1971.

The main report on the Framework Study is based on information presented in the appendices and the sources given in them. It presents a generalized statewide reconnaissance of Nebraska's water and related land resources, problems and needs, and a general framework for development. It does not provide detailed evaluations or time schedules for specific projects but a flexible guide into which properly designed projects can be fitted. The report also presents recommendations for action required to insure the optimum development of Nebraska's water resources. The report was published in May, 1971.

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CHAPTER 1. INTRODUCTION AND SUMMARY

This appendix presents an inventory of Nebraska's land resources in support of the State Water Plan Framework Study report published in May 1971. Appendix A was published in preliminary form in June 1969 to provide information to planners during the Framework Study.

Purpose

The primary objectives of this report are to summarize the physical characteristics of Nebraska's land as they relate to potential water resource development and to inventory the land capability, land use, and land ownership. The preliminary publication was intended to provide as much data as was available to all participants in the Framework Study. As the study progressed, more information became available and needed data was revised, researched, or estimated to allow planning to proceed. Since the Report on the Framework Study was published, more information on Nebraska's land resources has become available, and this has been used to update the preliminary version of this appendix whenever appropriate. The information contained in this edition supports the framework report, except where noted, and it should prove useful in future planning as well, particularly the basin planning section of the State Water Plan.

Scope

The Framework Study was a comprehensive statewide study on a reconnaissance basis. The information in this report is also comprehensive and of reconnaissance level to provide an overall picture of the state and the 13 river basins which were the major subdivisions used in the Framework Study. Some of the information presented here is available only on a generalized basis. Some is available in much greater detail, but it has been summarized here to make presentation in a single volume possible.

Two separate geographical bases were used for the data presented in this report. The first is the hydrologic basins. The State was divided into 13 basins to maintain manageable-sized units for State Water Plan studies. The boundaries of these basins are shown in Figure 1.

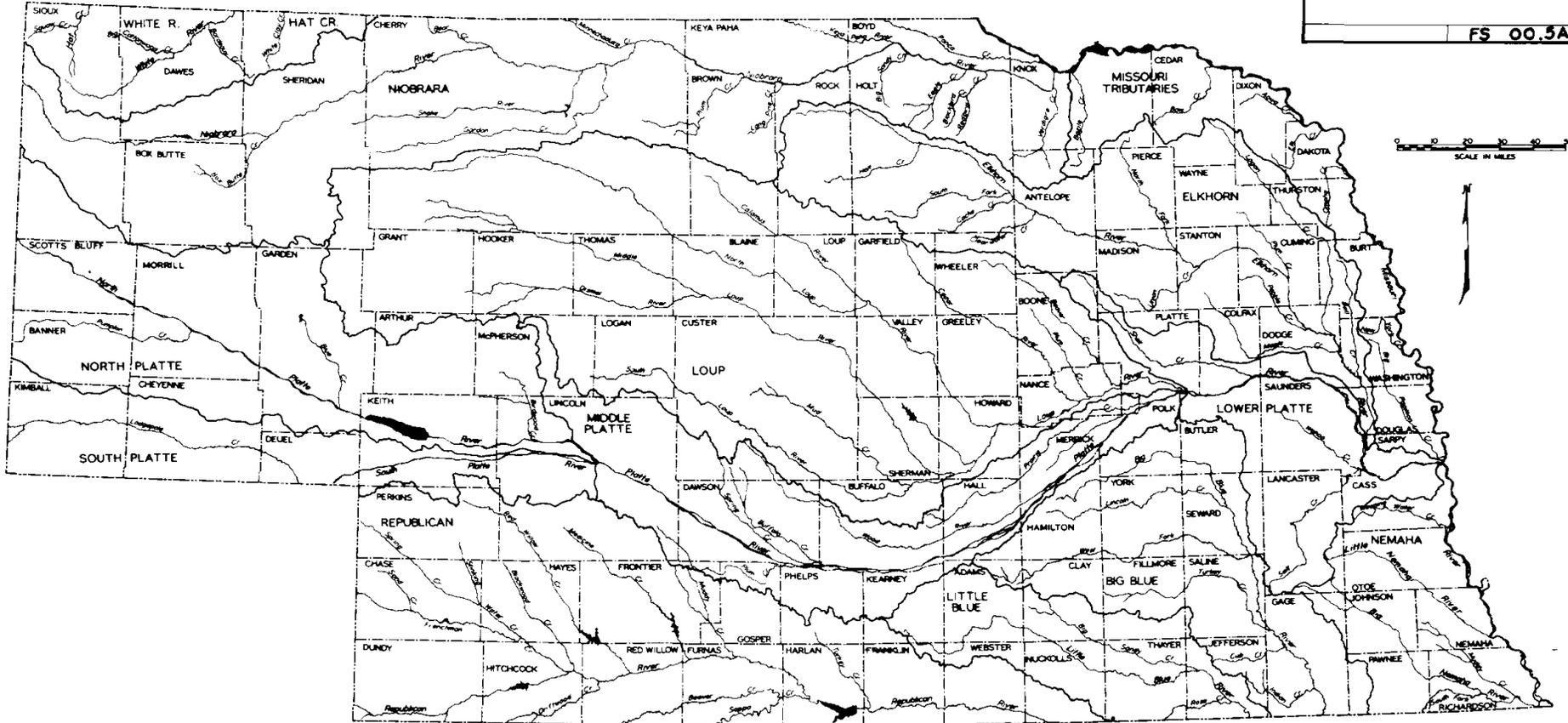
The second area designation was the "land resource area", frequently referred to as "LRA's." These are broad geographical areas which are similar in their physical characteristics. Since these areas are generally similar throughout, they were used as the geographical base for some of the agricultural land use and general soils capabilities information. Land resource areas are described in Chapter 2.

The primary concern of this report is the inventory of Nebraska's land base. While the majority of Nebraska's population is urban, agriculture utilizes about 95 percent of the total land area. Therefore,

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this volume deals extensively with the agricultural aspects of land use in Nebraska.

Some inconsistencies in data exist in this volume. This resulted from the use of data from many sources that did not use the same geographical bases, the same definitions of land uses and categories, or the same time period. In some instances, data was not available to make a complete inventory, and these have generally been noted in the text.

Acknowledgements

The major sources of data for the preliminary report were the 1958 Nebraska Conservation Needs Inventory, the preliminary 1966 Conservation Needs Inventory, the preliminary Appendix of the Land Resources Availability Work Group of the Missouri River Basin Interagency Committee, and file information made available by various state and federal agencies.

This has been updated with information primarily from the 1969 Conservation Needs Inventory, the State Comprehensive Outdoor Recreation Plan, and data made available by many state and federal agencies.

The Nebraska Natural Resources Commission gratefully acknowledges the help and advice received from government agencies, private organizations and individuals during the preparation of this publication.

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State agencies

Nebraska State Historical Society
Conservation and Survey Division, University of Nebraska
Nebraska Game and Parks Commission
State Office of Planning and Programming
State Library Commission

Summary

This appendix to the Report on the Framework Study is an inventory of the land resources of the State with emphasis on its relation to water resources. It presents, on a statewide basis, a compilation of available information on the following characteristics of the land resource:

- (1) physical characteristics
- (2) land capabilities
- (3) current land use
- (4) land ownership.

In this publication information is generally displayed either on a statewide basis or according to three different geographical and governmental subdivisions: river basins, land resource areas, and counties. The 13 river basins used were those defined in the Framework Study, and the land resource areas are those defined by the U.S. Department of Agriculture.

The agricultural, mineral, and environmental capabilities of the land are also summarized. The State has 47,168,000 acres, about 95.2 percent of the State's area, suitable for agricultural uses. Of this, about five percent is Class I land, and about 56 percent is in Classes I through IV, which are considered arable. Nearly all of the remaining 44 percent is capable of being used for range, pasture, or other agricultural purposes.

Soil resource groups contain soils with similar characteristics, and production capability is fairly uniform throughout each group. The comparative productivity of the 56 groups in the State is tabulated in Chapter 3.

The agricultural lands of the State have varying capabilities for sustained production under irrigation. The irrigation suitability of all agricultural lands has been rated as Category A, B, C, or D in descending order of suitability. In Nebraska, there are about 17,600,000 acres of Category A and B lands, about 7,300,000 acres of Category C, which are marginally suitable, and over 22 million acres of Category D lands. In 1970, about 3,730,000 acres were developed for irrigation in the State.

Six industrial minerals -- limestone, pumice, clays, sand and gravel, oil, and natural gas -- are currently produced in Nebraska. Non-metallic minerals, such as sand and gravel, limestone, and clays have the greatest potential for future development.

Environmental features of the land resource which can be measured objectively include primarily those which are unique, rare, or unusual, such as unusual scenic or geologic areas, archeological sites, and historical places. Available information on such rare features is summarized in Chapter 3. Also included is an inventory of the land cover according to habitat type. Nebraska has a rich heritage of history dating from prehistoric times through the space age, and there are many archeological and historical sites in the State.

Agriculture utilizes approximately 95 percent of Nebraska's total area. The largest type of agricultural land use is pasture and range -- slightly over one-half of the State. Cropland comprises just over 40 percent of the total area, and the remaining land in agricultural use

is used for forest and woodland and other agricultural uses. Transportation uses occupy 964,000 acres, or 1.9 percent of the total land area of the State. Recreation, fish and wildlife, incorporated communities, built-up and other areas, mineral areas, and military uses occupy only 1.5 percent of the State's total area. The water area of the State amounts to approximately 583,000 acres, or about one percent of the total.

Remote sensing from satellites represents a new technique for continuously monitoring and inventorying land cover and use. A discussion of procedures and classifications used in producing a land use map produced from satellite images is included in Chapter 4. A copy of a Level 1 land use map is included in the map section at the back of this publication.

About 94 percent of the land area of the State, 46,000,000 acres, is in private ownership. Almost 44,700,000 acres are in farms selling over \$2,500 worth of agricultural products. State and Federal agencies own the great preponderance of the public lands. Of the total federal ownership of 716,025 acres, most is included in National Forests, National Grasslands, and Wildlife Refuges in the northern and western parts of the State. The largest acreage of state-owned land is that under the administration of the Board of Educational Lands and Funds.

CHAPTER 2. PHYSICAL DATA

The State of Nebraska has a total area of approximately 49,500,000 acres.^{1/} The land area is 48,952,000 acres, and the water area is 583,000 acres.

Geographical Bases

The State has been subdivided into many different areas for political, resource management, and statistical purposes, among others. In this chapter, the three primary bases used for disaggregating data in this appendix, river basins, counties, and land resource areas, are presented and defined.

River Basins

The State was divided into 13 river basins for the Framework Study. Whenever possible, a major river or system of rivers such as the Republican River or Loup Rivers was used as a single entity to maintain the integrity of the drainage basin, provided the basin was of manageable size for planning purposes. In the case of the Platte River, it was necessary to divide the basin into several sections to retain manageability. In other areas, such as the northwestern and southeastern corners of the State, it was necessary to group several small basins together.

Figure 1 shows the boundaries and Table 1 lists the approximate total area of these basins.

Counties

Nebraska has 93 counties, shown in Figure 1, ranging in area from 161,040 acres in Sarpy County to 3,847,980 acres in Cherry County. Table 2 lists the land areas, small water areas, and large water areas for each of the 93 counties. Small water areas are lakes and ponds less than 40 acres and streams and canals under one-eighth mile wide, and large water areas are defined as lakes greater than 40 acres and streams and canals one-eighth mile or more in width.

Land Resource Areas

The U.S. Department of Agriculture has divided the entire nation into geographical areas with similar physical and agricultural characteristics. Nebraska lies within 13 land resource areas (LRA's) which have

^{1/} Nebraska Conservation Needs Inventory, Nebraska Conservation Needs Committee, Department of Agriculture, 1969.

TABLE 1
TOTAL AREA OF RIVER BASINS IN NEBRASKA

River Basins ^{a/}	Acres
White River - Hat Creek Basin	1,360,000
Niobrara River Basin	7,595,000
Missouri Tributaries River Basin	1,890,000
North Platte River Basin	4,570,000
South Platte River Basin	2,015,000
Middle Platte River Basin	3,285,000
Loup River Basin	9,750,000
Elkhorn River Basin	4,480,000
Lower Platte River Basin	1,990,000
Republican River Basin	6,175,000
Little Blue River Basin	1,695,000
Big Blue River Basin	2,925,000
Nemaha River Basin	<u>1,770,000</u>
Total	49,500,000

^{a/} River basin areas were planimetered by the Conservation and Survey Division and computed to nearest square mile. The area in acres (rounded to 5,000) was computed from square miles.

TABLE 2
LAND AND WATER AREA OF NEBRASKA

County	Land Area ^{a/}	Small Water ^{b/} Areas	Large Water ^{c/} Areas	Total Land and Water Areas
		(acres)		
Adams	359,680	700	-	360,380
Antelope	545,920	800	-	546,720
Arthur	450,560	3,900	5,056	459,516
Banner	472,320	100	-	472,420
Blaine	455,040	5,100	896	461,036
Boone	437,120	1,200	-	438,320
Box Butte	681,600	400	1,152	683,152
Boyd	344,320	700	6,720	351,740
Brown	778,240	2,500	4,864	785,604
Buffalo	607,360	1,100	16,702	625,162
Burt	309,120	-	7,232	316,352
Butler	372,480	800	-	373,280
Cass	355,200	2,000	5,696	362,896
Cedar	474,880	1,600	4,544	481,024
Chase	569,600	2,500	2,432	574,532
Cherry	3,818,240	9,900	26,944	3,855,084
Cheyenne	759,040	500	128	759,668
Clay	364,800	300	-	365,100
Colfax	259,840	100	5,760	265,700
Cuming	365,440	500	-	365,940
Custer	1,637,120	-	2,816	1,639,936
Dakota	163,200	300	6,144	169,644
Dawes	887,040	1,200	2,368	890,608
Dawson	624,000	1,600	24,064	649,664
Deuel	279,040	100	2,240	281,380
Dixon	304,000	500	5,760	310,260
Dodge	337,920	400	6,336	344,656
Douglas	214,400	100	4,032	218,532
Dundy	589,440	100	320	589,860
Fillmore	369,280	2,100	-	371,380
Franklin	369,920	600	-	370,520
Frontier	615,680	200	3,479 ^{d/}	619,359
Furnas	462,080	500	-	462,580
Gage	549,120	1,300	149 ^{d/}	550,569
Garden	1,073,920	6,300	32,192	1,112,412
Garfield	364,160	1,000	640	365,800
Gosper	296,960	100	1,344	298,404
Grant	488,960	11,300	10,240	510,500
Greeley	364,800	1,300	-	366,100
Hall	343,680	2,000	9,920	355,600
Hamilton	343,680	300	2,496 ^{d/}	346,476
Harlan	355,840	800	13,240 ^{d/}	369,880
Hayes	455,040	200	128	455,368
Hitchcock	455,680	100	6,144	461,924
Holt	1,539,200	3,400	7,616	1,550,216
Hooker	462,080	500	512	463,092
Howard	360,960	-	7,232	368,192
Jefferson	369,280	300	-	369,580
Johnson	241,280	1,000	-	242,280
Kearney	327,680	-	-	327,680
Keith	660,480	300	45,248	706,028

TABLE 2 (Page 2)

County	Land Area ^{a/}	Small Water ^{b/}	Large Water ^{c/}	Total Land and Water Areas
	(acres)			
Keya Paha	491,520	200	3,776	495,496
Kimball	609,920	200	448	610,568
Knox	708,480	1,000	21,184 ^{d/}	730,664
Lancaster	540,800	1,300	4,320 ^{d/}	546,420
Lincoln	1,614,080	800	31,552	1,646,432
Logan	364,800	200	192	365,192
Loup	367,360	800	-	368,160
McPherson	547,840	700	2,496	551,036
Madison	366,080	700	-	366,780
Merrick	307,200	-	11,456	318,656
Morrill	897,280	2,200	15,872	915,352
Nance	280,960	700	5,760	287,420
Nemaha	256,000	400	3,264	259,664
Nuckolls	370,560	1,600	-	372,160
Otoe	396,160	2,100	2,304 ^{d/}	400,564
Pawnee	277,120	200	147 ^{d/}	277,467
Perkins	566,400	-	320	566,720
Phelps	348,160	-	768	348,928
Pierce	366,720	600	-	367,320
Platte	426,880	-	12,736	439,616
Polk	276,480	300	1,216	277,996
Red Willow	439,040	800	-	439,840
Richardson	352,000	1,700	2,240	355,940
Rock	645,760	2,500	4,864	653,124
Saline	368,000	1,400	640	370,040
Sarpy	152,960	400	6,016	159,376
Saunders	485,760	2,700	3,968	492,428
Scotts Bluff	464,640	2,600	12,352	479,592
Seward	365,440	1,400	448	367,288
Sheridan	1,575,680	11,200	12,416	1,599,296
Sherman	362,880	3,200	2,624	368,704
Sioux	1,320,320	1,100	128	1,321,548
Stanton	275,840	400	-	276,240
Thayer	369,280	1,100	-	370,380
Thomas	458,240	1,700	-	459,940
Thurston	248,320	-	3,520	251,840
Valley	364,160	2,300	2,240	368,700
Washington	247,020	500	5,120	252,640
Wayne	283,520	-	-	283,520
Webster	368,000	2,200	-	370,200
Wheeler	368,640	500	192	369,332
York	369,280	1,300	-	370,580
TOTAL	48,952,300	125,600	457,365	49,535,265

a/ Source: Nebraska Statistical Handbook 1972, compiled and published by Nebr. Dept. of Economic Development.

b/ Source: Nebraska Conservation Needs Inventory, Nebraska Conservation Needs Committee, Department of Agriculture, 1969. Small water areas are lakes and ponds less than 40 acres and streams and canals under one-eighth mile wide.

c/ Source: Area Measurement Reports - Areas of Nebraska: 1960, U.S. Bureau of the Census, 1967. Large water areas are lakes greater than 40 acres and streams and canals one-eighth mile or more in width.

d/ Adjusted for water areas added after 1960.

similar soil, climatic, geologic, vegetative, and topographic features, as shown in Figure 2.

The following is a brief discussion of the topography, climate, water resources, soils, and land uses of each LRA.^{2/} Soil terms are based upon the 1938 classification system while terms in parentheses are from the most recent soil classification system.

LRA 102. The Loess, Till, and Sandy Prairies covers approximately 5,792,000 acres in northeastern Nebraska. The average annual precipitation and frost free period within this area are 22 to 28 inches and 145 to 165 days, respectively. The topography is formed by a nearly level to rolling glacial drift plain which is mantled by nearly uniform loess deposits. The slopes are usually long, smooth, and gentle, but they are steeper and hillier along some of the larger stream valleys. The elevation within this LRA ranges between 1,200 and 2,000 feet above mean sea level.

The principal source of water for domestic and livestock needs is shallow wells in glacial deposits. Some water for livestock needs is stored in small ponds and reservoirs. Chernozem (Udic Haplustoll) soils are the dominant soils in this area with Regosol (Ustorthent) soils occurring on the more sloping topography. Alluvial (Cumulic Haplustoll) soils occur on the flood plain areas. Nearly all the land is used as farmland with 75 percent croplands, 20 percent pastures, and two percent woodlands. Major crops are corn, wheat, soybeans, and other small grains.

LRA 106. The Nebraska and Kansas Loess-Drift Hills occupies approximately 3,091,200 acres in southeastern Nebraska. The average annual precipitation and frost free period within this LRA are 26 to 34 inches and 160 to 175 days, respectively. This area is a dissected glacial drift plain covered in most places by loess deposits. Ridge-tops are broad and smooth, and slopes are undulating to rolling. Stream valleys are bordered by relatively narrow bands of hilly to steep slopes. The valley floors are narrow except along a few of the larger Missouri River tributaries. The elevation in this LRA varies between 1,000 and 1,500 feet.

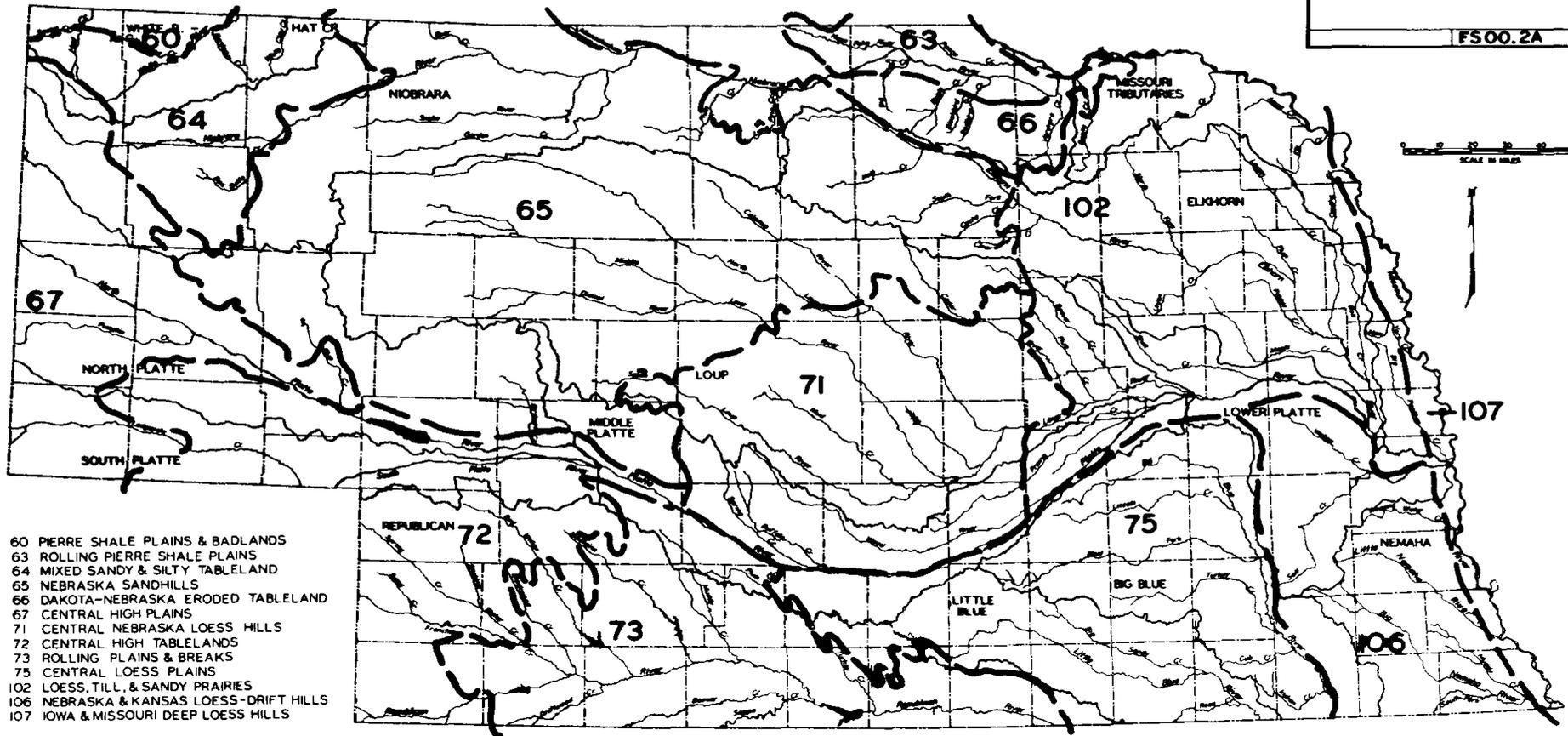
Shallow glacial drift wells supply water for domestic and livestock needs on most farms. There are some deep wells, small ponds, and reservoirs that provide livestock water. The rainfall is generally adequate for crops, but yields are reduced during dry years. The major soils are Brunizem (Typic Argiudoll or Typic Hapludoll) with Regosol (Typic Udorthent) soils on the steep slopes and Humic Gley (Aquoll) soils on the narrow bottom lands along the streams. The land is used primarily for farmland. Approximately 80 percent of the area is cropland, and 15 percent is used for pastures. Wheat is an important cash crop, but corn and feed grains occupy more acres.

^{2/} Land Resource Regions And Major Land Resource Areas Of The United States, U.S. Department of Agriculture, Agriculture Handbook 296, Washington, D.C., 1972.

MAJOR LAND RESOURCE AREAS IN NEBRASKA

State of Nebraska
NATURAL RESOURCES COMMISSION
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- 60 PIERRE SHALE PLAINS & BADLANDS
- 63 ROLLING PIERRE SHALE PLAINS
- 64 MIXED SANDY & SILTY TABLELAND
- 65 NEBRASKA SANDHILLS
- 66 DAKOTA-NEBRASKA ERODED TABLELAND
- 67 CENTRAL HIGH PLAINS
- 71 CENTRAL NEBRASKA LOESS HILLS
- 72 CENTRAL HIGH TABLELANDS
- 73 ROLLING PLAINS & BREAKS
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- 102 LOESS, TILL, & SANDY PRAIRIES
- 106 NEBRASKA & KANSAS LOESS-DRIFT HILLS
- 107 IOWA & MISSOURI DEEP LOESS HILLS

— LAND RESOURCE AREA BOUNDARY

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Fig. 2

LRA 107. The Iowa and Missouri Deep Loess Hills covers about 601,600 acres of Nebraska along the Missouri River. The average annual precipitation and frost free period within this area range from 25 to 34 inches and 150 to 175 days, respectively. Much of the loess-mantled landscape is dissected by small deeply entrenched tributaries of the Missouri River. The Missouri River flood plain is relatively narrow along portions of Nebraska's eastern boundary except for wider areas in Burt, Dakota, and Washington Counties. The elevation within this LRA varies from approximately 900 to 1,500 feet.

Groundwater is abundant in the deep outwash deposits within the valleys, but it is less plentiful in the uplands. Other important water resources are moderate rainfall and abundant streamflow. The major soils are Brunizem (Typic Hapludoll), which were developed from the moderate to very deep loess deposits on the gentle to rolling slopes. Regosol (Typic Udorthent), Humic Gley (Aquoll), and Alluvial (Cumulic Hapludoll) soils are also found in this area. Land use in this LRA is primarily farming. Approximately 80 percent of the area is used as croplands, and 15 percent is used for pastures. The principal crops are corn, hay, soybeans, and other feed crops.

LRA 71. The Central Nebraska Loess Hills covers 4,691,200 acres in Nebraska. The average annual precipitation and frost free period range from 20 to 24 inches and 140 to 155 days, respectively. The landscape in this area consists of undulating to gently rolling loess-mantled ridgetops, which are separated by steep slopes bordering drainageways. The large streams have wide level flood plains and terraces. The elevation within this LRA varies between 1,500 and 2,500 feet, and the relief ranges up to as much as 100 to 200 feet.

Most of the area receives low and erratic amounts of rainfall, but groundwater is both abundant and high in quality. The groundwater resources meet domestic and livestock needs, and they are used locally for irrigation along with surface waters from some of the larger rivers. The major soils in this LRA are Chernozem (Typic Argiustoll), which occur on the gentle slopes of the uplands and terraces. Regosol (Typic Ustorthent) and Solonetz (Natrustoll) soils are found on the steep slopes and the nearly level areas on the terraces, respectively. Nearly all the land is in farms and ranches; 40 percent of it is dryfarmed and 50 percent is grazed. Winter wheat is the major cash crop, but corn, grain sorghum, other feed grains, and hay occupy large areas. Approximately 5 to 10 percent of this area is irrigated, and corn and alfalfa are the principal irrigated crops.

LRA 72. The Central High Tableland covers 4,384,000 acres in southwestern Nebraska. The land surface of this smooth loess-mantled tableland has undulating to gently rolling slopes. Major valleys are bordered by steep slopes, and the Republican and Platte Rivers have wide level flood plains and terraces. The elevation of this area ranges between 3,000 and 4,500 feet. The average annual precipitation and frost free periods are 16 to 20 inches and 140 to 155 days, respectively.

Water is obtained from the Republican and Platte Rivers to irrigate lands along these valleys to supplement the low and erratic rainfall. In most of this LRA, groundwater for domestic and livestock needs is adequate and of good quality. Chestnut (Aridic Haplustoll, Pachic Haplustoll, and Aridic Argiustoll) soils occupy about one-half of the area with Regosol (Ustic Torriorthent) and Lithosol (Typic Ustorthent) soils on the steep slopes. Nearly all the land is used as farmland and rangeland. This area is a major dry farming area, but irrigation of croplands occurs along the major rivers. The major cash crop is wheat.

LRA 73. The Rolling Plains and Breaks covers 3,628,800 acres in south-central Nebraska. The landscape of this area consists of dissected plains which have broad undulating to rolling ridgetops and hilly to steeply sloping valley sides. The Republican River and its larger tributaries have formed broad flood plains and terraces. The elevation of this area ranges between 2,500 and 3,200 feet. The average annual precipitation and frost free period vary between 18 to 24 inches and 150 to 160 days, respectively.

The Republican and Platte Rivers provide water for irrigation in parts of the area to supplement the rainfall. Groundwater is also used for irrigation in some places. Most of the area is covered by Chernozem (Typic Argiustoll) soils, which have formed in the moderate to deep loess materials. Regosol (Typic Ustorthent) soils occur on the steep slopes bordering many valleys, and Alluvial (Cumulic Haplustoll) soils occur on the flood plains of the larger streams. The land use in this LRA is farming, and the land is about equally divided between croplands and pastures. Winter wheat, sorghum, and corn are important crops.

LRA 75. The Central Loess Plain occupies 4,825,600 acres in south-central and southeastern Nebraska. The topography is a nearly level to gently rolling plain, which is mantled with loess deposits. Stream valleys are mostly narrow and are not deeply incised. The elevation ranges from 1,500 to 2,200 feet. Grain crops and pastures depend upon a moderate but somewhat erratic rainfall. The average annual precipitation and frost free period range between 21 to 30 inches and 155 to 175 days, respectively.

The Platte River provides some water for irrigation. Groundwater that is hard but otherwise of good quality is abundant in the sands and gravels underlying much of the area. The soils occurring in this LRA are as follows: Chernozem (Typic Argiustoll) on the rolling slopes of the loess-mantled uplands and terraces, Planosol (Typic Argialboll) in depressions, Regosol (Typic Ustorthent) on the strongly sloping valley sides, and Alluvial (Cumulic Haplustoll) on the flood plains. The major land use is farming with approximately 75 percent used as croplands and 15 percent used for pastures. Over 20 percent of the cropland is irrigated, and corn is a major irrigated and dryland crop. Other important cash crops are winter wheat and sorghum.

LRA 60. The Pierre Shale Plains and Badlands occupies 332,800 acres in the northwestern corner of Nebraska. This LRA is a dissected

shale plain that has undulating to gently rolling narrow divides. Local relief ranges up to a few hundred feet, and the elevation varies from about 3,800 to 4,000 feet. The average annual precipitation and frost free period are 14 to 16 inches and 125 days, respectively.

The low rainfall and scarcity and poor quality of the groundwater limit agricultural practices. This LRA contains a low percentage of high quality soils. The major soils are Chestnut (Ustertic Camborthid) on the gentle slopes and Lithosol (Lithic Ustorthent) on the steeper slopes. Most of the land is in ranches, and nearly all of the area is grazed. Wheat and alfalfa are grown in very limited amounts.

LRA 63. The Rolling Pierre Shale Plains covers 940,800 acres in northeastern Nebraska. The dissected, loess-mantled, shale and clay plains of this area have undulating and relatively narrow ridgetops, steep side slopes, and steep-walled valleys, which have narrow flood plains. Local relief ranges from a few feet to 200 feet or more while the elevation of this LRA varies from 1,400 to 2,000 feet. The average annual precipitation and frost free period are 20 to 23 inches and 145 to 150 days, respectively.

This area receives relatively low and erratic rainfall, and surface water supplies fluctuate widely with the season. Groundwater supplies are scarce and of poor quality. Soils in this LRA are primarily Chestnut (Aridic Haplustoll), but Chernozem (Typic Haplustoll) and Lithosol (Vertic Haplustoll) soils occur on the wetter sites and slopes, respectively. The land use in this area is mostly farming and ranching. Approximately 60 percent of the area is grazed, and 33 percent is dryfarmed. Feed and forage for livestock are important crops.

LRA 64. The Mixed Sandy and Silty Tableland occupies 2,035,200 acres in northwestern Nebraska. This area is a gently sloping tableland which is dissected by narrow steep-walled valleys. There are rolling to hilly sand dune structures in some areas. The elevation in this LRA ranges from 3,600 to 5,000 feet. The average annual precipitation and frost free period are 15 to 18 inches and 125 to 135 days, respectively.

The low precipitation and short growing season coupled with the scarcity and poor quality of the groundwater in most of the LRA limit the agricultural practices. Also, most of the good quality soils are concentrated in Box Butte County and the Mirage Flats area. The dominant soils in this LRA are Chestnut (Typic Argiustoll and Typic Haplustoll), which are formed from silty or fine sandy materials. Lithosol (Lithic Ustorthent), Regosol (Typic Ustorthent), and Alluvial (Ustic Torrifluent) soils also occur. Farms and ranches occupy most of the land. Approximately 50 percent of the land is grazed and 33 percent is farmed. Important crops are livestock feeds and wheat.

LRA 65. The Nebraska Sandhills covers 12,358,400 acres in Nebraska. The landscape consists of stabilized old sand dunes having

rolling to steep irregular slopes with many scattered small depressions. There are many ponds, small lakes, and marshes in the deeper depressions, but there are few streams. Local relief ranges from a few feet to about 300 feet, and the elevation of this LRA varies from 2,000 to 4,000 feet. The average annual precipitation and frost free periods are 17 to 23 inches and 120 to 150 days, respectively.

Rainfall is usually sufficient for the rangeland. The many small lakes and ponds provide water for livestock needs, and groundwater, which is used for domestic and livestock needs, is abundant and of good quality. Nearly one-third of the area consists of stabilized dunes that have little evidence of soil formation except for a slight darkening of the upper 2 or 3 inches. Much of the remaining area contains Regosol (Typic Ustipsamment) soils that have a thicker and darker surface layer. Humic Gley (Typic Haplaquoll) soils are in depressions among the dunes and along flood plains of larger streams. There are also Regosol soils in wet and dry meadows (Entic Haplustoll and Aquic Haplustoll, respectively). The major land use is large ranches, and most of the land is grazed by cattle. Small areas along the streams are used to grow hay or other feed crops.

LRA 66. The Dakota-Nebraska Eroded Tableland covers about 1,305,600 acres in north-central and northeastern Nebraska. The area consists of primarily rolling to undulating uplands, which are underlain by calcareous sandstone. Steep slopes border the valleys of most streams. Local relief varies from a few feet to 100 feet or more, and the elevation ranges from 1,800 to 2,400 feet. The average annual precipitation and frost free period vary from 18 to 24 inches and from 145 to 150 days, respectively.

Croplands and rangelands depend mainly upon rainfall for moisture, even though loess sands yield large amounts of groundwater and high water tables supply sub-irrigated waters. Sandy and silty Chernozem (Typic Argiustoll) soils occupy most of the gentle slopes, and clayey Chernozem (Typic Haplustoll) soils occupy the rolling hills. Regosol (Typic Ustipsamment) soils occur on the more sloping sandy areas. Nearly all of the land is in farms and ranches. Approximately 75 percent of the area is rangeland, and 25 percent is cropland. Important crops are corn, oats, and alfalfa.

LRA 67. The Central High Plains occupies 3,174,400 acres in western Nebraska. The landscape is a moderately dissected undulating to rolling plain. Steep slopes occur along the valleys of the larger streams. Dunes bordering some of the valleys have rolling to hilly irregular topography. Local relief varies from a few feet to 100 or 200 feet, and the elevation ranges from 4,200 to 5,200 feet. The average annual precipitation and frost free period are approximately 14 to 17 inches and 125 to 140 days, respectively.

Rangelands and croplands depend upon the low and erratic rainfall for water. Sands and gravels in much of the area yield adequate supplies of groundwater for livestock and domestic uses. Where shale is near the surface, the groundwater is scarce and usually of poor

quality. Irrigation waters are provided mostly from larger rivers and a few wells.

A variety of soils are found in this LRA. Chestnut (Aridic Haplustoll and Aridic Argiustoll) soils are dominant on smooth slopes where moisture supplies are more favorable. Lithosol (Lithic Ustorthent) soils are found on steep slopes bordering stream valleys and along edges of mesas. Regosol (Typic Ustorthent) soils are formed from deep sands and silts with a hilly to steep topography, and Alluvial (Ustic Torrifluent) soils occur along the narrow flood plains of the larger streams. Nearly all the land is used for farming and ranching. Approximately 60 percent of the area is grazed, 25 percent is dryfarmed, and 10 percent is irrigated. Wheat is the major crop while corn, alfalfa, sugar beets, and dry beans are major irrigated crops.

Topographic Regions

Figure 3 delineates the topographic areas in Nebraska. The different areas which compose this map are the valleys, valley side slopes, plains, dissected plains, sandhills, rolling hills, bluffs and escarpments, and large reservoirs.

The valleys are flat lands along the major streams. Materials found in the valleys are stream-deposited silt, clay, sand, and gravel. Valley side slopes are moderately sloping lands which occur between the escarpments and the major stream valleys in western Nebraska. These areas contain mostly siltstone bedrock covered by a few feet to a few tens of feet of sand, gravel, or silt.

The plains are flat-lying lands which lie above the valleys. Sandstone or stream-deposited silt, clay, sand, and gravel overlain by wind-deposited silt (loess) occur on the plains. The dissected plains are hilly lands with moderate to steep slopes, sharp ridge crests, and remnants of the old, nearly level plains.

The sandhills are hilly lands composed of low to high dunes of sand stabilized by a grass cover. The sand dunes mantle sandstone and stream-deposited silt, sand, and gravel.

The rolling hills are hilly lands with moderate to steep slopes and rounded ridge crests. In eastern Nebraska, the rolling hills are primarily till that has been eroded and mantled by loess, and in northwestern Nebraska the hills are eroded clay and clay-shale beds.

The bluffs and escarpments are rugged lands with very steep and irregular slopes. Bedrock materials, such as sandstone, shale, and limestone, are exposed in many places in these areas.

Large reservoirs, which were constructed for purposes such as water storage for irrigation, generation of electricity, flood control, or recreation, are also delineated on this map.

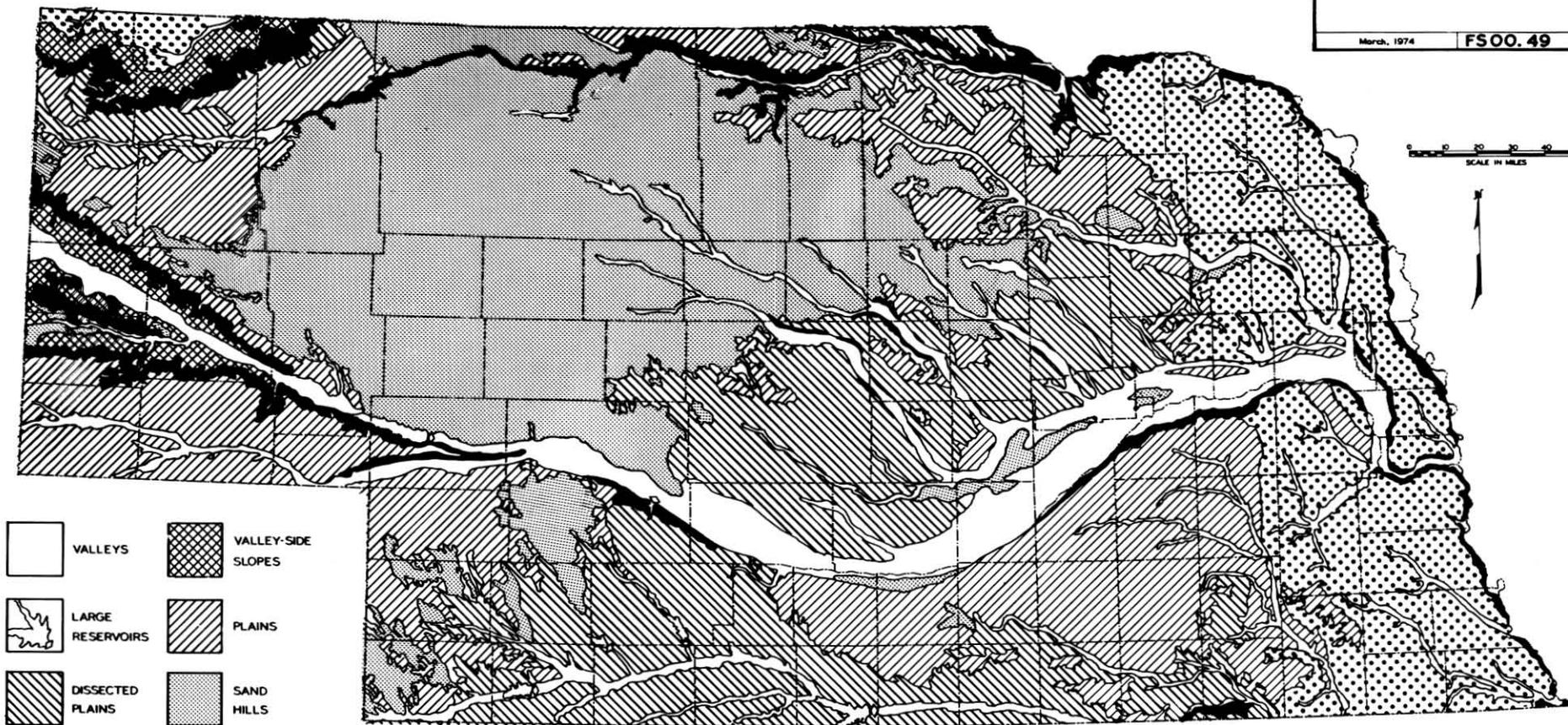
TOPOGRAPHIC REGIONS

State of Nebraska
NATURAL RESOURCES COMMISSION
Planning Division

March, 1974

FS00.49

SCALE IN MILES



- | | |
|------------------|-----------------------|
| VALLEYS | VALLEY-SIDE SLOPES |
| LARGE RESERVOIRS | PLAINS |
| DISSECTED PLAINS | SAND HILLS |
| ROLLING HILLS | BLUFFS AND ESCARPMENT |

SOURCE: CONSERVATION & SURVEY DIVISION, UNIVERSITY OF NEBRASKA-LINCOLN

Most of the topographic regions do not coincide very closely with the land resource areas. However, there are two notable exceptions where the topographic region and the LRA match -- the sandhills topographic region and LRA 65 (Nebraska Sandhills) and the rolling hills topographic region in northwestern Nebraska and LRA 60 (Pierre Shale Plains and Badlands).

CHAPTER 3. LAND CAPABILITIES

The purpose of this chapter is to inventory the capabilities of the land. Emphasis has been placed upon agricultural, mineral, and environmental capabilities that exist in Nebraska.

Agricultural Capability

Agricultural capabilities in this publication are classified under two systems, land capabilities and soil resource groups (SRG), which are related through the common use of land capability units. The land capability classification system contains three major levels: capability units, capability subclasses, and capability classes. Capability units, which are the lowest category, contain groupings of soils that have similar responses to systems of management of common cultivated crops and pasture plants. Capability subclasses are groupings of capability units having similar kinds of limitations or hazards; and capability classes, the broadest category in this classification system, combine similar capability subclasses. The SRG classification is a grouping of land capability units or soils that have similar cropping patterns, yield characteristics, responses to fertilizer, management, and land treatment measures.

Land Capability Classification

Capability Classes. The land capability classification system, which was developed by the Soil Conservation Service^{3/}, places soils in eight general capability classes which are designated as Roman Numerals I through VIII. The risks of soil damage or limitations in use become increasingly greater from Class I to Class VIII. Under good management, soils in the first four classes are capable of producing adapted plants and the common cultivated field crops and pasture plants. Soils in Classes V, VI, and VII are better suited to permanent vegetation rather than to cultivated crops. Soils in Class VIII do not return on-site benefits for inputs of management for crops, grasses, or trees.

Class I soils contain few limitations that restrict their use. Soils in this class are suited to a wide range of plants and may be safely used for cultivated crops, pasture, range, woodland, or wildlife food and cover. These soils are nearly level and erosion hazards from both wind and water are low.

Class II soils have some limitations that reduce the choice of plants or require moderate conservation practices. These soils may be used for cultivated crops, pasture, range, woodland, or wildlife food and cover. Soil limitations include the effects of any of the following:

^{3/} Land-Capability Classification, U.S. Department of Agriculture, Agriculture Handbook No. 210, Washington, D.C., 1961.

gentle slopes, moderate susceptibility to wind or water erosion, less than ideal soil depth, somewhat unfavorable soil structure and workability, slight to moderate salinity, occasional damaging overflow, wetness correctable by drainage, and slight climatic limitations on soil use and management.

Class III soils have severe limitations that reduce the choice of plants and/or require special conservation practices. This class has more restrictions than those in Class II, and for cultivated crops the conservation practices are often more difficult to apply. These soils may be used for cultivated crops, pasture, woodland, range, or wildlife food and cover. Soil limitations may result from the effects of one or more of the following: moderately steep slopes, high potential for wind or water erosion or severe adverse effects of past erosion, frequent overflow with crop damage, very slow permeability of subsoil, wetness or some persistent waterlogging after drainage, shallow depths to bed-rock or materials that limit the rooting zone and water storage, low moisture-holding capacity, low fertility not easily corrected, moderate salinity, or moderate climatic limitations.

Class IV soils have very severe limitations that restrict the choice of plants, require very careful management, or both. These soils have more restrictions in their use than those of Class III; however, they may still be used for cultivated crops, pasture, woodland, range, or wildlife food and cover. When these soils are cultivated, more careful management is required, and conservation practices are more difficult to apply and maintain. Soil limitations may be caused by one or more of the following: steep slopes, severe potential for water or wind erosion, severe effects of past erosion, shallow soils, low moisture-holding capacity, frequent overflows accompanied by severe crop damage, excessive wetness with continuing hazard of waterlogging after drainage, severe salinity, or moderately adverse climate.

Class V soils have little or no erosion hazard but have other limitations which are impractical to remove that limit their use primarily to pasture, range, woodland, or wildlife food and cover. Examples of soils in this class are the following: bottom land soils which are subject to frequent overflow that prevents the normal production of cultivated crops, nearly level soils with a short growing season that prevents normal production of crops, level or nearly level stony or rocky soils, and ponded areas where drainage for crops is not feasible but where soils are suitable for grasses or trees.

Class VI soils have severe limitations that make them generally unsuited to cultivation and restrict their use largely to range, woodlands, or wildlife food and cover. These soils have at least one of the following permanent limitations: steep slope, severe erosion hazard, effects of past erosion, stoniness, shallow rooting zone, excessive wetness or overflow, low moisture capacity, salinity, or severe climate. Physical conditions of these soils are such that it is practical to apply range or pasture improvements, if needed, such as seeding, liming, fertilizing, and water control.

Class VII soils have very severe limitations that make them unsuited to cultivation and that restrict their use largely to rangeland, woodland, or wildlife. The physical conditions of these soils are such that it is impractical to apply the pasture and range improvements that are possible for Class VI soils. Soil restrictions for this class are more severe than those in Class VI because of one or more of the following permanent limitations: very steep slopes, erosion, shallow soil, stones, wet soil, salts, and unfavorable climate.

Class VIII soils and landforms have limitations that preclude their use for commercial plant production and restrict their use to recreation, wildlife, water supply, or aesthetic purposes. In this class, limitations that cannot be corrected may result from the effects of one or more of the following: erosion or erosion hazard, severe climate, wet soil, stones, low moisture capacity, or salinity. Landforms that are included in this class are badlands, rock outcrops, sandy beaches, river washes, mine tailings, and other nearly barren land.

Capability Subclasses. The capability subclasses are divisions within capability classes based on the major limiting factor: erosion (e), excess water (w), soil limitations within the rooting zone (s), or climatic limitations (c). For example, land with a slight to moderate erosion hazard would be placed in Subclass Iie.

The erosion subclass contains soils in which the susceptibility to erosion is the dominant problem or hazard in their use. Past and potential erosion damage is the major criteria for placing soils in this subclass. The excess water subclass contains soils where excess water is the dominant hazard or limitation in their use. Poor soil drainage, wetness, high water table, and overflow are criteria for classifying soils in this subclass. The soil limitations subclass contains soils that have such limitations as shallowness of rooting zones, stones, low moisture-holding capacity, low fertility which is difficult to correct, and salinity. The climatic limitation subclass is made up of soils where the climate, particularly temperature or lack of moisture, is the major hazard or limitation in their use.

Table 3 gives the area of each capability class within the State and the areas of Classes II-VIII that are inventoried by capability subclass or kind of limitation. This table indicates that approximately 56 percent, or 26,400,000 acres, of agricultural land within the state is in the Classes I through IV, the arable category. Most of these lands have some limitations in their use. The major limitation is the erosion hazard from either water or wind. Approximately 1,200,000 acres have soil limitations, 1,500,000 acres have climatic limitations, and 2,400,000 acres have excess water which can be controlled to a certain degree by drainage practices. Soils in Classes V through VII comprise about 44 percent of the agricultural lands of the State. Only 0.12 percent of the soils in the State belong to Class VIII.

TABLE 3

TOTAL AGRICULTURAL LAND BY CAPABILITY CLASS AND SUBCLASS

Capability Class	Total Agriculture Land (acres)	E Erosion Hazard (acres)	W Excess Water (acres)	S Soil Limitations (acres)	C Climate Limitations (acres)	Total (percent)
I	2,643,287					5.60
II	9,562,253	5,800,636	1,558,288	827,002	1,376,327	20.27
III	8,848,226	7,754,921	773,893	186,731	132,681	18.76
IV	5,356,881	5,049,138	108,225	199,518		11.36
I - IV	26,410,647	18,604,695	2,440,406	1,213,251	1,509,008	55.99
V	521,849		521,849			1.11
VI	16,578,627	14,474,060	770,761	1,333,806		35.15
VII	3,598,514	2,825,070		773,444		7.63
V - VII	20,698,990	17,299,130	1,292,610	2,107,250		43.89
VIII	53,967		43,701	15,266		0.12
TOTAL	47,168,604	35,903,825	3,776,717	3,335,767	1,509,008	
PERCENT	100.00	76.12	8.01	7.07	3.20	100.00

Source: Nebraska Conservation Needs Inventory, Nebraska Conservation Needs Committee, 1969.

Soil Resource Groups

Table 4 lists the 56 soil resource groups in Nebraska, describes the soils, and lists the irrigation suitability categories, major soils, slope, texture family, and problems of each SRG. Suitability of the soils for irrigation has been classified as Category A, B, C, or D according to the severity of limitations on sustained irrigation practices. Irrigation suitability is treated more fully in the following section.

The productivity indexes of soil resource groups for irrigated and non-irrigated lands by land resource areas are presented in Table 5. A productivity index of 100 represents the most productive soils.

TABLE 4
SOIL RESOURCE GROUPS

SRG Code	Description	Irrig. Category	Major Soils	Dominant Slope	Texture Family ^{a/}	Problems
510	Deep, nearly level, well drained silty soils on bottom lands	A	Kennebec, Hobbs	1%	Fine-silty	Slight-some areas subject to flooding
710	Deep, nearly level, well drained to moderately well drained silty soils on uplands.	A	Hord, Hastings, Belfore, Holder, Hall	1%	Fine-silty and fine	Slight
720	Deep, very gently sloping well drained silty soils on uplands.	A & B	Moody, Hastings, Keith, Holdrege, Holder	3%	Fine-silty	Erosion
721	Deep, nearly level, well drained silty soils on uplands.	A	Alliance, Cozad, Holdrege, Kadoka, Kenesaw, Bridgeport, Mitchell, Reliance, Richfield	1%	Fine-silty	Climate, low rainfall
725	Deep, very gently sloping, well drained, clayey soils on uplands.	D	Promise, Boyd	3%	Fine	High clay content. Droughty
521	Deep, nearly level to gently loamy soils on bottomlands.	A	Cass, Volin	2%	Coarse-loamy	Subject to flooding
722	Deep, nearly level to gently sloping loamy soils on uplands.	B	Alice, Anselmo, Ortello	3%	Coarse-loamy	Erosion

a/ Soil Taxonomy, Soil Conservation Service, USDA, unpublished document, 1973.

TABLE 4 (Page 2)

SRG Code	Description	Irrig. Category	Major Soils	Dominant Slope	Texture Family	Problems
723	Deep, nearly level, moderately well drained silty soils with clayey subsoils on uplands.	B	Crete, Wymore	1%	Fine	Droughty, high clay content subsoils
726	Moderately deep, nearly level or very gently sloping well drained loamy or silty soils on uplands.	B	Jansen, O'Neil	2%	Coarse-loamy over sand	Droughty
724	Deep, well drained to somewhat poorly drained, silty to loamy soils uplands on stream terraces.	B	Colo, Caruso, Gibbon, Las, Las Animas, Leshara, McCook, Wann	1%	Fine-silty and coarse-loamy	High water table, wetness or seldom flooding
522	Deep, well drained to somewhat poorly drained, silty to loamy soils on bottomlands subject to flooding	B	Colo, Gibbon, Hobbs occasionally flooded, Leshara, Wann, McCook	1%	Fine-silty and coarse-loamy	High water table or occasional flooding
523	Deep, nearly level, somewhat poorly or moderately well drained loamy and sandy soils on bottomlands.	B	Elsmere, Las, Wann	1%	Coarse-loamy and sandy	High water table, subject to occasional flooding
525	Deep, nearly level, moderately well to somewhat poorly drained soils with clayey subsoils on bottomlands.	B	Wood River	1%	Fine	High clay content subsoil

TABLE 4 (Page 3)

SRG Code	Description	Irrig. Category	Major Soils	Dominant Slope	Texture Family	Problems
730	Deep, very gently sloping to strongly sloping, deep and moderately deep silty and loamy soils on uplands.	B & C	Moody, Nora, Hastings, Keith, Holdrege, Alliance, Altvan, Holder	3% & 8%	Fine-silty and fine	Erosion
731	Deep, moderately sloping, soils on uplands with silty and loamy surface layers clayey subsoils.	D	Pawnee, Wymore	2%	Fine	Erosion, droughty, high clay content subsoil
531	Deep to moderately deep sandy to loamy, well drained to excessively drained soils on bottomlands.	B	Inavale, Glenberg, Darr	1%	Sandy to coarse-loamy	Subject to flooding, droughty
732	Deep, very gently sloping or moderately sloping, well drained loamy and silty soils on uplands.	B	Bayard, Blendon, Chappell, Glenberg, Hersh, Keith, Mitchell, Moody, Ortello, Anselmo	3%	Fine-silty to coarse-loamy	Erosion
733	Deep, nearly level or very gently sloping, well drained loamy soils on uplands.	A	Cheyenne, Bayard, Bridget, Keota, Nunn	1%	Fine-loamy	Climate, low rainfall
734	Deep, nearly level or gently sloping, well drained to excessively drained soils on uplands with sandy surface layers and loamy or sandy subsoils.	B	Anselmo, Boelus, Thurman, Hersh, Valentine	3%	Coarse-loamy or sandy	Erosion (wind)

TABLE 4 (Page 4)

SRG Code	Description	Irrig. Category	Major Soils	Dominant Slope	Texture Family	Problems
739	Deep and moderately deep, gently sloping well drained clayey soils on uplands.	D	Lynch, Boyd, Promise	3%	Fine	Water erosion
534	Deep, nearly level clayey to loamy moderately saline or alkali soils on bottomlands.	C	Saline or alkali phases of soils on bottomland	1%	Coarse-loamy to fine	Saline and alkali
735	Deep, nearly level, clayey to loamy, moderately saline or alkali soils or soils with claypans on uplands.	C	Saline or alkali phases of soils on uplands	1%	Sandy to fine-loamy	Saline and alkali
736	Moderately deep, nearly level well drained silty or loamy soils on uplands.	B	Rosebud, Chappell, Keota	2%	Fine-silty	Erosion, droughty
792	Shallow, nearly level to gently sloping excessively drained loamy soils on uplands.	C	Canlon-like	3%	Coarse-loamy	Erosion, droughty
535	Deep, nearly level, somewhat poorly to very poorly drained, clayey or silty soils on bottomlands.	C	Albaton, Luton, Wabash, Lawet drained	1%	Fine	Wetness, subject to flooding
737	Deep, nearly level, poorly drained soils on uplands with silty surface layers and clayey subsoils.	B	Fillmore, Silver Creek	1%	Fine	Wetness

TABLE 4 (Page 5)

SRG Code	Description	Irrig. Category	Major Soils	Dominant Slope	Texture Family	Problems
791	Deep, nearly level or very gently sloping somewhat poorly drained or poorly drained, upland or terrace soils with silty or clayey surface layers and clayey subsoils.	C	Scott, drained	1%	Fine	Wetness
536	Deep, nearly level to very gently sloping, excessively drained to poorly drained sandy to loamy soils on bottomlands.	B	Elsmere, Las, Las Animas, Sarpy McGrew, Cass	1%	Sandy and coarse-loamy	Wetness-high water table and/or subject to flooding
738	Deep, nearly level to very gently sloping, excessively drained to poorly drained sandy to loamy soils on uplands or valleys in the sandhills.	B	Elsmere, Ovina	1%	Sandy and coarse-loamy	Wetness-high water table
740	Deep or moderately deep, moderately and strongly sloping, well drained silty soils on uplands.	C & D	Coly, Uly, Colby, Crofton	8% ^{b/} & 14%	Fine-silty	Erosion
741	Deep, moderately sloping on strongly sloping excessively drained sandy and loamy soils on uplands.	C	Anselmo, Alice, Bayard, Thurman, Valentine	6%	Sandy and coarse-loamy	Erosion

^{b/} 8% - western Nebraska, 14% - eastern Nebraska.

TABLE 4 (Page 6)

SRG Code	Description	Irrig. Category	Major Soils	Dominant Slope	Texture Family	Problems
743	Deep, strongly sloping, well drained to excessively drained clayey soils on uplands.	D	Promise, Boyd	8%	Fine	Water erosion
541	Deep, nearly level clayey and loamy, moderately saline or alkali soils and loamy shallow soils on bottomlands.	C	Saline or alkali phases of soils on bottomlands	1%	Clayey to fine-loamy	Saline or alkali subject to flooding
742	Deep, nearly level, clayey, moderately saline or alkali soils on uplands.	C	Saline or alkali phases of soils on uplands	1%		Saline and alkali
544	Deep, nearly level, somewhat poorly drained to poorly drained sandy and loamy soils on bottomlands.	C	Elsmere, Els, Las Animas	1%	Sandy	Wetness, high water table, subject to flooding
744	Deep, nearly level, somewhat poorly drained to poorly drained sandy and loamy soils on uplands and sand-hill valleys.	C	Elsmere	1%	Sandy	Subject to flooding, high water table
543	Shallow, poorly drained soils on bottomlands.	C	Platte	1%		High water table, drought
745	Shallow over bedrock or gravel, nearly level or very gently sloping loamy soils on uplands.	C	Meadin, Dix, Epping, Canyon	2%	Fine-loamy to sandy	Droughty, shallow soils

TABLE 4 (Page 7)

SRG Code	Description	Irrig. Category	Major Soils	Dominant Slope	Texture Family	Problems
746	Deep, nearly level, well drained to excessively well drained upland soils with clayey surface layers and clayey subsoils.	C	Pierre	1%	Fine	Droughty
550	Deep to shallow nearly level or very gently sloping, drained and very poorly drained sandy to loamy soils on bottomlands.	D	Loup, Rauville, wet Alluvial Land, Barney, Tryon	1%	Sandy to loamy	Frequent flooding and/or high water table
750	Deep to shallow nearly level or very gently sloping, poorly drained and very poorly drained sandy or loamy soils on uplands or sandhill valleys.	D	Loup	1%	Sandy to fine-loamy	High water table
760	Deep, strongly sloping to moderately steep, well drained, silty or loamy soils on uplands.	D	Coly, Colby, Nora, Crofton	18%	Fine-silty	Erosion
761	Deep, strongly sloping to moderately steep, well drained to excessively drained, sandy and loamy soils on uplands.	D	Valentine, Thurman, Anselmo	10%	Sandy	Erosion
765	Deep and moderately deep, moderately sloping to steep, excessively drained clayey soils on uplands.	D	Promise, Lynch, Pierre	18%	Fine	Water erosion

TABLE 4 (Page 8)

SRG Code	Description	Irrig. Category	Major Soils	Dominant Slope	Texture Family	Problems
561	Deep to shallow nearly level, sandy to loamy soils and saline and alkali soils on bottomlands.	D	Meadin, Alluvial Land, saline and alkali phases of soils on bottomland	1%	Sandy to fine-loamy	Droughty, saline or alkali, subject to flooding
762	Deep or moderately deep nearly level loamy saline or alkali soils on uplands.	D	Saline and alkali phases of soils on uplands	1%	Fine-loamy	Droughty, saline or alkali
763	Deep to shallow nearly level or very gently sloping sandy to clayey soils on uplands or terraces.	D	Scott, Alluvial Land types	1%	Sandy to clayey	Excessive wetness
764	Shallow, very gently sloping to moderately sloping loamy soils on uplands.	D	Canon, Canyon	8%	Fine-loamy	Droughty, shallow
562	Deep to shallow nearly level to gently sloping, stratified sandy to clayey frequently flooded soils on bottomlands.	D	Alluvial Land types	1%	Sandy to clayey	Subject to flooding
770	Deep or moderately deep, moderately steep or steep, silty or loamy, excessively drained soils on uplands.	D	Coly, Colby	24%	Fine-silty	Erosion
780	Primarily land types such as river wash, gravel pits and sand pits.	D	Riverwash, sand and gravel pits	1%		

TABLE 4 (Page 9)

SRG Code	Description	Irrig. Category	Major Soils	Dominant Slope	Texture Family	Problems
580	Primarily land types such as marsh areas in the Sandhills.	D	Marsh	1%	Sandy	Flooding, high water table
771	Shallow, moderately steep or steep, excessively drained, loamy soils on uplands.	D	Canyon, Canlon	18%	Fine-loamy and coarse-loamy	Droughty, shallow soils
772	Very shallow to bedrock or gravel, sandy or loamy soils on uplands.	D	Rough stony land	18%		
773	Deep, steep, excessively drained sandy soils on uplands.	D	Valentine	24%	Sandy	Erosion
570	Very shallow to coarse sand and gravel, sandy or loamy soils on bottomlands.	D	Shallow soils over coarse sand and gravel on bottomlands	1%	Sandy	Droughty, subject to flooding

Source of Data: Economic Research Service and Soil Conservation Service data compiled in 1973.

TABLE 5
PRODUCTIVITY INDEXES OF SOIL RESOURCE GROUPS
FOR NON-IRRIGATED AND IRRIGATED LANDS^{a/}

SRG Code	LRA 102	LRA 75	LRA 71 & 73	LRA 65	LRA 67 & 72	LRA 60	LRA 64	LRA 63 & 66	LRA 106 & 107
510	95 100	90 100	85 100	75 96	70 96	- -	- -	80 96	100 100
710	90 100	85 100	80 100	70 96	65 96	- -	60 93	75 96	95 100
720	80 93	75 93	70 93	60 90	60 90	- -	55 85	65 90	85 93
721	85 100	- 100	75 100	- -	65 93	- -	55 93	70 96	- 100
725	70 79	- -	- -	- -	- -	- -	- -	50 72	- -
521	75 90	70 90	60 90	55 85	50 85	- -	50 85	55 90	80 90
722	70 93	65 93	55 93	50 90	45 90	- -	40 85	50 90	75 93
723	60 85	50 85	40 85	- -	30 85	- -	- -	- -	65 85
726	- -	- -	- 80	- 70	- 60	- -	35 85	50 90	- -
724	80 96	70 96	60 96	55 93	50 93	- -	- -	55 93	85 96
522	80 93	70 93	60 93	55 90	50 90	- -	50 90	55 90	85 93
523	75 90	65 90	55 90	45 85	40 85	- -	- -	50 85	75 90
525	- -	- -	- 87	- -	45 85	- -	- -	55 85	- 80
730	70 80	65 80	55 80	50 75	45 75	40 75	40 75	50 75	75 80

^{a/} For each SRG the upper row represents productivity of non-irrigated soils while the lower row presents productivity of irrigated soils.

TABLE 5 (Page 2)

SRG Code	LRA 102	LRA 75	LRA 71 & 73	LRA 65	LRA 67 & 72	LRA 60	LRA 64	LRA 63 & 66	LRA 106 & 107
731	60 80	55 80	45 80	40 75	- 75	- 75	- 75	40 75	65 80
531	60 82	55 82	50 82	45 79	35 79	- -	- -	45 79	65 82
732	65 79	55 79	50 79	40 72	35 72	- -	35 72	45 72	70 79
733	- -	- -	- -	50 85	45 85	40 85	- -	- -	- -
734	55 72	45 72	40 72	30 68	25 68	- -	- -	40 68	60 72
739	- -	- -	- -	- -	- -	- -	- -	40 60	- -
534	60 60	55 60	45 60	- -	25 60	- -	- -	40 60	65 60
735	55 60	50 60	45 60	- -	20 60	- -	20 60	- -	- -
736	- -	- -	- -	- -	30 60	- -	25 60	35 60	- -
792	- -	- -	- -	- -	- -	- -	- -	30 55	- -
535	70 85	65 85	60 85	- 82	35 82	- 79	30 79	- 82	70 85
737	65 85	60 85	55 85	- 82	35 82	- 79	- 79	- 82	- 85
791	- -	- -	- -	- -	- -	- -	40 72	40 72	70 79
536	60 79	- -	50 79	40 72	30 72	- -	25 72	45 72	65 79
738	55 82	- -	45 82	35 79	25 79	- -	- -	40 79	- -
740	55 64	50 64	35 64	30 60	25 60	20 60	20 60	30 60	60 64

TABLE 5 (Page 3)

SRG Code	LRA 102	LRA 75	LRA 71 & 73	LRA 65	LRA 67 & 72	LRA 60	LRA 64	LRA 63 & 66	LRA 106 & 107
741	50 60	45 60	30 60	25 60	20 60	- 60	15 60	25 60	55 64
743	- -	- -	- -	25 -	- -	- -	20 -	30 -	- -
541	45 55	35 55	25 55	20 55	20 55	- -	- -	20 55	50 55
742	40 55	30 55	20 55	15 55	15 55	10 55	- -	- -	45 55
544	- -	- -	- -	40 55	35 55	- -	- -	- -	- -
744	- -	- -	- -	40 55	35 55	- -	30 55	- -	- -
543	30 50	25 50	- -	- -	- -	- -	- -	- -	- -
745	- -	- -	30 55	25 55	20 55	- -	- -	25 -	- -
746	- -	- -	- -	- -	- -	- -	25 50	- -	- -
550	30 -	30 -	30 -	40 -	30 55	- -	25 -	35 -	35 -
750	- -	- -	- -	40 -	35 -	- -	- -	40 -	- -
760	35 50	30 50	25 50	20 -	15 40	10 -	10 -	20 -	40 -
761	30 -	25 -	25 -	25 20	15 40	- -	10 -	20 -	35 -
765	- -	- -	- -	- -	- -	- -	10 -	15 -	- -
561	35 -	- -	25 -	25 -	15 35	10 -	10 50	20 -	40 -
762	- -	- -	15 -	15 -	15 -	10 -	10 50	- -	- -

TABLE 5 (Page 4)

SRG Code	LRA 102	LRA 75	LRA 71 & 73	LRA 65	LRA 67 & 72	LRA 60	LRA 64	LRA 63 & 66	LRA 106 & 107
763	25 -	20 -	20 50	15 -	15 35	- -	15 -	15 -	30 -
764	15 -	- -	15 -	12 -	12 -	8 -	- -	10 -	15 -
562	25 -	25 -	20 50	15 -	15 35	10 -	10 -	12 -	30 -
770	20 -	15 -	10 -	10 -	10 -	- -	- -	10 -	25 -
780	5 -	5 -	- -	- -	- -	- -	- -	- -	- -
580	5 -	- -	5 -	5 -	5 -	- -	5 -	5 -	- -
771	10 -	- -	5 -	- -	5 -	- -	5 -	5 -	- -
772	5 -	- -	5 -	5 -	5 -	- -	5 -	- -	5 -
773	- -	- -	20 -	15 -	10 -	- -	- -	15 -	- -
570	- -	- -	10 -	- -	8 -	- -	- -	- -	- -

Source of Data: Economic Research Service and Soil Conservation Service data compiled in 1973.

Table 6 contains the area and percent of soil resource groups within the 13 river basins and the State. For example, SRG 761 comprises 10,187,200 acres, or 21.60 percent of the State, and it covers 40.79 percent, or 3,843,600 acres, of the Loup River Basin.

Irrigation Capability

Lands that have a potential for irrigation development have been identified on the basis of only physical and chemical limitations. Other constraints which could affect development, such as availability of water, plot size, land owner desires, availability of money, interest rates, or need for products, were not considered. In the following

TABLE 6

AREA AND PERCENT OF SOIL RESOURCE GROUPS WITHIN THE BASINS AND STATE

SRG	White- Hat	Nio- brara	Mo. Trib.	North Platte	South Platte	Middle Platte	Loup	Elk- horn	Lower Platte	Repub- lican	Little Blue	Big Blue	Nemaha	State Total
510	--	7.7 ^{a/} 0.11 ^{c/}	113.0 6.26	15.6 0.35	6.3 0.32	37.7 1.24	66.2 0.70	158.8 3.65	53.5 3.00	45.0 0.76	30.8 1.94	34.7 1.26	67.5 4.00	637.0 ^{b/} 1.35
710	--	3.7 0.05	25.2 1.40	--	10.5 0.53	145.6 4.78	68.1 0.72	144.7 3.32	134.8 7.57	38.3 0.65	129.7 8.18	640.4 23.31	4.9 0.29	1,345.8 2.85
720	71.5 6.42	374.1 5.12	312.6 17.32	157.4 3.53	309.1 15.71	269.5 8.85	442.3 4.69	681.4 15.65	284.7 15.99	1,098.3 18.64	236.0 14.89	492.5 17.93	308.3 18.25	5,037.8 10.68
721	17.9 1.60	317.5 4.34	0.4 0.02	161.2 3.62	226.7 11.53	462.5 15.19	290.7 3.08	0.4 0.01	4.2 0.24	675.6 11.46	171.6 10.82	25.0 0.91	--	2,353.8 4.99
725	--	1.0 0.01	0.2 0.01	--	--	--	--	--	--	--	--	--	--	1.3 0.00
521	--	6.2 0.09	7.9 0.44	14.0 0.31	1.7 0.09	30.7 1.01	13.2 0.14	57.6 1.32	17.3 0.97	20.9 0.35	0.2 0.01	0.4 0.02	0.2 0.01	170.4 0.36
722	0.5 0.05	133.6 1.83	18.2 1.01	64.7 1.45	51.2 2.60	71.2 2.34	67.4 0.71	90.9 2.09	7.4 0.41	117.1 1.99	1.7 0.11	2.0 0.07	0.2 0.01	625.9 1.33
723	--	--	--	--	1.2 0.06	85.1 2.80	4.2 0.04	--	13.8 0.77	35.4 0.60	294.6 18.58	340.6 12.40	7.7 0.45	782.4 1.66

a/ The first row of each SRG represents area in 1,000 acres.

b/ Basin areas may not add to total due to rounding.

c/ The second row of each SRG represents the percentage of each SRG in a particular basin.

TABLE 6 (Page 2)

SRG	White- Hat	Nio- brara	Mo. Tribes	North Platte	South Platte	Middle Platte	Loup	Elk- horn	Lower Platte	Repub- lican	Little Blue	Big Blue	Nemaha	State Total
726	--	36.7 0.50	--	--	1.0 0.05	12.8 0.42	--	4.7 0.11	--	16.5 0.28	--	--	--	71.7 0.15
724	--	49.5 0.68	2.8 0.16	2.1 0.05	--	23.9 0.79	41.6 0.44	2.9 0.07	0.8 0.04	6.5 0.11	5.6 0.35	15.7 0.57	0.8 0.05	152.1 0.32
522	9.6 0.86	19.9 0.27	66.4 3.68	8.6 0.19	9.8 0.50	154.4 5.07	107.2 1.14	271.0 6.22	138.5 7.78	60.7 1.03	29.0 1.83	64.6 2.35	103.3 6.11	1,043.0 2.21
523	--	31.2 0.43	5.7 0.31	12.7 0.29	0.5 0.02	39.8 1.31	10.9 0.12	255.2 5.86	16.0 0.90	11.0 0.19	--	--	0.6 0.04	383.7 0.81
525	--	3.4 0.05	--	--	0.5 0.03	3.4 0.11	--	--	2.7 0.15	--	0.3 0.02	--	5.3 0.31	15.6 0.03
730	116.0 10.41	326.3 4.46	310.2 17.18	288.1 6.47	372.1 18.92	231.0 7.59	567.5 6.02	787.2 18.07	589.2 33.09	436.2 7.40	185.1 11.68	190.3 6.93	487.5 28.85	4,886.7 10.36
731	--	0.4 0.01	--	--	--	0.6 0.02	--	--	82.4 4.63	--	33.3 2.10	292.0 10.63	364.8 21.59	773.5 1.64
531	--	31.1 0.43	4.3 0.24	0.2 0.00	0.1 0.01	9.0 0.30	13.0 0.14	86.5 1.99	17.5 0.98	6.1 0.10	--	--	--	167.8 0.36
732	13.1 1.18	508.9 6.96	25.0 1.39	158.1 3.55	71.4 3.63	21.2 0.70	150.7 1.60	128.2 2.94	1.3 0.07	195.4 3.32	1.8 0.11	1.8 0.07	2.6 0.15	1,279.6 2.71
733	1.7 0.15	0.4 0.01	--	38.3 0.86	9.0 4.01	--	--	--	--	--	--	--	--	119.4 0.25
734	--	180.6 2.47	19.7 1.09	4.9 0.11	--	37.3 1.22	79.5 0.84	126.9 2.91	0.2 0.01	4.0 0.07	--	0.2 0.01	0.1 0.01	453.5 0.96

TABLE 6 (Page 3)

SRG	White- Hat	Nio- brara	Mo. Trib.	North Platte	South Platte	Middle Platte	Loup	Eik- horn	Lower Platte	Repub- lican	Little Blue	Big Blue	Nemaha	State Total
739	--	4.4 0.06	0.5 0.02	--	--	--	--	--	--	--	--	--	--	4.8 0.01
534	--	--	2.6 0.14	37.8 0.85	8.9 0.45	28.8 0.95	5.5 0.06	8.1 0.19	6.3 0.36	1.5 0.03	--	--	1.5 0.09	101.1 0.21
735	--	0.4 0.01	--	1.3 0.03	2.1 0.11	19.3 0.63	0.4 0.00	5.4 0.12	1.6 0.09	0.6 0.01	--	0.9 0.03	--	31.9 0.07
736	--	4.0 0.05	--	--	35.5 1.80	--	--	--	--	9.5 0.16	--	--	--	48.9 0.10
792	--	0.2 0.00	--	--	--	--	--	--	--	--	--	--	--	0.2 0.00
535	--	--	105.3 5.83	0.4 0.01	0.6 0.03	19.7 0.65	--	58.2 1.34	40.8 2.29	--	--	1.4 0.05	33.9 2.01	260.4 0.55
737	--	--	--	--	--	--	--	0.2 0.00	--	--	--	--	--	0.2 0.00
791	--	3.8 0.05	--	0.2 0.00	10.2 0.52	16.6 0.54	4.3 0.05	7.4 0.17	11.4 0.64	7.2 0.12	19.7 1.24	65.9 2.40	1.4 0.08	148.0 0.31
536	3.4 0.30	34.6 0.47	2.2 0.12	1.4 0.03	--	16.3 0.54	37.6 0.40	113.9 2.62	5.5 0.31	2.6 0.04	--	--	--	217.6 0.46
738	--	86.8 1.19	0.9 0.05	16.6 0.37	--	6.6 0.22	102.4 1.09	7.0 0.16	--	--	--	--	--	220.5 0.47
740	127.8 11.47	120.7 1.65	410.1 22.72	118.8 2.67	211.0 10.73	189.7 6.23	516.1 5.48	203.4 4.67	154.1 8.65	295.6 5.02	177.0 11.17	324.6 11.81	185.0 10.95	3,033.9 6.43

TABLE 6 (Page 4)

SRG	White- Hat	Nio- brara	Mo. Tribs.	North Platte	South Platte	Middle Platte	Loup	Elk- horn	Lower Platte	Repub- lican	Little Blue	Big Blue	Nemaha	State Total
741	5.7 0.51	734.9 10.05	36.9 2.04	333.2 7.48	61.4 3.12	30.8 1.01	281.7 2.99	112.4 2.58	7.7 0.43	278.2 4.72	0.3 0.02	0.5 0.02	2.4 0.14	1,886.1 4.00
743	66.4 5.96	34.9 0.48	0.9 0.05	--	--	--	--	--	--	--	--	--	--	102.1 0.22
541	--	--	0.3 0.02	13.4 0.30	16.5 0.84	23.3 0.77	0.2 0.00	15.6 0.36	19.3 1.08	6.9 0.12	--	--	0.2 0.01	95.7 0.20
742	0.7 0.15	--	--	1.9 0.04	--	9.6 0.31	1.4 0.02	2.0 0.05	3.6 0.20	5.8 0.10	9.8 0.62	5.2 0.19	--	41.0 0.09
544	--	0.8 0.01	--	7.0 0.16	--	--	7.7 0.08	--	--	5.1 0.09	--	--	--	20.6 0.04
744	--	3.9 0.05	--	19.0 0.43	--	0.6 0.02	19.7 0.21	--	--	7.5 0.13	--	--	--	50.6 0.11
543	--	--	--	--	--	8.0 0.26	--	--	--	--	--	--	--	8.0 0.02
745	--	71.8 0.98	--	0.8 0.02	--	--	5.0 0.05	--	--	--	--	0.2 0.01	--	77.9 0.17
746	7.8 0.70	--	--	--	--	--	--	--	--	--	--	--	--	7.8 0.02
550	--	26.2 0.36	8.3 0.46	32.4 0.73	--	12.2 0.40	101.1 1.07	66.0 1.52	14.1 0.79	13.5 0.23	--	1.0 0.04	1.3 0.08	276.3 0.59
750	--	25.2 0.34	--	20.2 0.45	--	--	121.7 1.29	--	--	1.0 0.02	--	--	--	168.2 0.36

TABLE 6 (Page 5)

SRG	White- Hat	Nio- brara	Mo. Trib.	North Platte	South Platte	Middle Platte	Loup	Elk- horn	Lower Platte	Repub- lican	Little Blue	Big Blue	Nemaha	State Total
760	65.7 5.90	80.0 1.09	207.7 11.51	70.6 1.59	66.1 3.36	488.3 16.04	752.4 7.98	20.4 0.47	63.5 3.56	1,280.3 21.72	174.3 10.99	128.6 4.68	41.2 2.44	3,439.2 7.29
761	26.6 2.39	2,291.8 31.36	25.9 1.43	2,057.6 46.20	116.3 5.91	291.4 9.57	3,843.6 40.79	741.0 17.01	14.3 0.80	763.0 12.95	13.2 0.83	0.2 0.01	2.2 0.13	10,187.2 21.60
765	93.1 8.36	135.5 1.85	14.5 0.81	--	--	--	--	--	--	--	--	--	--	243.2 0.52
561	11.5 1.03	2.1 0.03	1.2 0.07	64.8 1.46	18.6 0.95	15.9 0.52	11.5 0.12	12.9 0.30	6.0 0.34	11.1 0.19	--	--	--	155.7 0.33
762	59.1 5.31	0.4 0.01	--	27.5 0.62	2.7 0.14	2.6 0.09	--	--	--	--	--	--	--	92.3 0.20
763	--	5.8 0.08	--	15.1 0.34	5.5 0.28	--	43.3 0.46	3.7 0.08	0.4 0.02	4.3 0.07	--	--	--	78.1 0.17
764	160.5 14.40	417.0 5.70	24.7 1.37	154.0 3.46	169.3 8.61	5.0 0.16	8.9 0.09	0.3 0.01	1.3 0.08	54.6 0.93	21.4 1.35	5.5 0.20	19.1 1.13	1,041.6 2.21
562	8.5 0.76	25.0 0.34	14.6 0.81	14.1 0.32	7.1 0.36	93.2 3.06	200.9 2.13	53.7 1.23	44.4 2.50	55.3 0.94	43.4 2.74	97.1 3.53	37.0 2.19	694.3 1.47
770	--	--	13.8 0.76	6.0 0.14	--	95.9 3.15	19.6 2.03	0.2 0.00	21.7 1.22	299.3 5.08	4.7 0.29	15.2 0.55	10.6 0.63	659.0 1.40
780	--	--	10.4 0.58	--	--	0.7 0.02	--	0.4 0.01	--	--	--	--	--	11.4 0.02
580	--	26.4 0.36	2.8 0.15	6.1 0.14	14.8 0.75	10.2 0.34	18.9 0.20	4.0 0.09	--	3.5 0.06	--	--	--	86.7 0.18

TABLE 6 (Page 6)

SRG	White- Hat	Nio- brara	Mo. Trib.	North Platte	South Platte	Middle Platte	Loup	Elk- horn	Lower Platte	Repub- lican	Little Blue	Big Blue	Nemaha	State Total
771	43.2 3.88	85.5 1.17	9.2 0.51	16.7 0.38	--	--	--	--	0.1 0.01	--	--	--	--	154.7 0.33
772	182.1 16.35	62.7 0.86	0.7 0.04	260.9 5.86	77.2 3.92	--	12.8 0.14	--	0.4 0.02	14.8 0.25	1.7 0.11	1.0 0.04	--	614.5 1.30
773	20.6 1.85	991.6 13.57	--	229.8 5.16	2.2 0.11	24.1 0.79	1,211.8 12.86	122.3 2.81	--	5.0 0.09	--	--	--	2,607.4 5.53
570	--	--	--	--	--	--	--	--	--	--	--	--	--	0.0 0.00
	1,114.0	7,309.0	1,805.1	4,453.6	1,967.0	3,044.7	9,423.2	4,355.3	1,780.9	5,893.4	1,585.2	2,747.5	1,689.6	47,168.4

Source of Data: Economic Research Service and Soil Conservation Service data compiled from Nebraska Conservation Needs Inventory, 1969 and Nebraska Agricultural Statistics, 1966-1970.

sections, lands which have a physical potential for irrigation development, as determined in the 1969 Conservation Needs Inventory on the basis of a statistical sample of each county, have been inventoried by basin and soil resource groups.

Irrigation Suitability Classification System. Nebraska's lands can be divided into four irrigation suitability categories: A, B, C, and D based upon the major factors limiting irrigation. Only A and B are considered capable of sustained irrigation; however, some C and D lands may now or eventually be irrigated under certain conditions. The amount of land in all categories that is or will be irrigated depends upon several of the constraints listed in the previous section. The limitation of soils in any category may be changed by reclamation projects that substantially alter the soil characteristics or that reduce the soil hazards or risks over a long period of time. The limiting factors within each are given in the following paragraphs.

Category A soils have slight limitations. They are located on 0 to 3 percent slopes and have deep rooting zones, favorable permeability and water holding capacity, and good tilth, which is easily maintained. They require good management practices to maintain soil fertility and structure, to control erosion, and to efficiently use irrigation water.

Soils in Category B have moderate limitations. They are similar to the soils in A, but they have one characteristic which requires additional care in water application, crop residue for fertility management, and erosion control measures to compensate for this characteristic. Four divisions of soils comprise this category. The first has the following characteristics: 3 to 6 percent slopes, deep rooting zones, favorable intake rates, favorable water holding capacities, and good tilth. The second has 0 to 3 percent slopes, deep rooting zones, high water holding capacities, and slow intake rates. The third has 0 to 6 percent slopes, shallow to moderately deep rooting zones, and good intake rates. The fourth has 0 to 6 percent slopes and high intake rates, 2 inches per hour or more.

Category C soils have severe limitations. They have one or more adverse characteristics which require intense management to control erosion, to maintain or improve fertility, and to conserve irrigation water for sustained irrigation. Five divisions of soils comprise this category. The first has 6 to 10 percent slopes, favorable intake rates and water holding capacities, and good tilth, which is easily maintained. The second has 3 to 6 percent slopes, deep rooting zones, high water holding capacity, and slow intake rates. The third division has 6 to 10 percent slopes, shallow to moderately deep rooting zones, and good intake rates. The fourth has 6 to 10 percent slopes and high intake rates, 2 inches per hour or more. The fifth has the following characteristics: 0 to 1 percent slopes, deep to moderately deep rooting zones, low permeabilities, poor soil moisture-plant relationship, poor tilth or soil structures, and excess salts. Category C soils are generally unsatisfactory for sustained irrigation. They are irrigable

only with the most intensive conservation and irrigation management measures that control wind and water erosion and maintain soil fertility.

Category D soils have very severe limitations. They have one or more characteristics that make them generally unsatisfactory for irrigation. Undesirable characteristics are excessive slopes, stony or rocky soils, excess water, excess amounts of soluble salts, and overflow hazards.

Lands Suitable for Irrigation. Table 7 shows the irrigation suitability category of agricultural lands in major land use groups by river basins. Approximately 37.3 percent, or 17,600,000 acres, of the State's agricultural lands are A and B lands, which are the most suitable for irrigation. In 1970, irrigated croplands in Nebraska totaled 3,732,000 acres, or about 7.9 percent of the agricultural lands.

The irrigation suitability of lands in the river basins is discussed in the following paragraphs.

The White River-Hat Creek Basin contains the smallest amounts of lands in Categories A and B of all the river basins. The major land use in this basin is pasture and range, because soil limitations and the scarcity of rainfall have limited cropland acres. Inadequate water supplies have also limited irrigation development. Approximately 28,000 acres were developed for irrigation in 1970.

In the Niobrara River Basin, 29.4 percent of the agricultural land is in Categories A and B. A large proportion of the good quality irrigable land occurs in four widely separated tracts near O'Neill in Holt County, near Ainsworth in Brown County, the Mirage Flats area of Sheridan County, and near Alliance in Box Butte County. Significant portions of these areas are under irrigation. In 1970, about 155,000 acres were developed for irrigation in the basin.

In the Missouri Tributaries River Basin, approximately 33.6 percent of the agricultural land is in Categories A and B. Most of the good irrigable acres are on the Missouri River bottomlands in Washington, Burt, and Dakota Counties. The area developed for irrigation in this basin was 23,000 acres in 1970.

The North Platte River Basin has about 21.2 percent of its agricultural lands in Categories A and B. Most of these lands lie in the North Platte River valley. In 1970, approximately 398,000 acres of cropland were developed for irrigation in this basin, and about one-third of these acres are lands in Categories C and D.

The South Platte River Basin has a large percentage of irrigable land--59.8 percent of the agricultural land is Category A and B land. Most of the good quality land is along the South Platte River valley and on the tablelands in Deuel and Cheyenne Counties. Approximately 88,000 acres were developed for irrigation in this basin in 1970. This low acreage of irrigated land is due, in part, to the limited availability of water in some areas.

TABLE 7
IRRIGATION SUITABILITY OF AGRICULTURAL
LAND IN PRESENT LAND USE GROUPS

Basin	Category	Cropland		Pasture and Range	Forest and Woodland	Other Land	Total Land
		Non-Irr.	Irr.				
(Thousand acres)							
White-Hat	A	4.5	10.8	4.3	0.0	0.0	19.6 ^{a/}
	B	110.9	0.0	91.8	10.5	0.8	214.1
	C	56.4	4.3	73.5	8.7	0.0	142.9
	D	19.0	12.9	540.4	146.2	18.8	737.3
	Total		190.8	28.0	710.0	165.4	19.7
Niobrara	A	174.6	91.0	65.5	1.3	3.2	335.6
	B	745.4	55.0	961.0	29.3	19.0	1,809.7
	C	192.5	9.0	727.3	1.5	7.0	937.3
	D	102.2	0.0	4,014.7	88.8	22.2	4,227.9
	Total		1,214.8	155.0	5,768.5	120.9	49.9
Missouri Tribs.	A	97.9	13.2	23.2	3.6	8.6	146.6
	B	334.1	2.3	87.6	8.2	27.2	459.4
	C	360.9	6.6	64.4	6.7	15.2	453.8
	D	369.3	0.9	303.8	48.1	23.3	745.4
	Total		1,162.2	23.0	479.0	66.7	74.3
North Platte	A	95.1	115.6	14.3	0.0	4.1	229.1
	B	331.1	159.6	207.7	0.0	16.6	714.9
	C	104.9	74.2	334.3	0.0	20.2	533.7
	D	57.9	48.6	2,838.3	14.2	16.9	2,975.9
	Total		589.1	398.0	3,394.5	14.2	57.8
South Platte	A	277.9	26.7	17.5	0.0	2.2	324.2
	B	684.0	41.4	115.9	0.0	11.0	852.4
	C	177.7	19.9	106.9	0.2	6.0	310.7
	D	103.9	0.0	361.1	6.8	7.9	479.7
	Total		1,243.5	88.0	601.4	7.0	27.1
Middle Platte	A	117.6	497.3	34.8	1.1	25.8	676.6
	B	303.7	334.0	273.7	5.1	22.5	938.9
	C	125.7	74.6	168.5	0.6	4.5	373.9
	D	69.8	1.1	936.9	38.3	9.2	1,055.2
	Total		616.8	907.0	1,413.8	45.1	61.9
Loup	A	174.9	212.4	32.1	0.2	21.2	440.7
	B	728.4	136.8	497.0	8.4	37.6	1,408.2
	C	463.7	35.1	491.7	4.4	18.0	1,012.9
	D	181.6	4.2	6,300.2	35.8	39.6	6,561.4
	Total		1,548.5	388.4	7,321.0	48.9	116.4

a/ Totals may not add due to rounding.

TABLE 7 (Page 2)

Basin	Category	Cropland		Pasture and Range	Forest and Woodland	Other Land	Total Land
		Non-Irr.	Irr.				
(Thousand acres)							
Elkhorn	A	206.2	61.8	75.2	1.5	16.9	361.6
	B	970.1	34.3	663.2	25.7	76.7	1,770.0
	C	757.3	29.4	162.7	6.0	39.7	995.2
	D	178.5	27.1	973.3	14.0	35.6	1,228.5
Total		2,112.1	152.6	1,874.4	47.3	168.9	4,355.3
Lower Platte	A	144.4	42.7	11.0	0.7	11.3	210.1
	B	366.1	30.3	99.1	3.0	21.3	519.7
	C	547.2	31.7	103.2	5.5	22.7	710.2
	D	151.4	3.3	148.0	14.0	24.1	340.8
Total		1,209.1	108.0	361.2	23.3	79.4	1,780.9
Republican	A	481.9	213.0	62.3	7.4	15.2	779.8
	B	1,551.3	152.7	249.9	18.2	27.3	1,999.4
	C	310.0	27.3	260.0	1.1	10.0	608.4
	D	243.3	4.1	2,203.7	26.6	28.2	2,505.9
Total		2,586.5	397.0	2,776.0	53.4	80.6	5,893.4
Little Blue	A	183.8	120.0	23.7	2.1	2.6	332.2
	B	473.6	190.8	68.6	8.4	12.8	754.2
	C	120.7	10.1	72.9	0.4	2.8	206.9
	D	66.2	11.1	189.0	20.3	5.5	292.0
Total		844.2	332.0	354.1	31.2	23.8	1,585.2
Big Blue	A	315.5	336.4	24.9	4.3	19.5	700.6
	B	645.7	340.1	73.3	8.5	22.1	1,089.7
	C	256.2	28.6	95.1	2.7	6.6	389.2
	D	273.4	37.0	197.9	52.2	7.6	568.0
Total		1,490.8	742.0	391.2	67.7	55.8	2,747.5
Nemaha	A	44.2	11.4	7.3	7.2	2.5	72.6
	B	335.8	0.0	65.4	15.3	15.3	431.8
	C	490.9	1.6	121.0	9.3	18.4	641.2
	D	316.9	0.0	166.9	40.9	19.4	544.1
Total		1,187.7	13.0	360.7	72.7	55.5	1,689.6
State	A	2,318.5	1,752.2	396.1	29.5	133.0	4,629.2
	B	7,580.2	1,477.3	3,454.1	140.6	310.1	12,962.2
	C	3,964.0	352.4	2,781.5	47.3	171.1	7,316.3
	D	2,133.3	150.1	19,174.2	546.2	258.3	22,262.1
Total		15,996.0	3,732.0	25,805.8	763.7	871.0	47,168.6

Source of Data: Economic Research Service and Soil Conservation Service data from Nebraska Conservation Needs Inventory, 1969 and Nebraska Agricultural Statistics, 1966-1970.

In the Middle Platte River Basin, 53.1 percent of the agricultural land is Category A and B land. Most of the irrigable acres are along the Platte River valley, and most of the 907,000 acres developed for irrigation in 1970 are in this valley.

The Loup River Basin has a low percentage of irrigable acres. Only 19.6 percent of the agricultural land is in Categories A and B. Most of the better quality lands are located in the southeastern part of the basin along the major stream valleys. Over one-half of the basin is in the Sandhills where irrigation suitability is limited. Approximately 388,400 acres were developed for irrigation in this basin in 1970.

Lands in Categories A and B comprise 48.9 percent of the Elkhorn River Basin's agricultural lands. The majority of the high quality irrigable land occurs along the flood plains of the Elkhorn River, Logan Creek, and Maple Creek. This basin has a large acreage of wetlands in the upper reaches of the basin which would require drainage before irrigation development could proceed. In 1970, 152,600 acres were developed for irrigation.

In the Lower Platte River Basin, 41.0 percent of the agricultural land is in Categories A and B. The largest tracts of irrigable land occur in the Platte River valley and the "Todd Valley" in Saunders County. About 108,000 acres were developed for irrigation in this basin in 1970.

Lands in Categories A and B comprise about 47.2 percent of the agricultural lands in the Republican River Basin. Most of the irrigable lands are scattered on ridgetops throughout the basin, along the Republican River valley, or on tablelands in Perkins and Chase Counties. Approximately 397,000 acres were developed for irrigation in 1970.

In the Little Blue River Basin, approximately 68.5 percent of the agricultural land is in Categories A and B. Good quality irrigable lands are spread throughout the basin although they are more prevalent in the upper portions. The area developed for irrigation, about 332,000 acres in 1970, has been limited by the lack of adequate groundwater supplies in the area south of the Little Blue River.

Lands in Categories A and B comprise approximately 65.2 percent of the agricultural lands in the Big Blue River Basin. In terms of the physical and chemical characteristics of the soils, this basin probably has the best potential for irrigation of any basin in the State. This potential and the availability of groundwater led to the development of 742,000 acres for irrigation in 1970.

In the Nemaha River Basin, about 29.9 percent of the agricultural land is in Categories A and B. The irrigable acres are generally distributed throughout the basin, but most of the high quality lands are on the flood plains of the larger streams. In 1970, 13,000 acres were developed for irrigation. Irrigation has been limited because of

the relatively favorable rainfall conditions, lack of high quality lands, and limited groundwater supplies.

Mineral Capability

Nebraska currently produces only six of the more than 80 minerals on the industrial market. These minerals are limestone, pumice (volcanic ash), clays, sand and gravel, oil, and natural gas. In the past, the State also produced coal, potash, and salt, but production of these minerals is no longer economical.

The greatest potential for increased mineral production appears to be with the nonmetallic minerals. Sand and gravel resources appear adequate to meet future State needs; thus, the annual production of this commodity depends primarily upon the demand for it. The value of the limestone and clays produced in 1971 declined from 1970^{4/} even though adequate resources of these minerals are present in Nebraska. Thus, demand and economics will be the limiting factors on the production of these minerals in the immediate future.

No metallic minerals were mined in Nebraska in 1971.^{4/} The potential for the production of these minerals in the future appears very small.

The production of mineral fuels (gas and oil) in the State has been declining for several years.^{4/} Production of these minerals in the immediate future will probably continue to decline unless new resources are discovered.

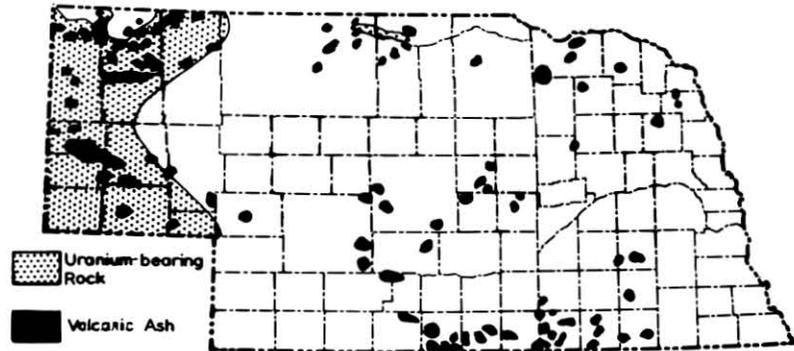
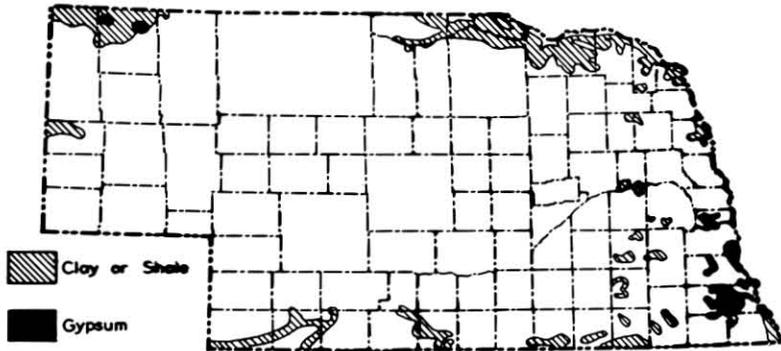
Figure 4 shows areas containing potential resources of sand and gravel, limestone, clay or shale, uranium-bearing rocks, diatomaceous earth, quartzite, volcanic ash, and gypsum. These potential mineral resources maps were developed by the Conservation and Survey Division, University of Nebraska.

Sand and gravel resources are limited primarily to Recent and Pleistocene alluvial, loess, and glacial deposits. The Ogallala Formation (Pliocene) is also a good potential source of sand and gravel.

Extensive limestone resources are found in the southeastern corner of the State where Permian and Pennsylvanian limestone formations are shallow or outcrop along stream valleys. These same formations are deeply buried under younger strata in the remainder of the State, so they cannot be utilized economically in these latter areas. There are a few other locations where limestone formations are shallow or outcrop, and these formations represent younger (post Permian and

4/ Reprint from the 1971 Bureau of Mines Minerals Yearbook: The Mineral Industry of Nebraska, U.S. Dept. of Interior, Bureau of Mines, U.S. Government Printing Office, Washington, D.C., 1972.

LOCATION OF SELECTED MINERAL RESOURCES AT OR NEAR THE SURFACE



SOURCE: CONSERVATION & SURVEY DIVISION, UNIVERSITY OF NEBRASKA-LINCOLN

FIG. 4

Pennsylvanian) limestone strata. There is also a potential for shaft mining to extract limestone from older, deeper, high-grade deposits.

Potential clay and shale resources are found primarily in Cretaceous (Pierre Formation) and Pennsylvanian shale or clay formations which are shallow or outcrop.

The occurrence of economical metallic minerals is more probable in the eastern one-fifth of Nebraska where Paleozoic and Precambrian rocks are shallower.

The most productive oil and gas units in western Nebraska are usually within the Dakota Group (Cretaceous). In Richardson County the most productive oil units are of Devonian and Ordovician age. In southwestern Nebraska, oil is produced from Pennsylvanian and Permian formations.^{5/}

Although not industrial minerals, the collecting of gemstones and minerals within the State is pursued by large numbers of people and does produce materials of economic value.

Environment

The environmental capabilities of the land are difficult to enumerate because standards for classification are not clearly defined and different features may connote different things to each person. Nevertheless, an attempt has been made in the following sections to inventory the capability of the land according to some established environmental criteria for biological and physical features and cultural heritage, including historic and prehistoric people and events. The environmental features which will be discussed are: unusual scenic areas, scenic and protected rivers, prehistoric and Indian people, historical features, and biological features.

Unusual Scenic Areas

Nebraska contains significant diversities in its landscape, weather patterns, soil types, and plant and animal habitats to provide a variety of scenic areas. Scenic landscapes vary from the bluffs along the Missouri River to the rolling hills in the eastern section, the sandhills and tablelands in the central portion, the higher tablelands and badlands in the western portion, and the river valleys throughout the State. The aesthetic value of the scenery is in the eyes of the beholder, so values are difficult to assign to the scenic areas. Some of the more unusual scenic areas in Nebraska are the Pine Ridge in the northwest corner of the State, the Wildcat Hills escarpment in the

5/ The Geological Section of Nebraska, Condra, G. E. and Reed, E. C., University of Nebraska Conservation and Survey Division, Nebraska Geological Survey Bulletin 14A, 1959.

western part of the State near the North Platte River, the Niobrara River valley, especially along its central and eastern reach, the Sandhills grassland, and the Missouri River bluffs.

Scenic and Protected Rivers

A few rivers retain a large fraction of their historic flow and natural shoreline characteristics. These rivers have intrinsic values in their undeveloped and unaltered state, and they should be preserved in their existing free flowing natural condition. The following rivers or reaches of rivers possess attributes which qualify them for preservation in their existing free flowing state:

1. Niobrara River - from its confluence with Antelope Creek downstream to the headwaters of the proposed Norden Reservoir, including the lower 8 miles of the Snake River tributary.
2. Snake River - from its headwaters to the headwaters of Merritt Reservoir.
3. North Loup River - from its headwaters to 18 miles west of the Taylor Diversion Dam.
4. Middle Loup River - from its headwaters to the Milburn Diversion Dam.
5. Dismal River - from its headwaters to its mouth.
6. Missouri River - from Lewis and Clark Reservoir west and north along the Nebraska border.
7. Missouri River - from Yankton to South Sioux City.
8. Platte River - from the mouth of the Loup River to the confluence of the Missouri River.
9. Big Blue River - from Crete to Beatrice.

Other streams have been altered by diversions, impoundments, channelization, or changes in water quality, but some still possess recreational, scenic, or ecological values which are worthy of further study. The Cedar, Elkhorn, and Calamus Rivers, and additional sections of the Platte River could be included in this category.

One stream in the State has been mentioned for national consideration. It has been recommended that the reach of the Niobrara River listed above be evaluated further for potential designation as a scenic river under the Wild and Scenic Rivers Act of 1968.

Unusual Geological Features

Nebraska has a variety of geological features, and most of these features occur over a large area so it is difficult to classify any as scarce or unique resources. For example, glacial features, primarily till plains, are found in large portions of the eastern one-fifth of the State; and loess (wind-blown) deposits cover large portions of the entire State. The Sandhills are an example of the large areal extent of sandy loess deposits. Although the Sandhills are unique geological features, they are in little danger of being impaired or destroyed because of the areal extent they encompass.

There are, however, some geological features which contain areas that should be preserved and protected for their educational and environmental attributes because their areal extent or occurrence is extremely limited. The White River Group (Oligocene), which is composed of the Brule and Chadron Formations, forms interesting weathered features in the Pine Ridge area. The more resistant sandstones remain while the less resistant clays have been eroded, producing features such as those found at Toadstool Park. The Harrison Formation of the Arikaree Group (Miocene) contains the Agate Springs fossil deposits in western Nebraska. The Smoky Hill Member of the Niobrara Formation (Cretaceous) forms chalk bluffs along streams which should be carefully evaluated before any change is made by development. Two of these geological features are the chalk bluffs along the Republican Valley from near Alma to Guide Rock and the chalk bluffs along the Missouri River from Cedar County to Great Bend north of Chamberlain, South Dakota.^{6/}

Fossil Areas

The University of Nebraska State Museum can provide information on fossil sites in Nebraska. Good fossil sites are often located at quarries, Sandhill blowouts, road cuts, and stream beds and valleys. The National Park Service has preserved one important site of prehistoric fossil remains in western Nebraska at the Agate Fossil Bed National Monument.

Prehistoric and Indian People

The history of Nebraska, which is an important component of Nebraska's environment, usually begins with written history when the first white men (explorers) traveled through the State. However, archeologists and paleontologists believe men were here at least 10,000 to 25,000 years ago. Present knowledge indicates that the first Nebraskans were nomadic hunters who lived in small groups and roamed over the Plains hunting large animals. The Folsom culture, whose camp sites have not yet been identified in Nebraska, was one of the nomadic

^{6/} Refer to Footnote Number 5.

hundreds (paleo-Indian cultures) who existed on the Plains sometime prior to 8,000 B.C.^{7/} Their projectile points, however, have been found throughout the State.

The Folsom culture was apparently succeeded by a number of distinct cultures whose projectile points are characterized by a high degree of workmanship. Excavations near Scottsbluff, Nebraska, and elsewhere indicate that several cultures developed these points. There is also evidence that conditions on the Plains were drier during this period, frequently called the Lithic period, than during the Folsom period. Several important Lithic sites are in western Nebraska: Signal Butte in Scotts Bluff County, Barn Butte in Garden County, and sites on Lime and Medicine Creeks in Frontier County. Work in eastern Nebraska on Logan Creek in Burt County by Marvin F. Kivett of the State Historical Society appears to provide the basis for defining an orderly succession of cultures between the Folsom people of more than 10,000 years ago and the pottery makers who occupied the plains from about 400 to 600 A.D.^{7/}

The pottery-making people, who are referred to as the prehistoric Indians, represent two general types, the Woodland and Mississippian cultures. The Woodland culture, the earliest pottery-making people to live on the Plains, spread over much of the Plains from 400 to 600 A.D., and their remains have been found in virtually all parts of Nebraska. These people lived primarily by hunting, but they may have practiced simple horticulture.

The Woodland people appear to have been succeeded by Mississippian people, a more sedentary and advanced people, who occupied the Plains between 1200 and 1500 A.D. They lived in relatively large unfortified villages and practiced hunting, fishing, and corn and bean horticulture. Two major variants of these people were found in Nebraska. The Nebraska culture was found along the Missouri River, and the Upper Republican culture was found in the villages of the Loup and the Republican Rivers and throughout southern and central Nebraska.

By the early seventeenth century, the Oneoto culture, which was related to the same Mississippian pattern as the Nebraska culture, appeared in eastern Nebraska. More recent (1670-1705) than the Oneoto culture was the Dismal River culture, whose remains have been found in western Nebraska, particularly in the Sandhills. Contemporaneous with the Oneoto and Dismal River cultures was the Lower Loup or proto-historic Pawnee, who lived in large villages on the Platte and Loup Rivers.

Many historic Indian tribes lived or roamed in Nebraska. The Pawnees occupied large villages in an area centering around the Platte River and hunted over a much larger area. The Sedentary Siouan tribes;

^{7/} History of Nebraska, Olson, James C., University of Nebraska Press, 1966.

Omaha, Ponca, Otoe, Iowa, and Missouri, lived along the Missouri River. The nomadic tribes; Dakota (Sioux), Cheyenne, Arapahoe, and Commanche, roamed over western Nebraska.

The Nebraska State Historical Society has located approximately 2,000 archeological sites in Nebraska. It is estimated that 98 percent of these represent Indian and prehistoric sites, and the other two percent are historic non-Indian sites. Table 8 lists the number of archeological sites in each county.

Historical Features

Historical features include anything which has occurred in this area after the white man's arrival. This would normally include the historic Indian people, but for cultural continuity the discussion on Indian people was presented in the section on the prehistoric people of Nebraska. In this section, only certain items which today have either an educational, recreational, or aesthetic value will be discussed, including the exploration of Nebraska, trappers, migration trails, forts, and early non-Indian settlers.

Exploration. Written history records that the first white men to visit the Plains were Spanish cavaliers under Francisco Vasquez Coronado in 1540. The Spanish did not reach Nebraska until 1720 when Pedro de Villasur led an expedition into the State. Villasur and most of his men were killed on the Platte River when his group was attacked by Indians, probably Pawnees.

In 1714 a Frenchman, Etienne Veniard de Bourgmond, ascended the Missouri River to the mouth of the Platte River, which he called the "Nebraska" or "flat water". Other French explorers who traveled in Nebraska were Pierre and Paul Mallet. In 1739, they traveled along the Platte River, which they named.

American exploration of Nebraska and the Plains began after the purchase of the Louisiana Territory from France in 1803. The Lewis and Clark Expedition of 1804 to 1806 explored the Louisiana Territory, of which Nebraska was a part. The expedition, which spent several weeks traveling up the Missouri River along Nebraska, followed the Missouri River to its headwaters, crossed the mountains, followed the most practical river route to the Pacific Ocean, made geographic and scientific observations, and cultivated friendship and trade with the Indians.

Other American expeditions which were concerned with Nebraska were the Zebulon Pike Expedition of 1806-1807 and the Yellowstone Expedition. Pike's orders were to explore the Southwest, and his party only visited the Pawnees along the Republican River in Nebraska. The Yellowstone Expedition, led by Atkinson and Long, originally planned on traveling up the Missouri River in steamboats, but could get no farther than Council Bluff, about 15 miles north of Omaha. After spending the winter of 1819-1820 at Council Bluff, Atkinson built Fort Atkinson,

TABLE 8
 ARCHEOLOGICAL AND HISTORICAL SITES

County	Archeological Sites ^{a/}	Historical Markers		
		State ^{b/}	National ^{c/}	Total ^{d/}
1. Adams	7	1	-	1
2. Antelope	32	2	1	2
3. Arthur	-	-	-	-
4. Banner	24	-	-	-
5. Blaine	4	-	-	-
6. Boone	23	-	-	-
7. Boyd	15	-	-	-
8. Box Butte	5	1	-	1
9. Brown	12	-	-	-
10. Buffalo	24	6	-	6
11. Burt	19	2	1	2
12. Butler	12	-	2	2
13. Cass	150	2	4	6
14. Cedar	16	-	-	-
15. Chase	24	1	1	2
16. Cherry	77	1	-	1
17. Cheyenne	55	3	-	3
18. Clay	11	2	-	2
19. Colfax	7	-	-	-
20. Cuming	7	1	1	2
21. Custer	16	3	1	4
22. Dakota	21	4	1	4
23. Dawes	46	6	2	6
24. Dawson	20	3	1	4
25. Deuel	9	4	1	5
26. Dixon	16	2	-	2
27. Dodge	7	1	-	1
28. Douglas	19	6	6	11
29. Dundy	12	2	-	2
30. Fillmore	8	1	-	1
31. Franklin	34	1	-	1
32. Frontier	123	1	-	1
33. Furnas	22	2	-	2
34. Gage	36	1	1	2
35. Garden	28	2	1	3
36. Garfield	2	1	-	1
37. Gosper	55	-	-	-
38. Grant	-	-	-	-
39. Greeley	17	1	-	1
40. Hall	18	4	1	4
41. Hamilton	16	1	-	1

a/ Source: 1973 Nebraska State Historical Society data.

b/ Source: Nebraska State Historical Markers, Brown, Elinor L., 1973.

c/ Source: The National Register of Historic Places, U.S. Dept. of Interior, Office of Archeology and Historic Preservation, U.S. Government Printing Office, Washington, D.C., 1972. Federal Register, U.S. Dept. of Interior, National Park Service, Volume 38, Number 39, Part II (Feb. 28, 1973).

d/ Nebraska State Historical Markers and National Register of Historic Places may not add to total due to duplication of sites.

TABLE 8 (Page 2)

County	Archeological Sites ^{a/}	Historical Markers		
		State ^{b/}	National ^{c/}	Total ^{d/}
42. Harlan	34	1	-	1
43. Hayes	16	-	-	-
44. Hitchcock	17	2	1	3
45. Holt	17	3	-	3
46. Hooker	42	-	-	-
47. Howard	33	-	2	2
48. Jefferson	12	2	2	4
49. Johnson	7	-	-	-
50. Kearney	8	1	1	2
51. Keith	23	5	1	6
52. Keya Paha	6	-	-	-
53. Kimball	27	-	-	-
54. Knox	38	2	2	4
55. Lancaster	31	4	7	9
56. Lincoln	38	5	-	5
57. Logan	-	-	-	-
58. Loup	6	-	-	-
59. McPherson	3	-	-	-
60. Madison	10	2	-	2
61. Merrick	12	2	-	2
62. Morrill	56	1	1	1
63. Nance	25	3	1	3
64. Nemaha	46	4	1	4
65. Nuckolls	11	1	-	1
66. Otoe	12	3	2	5
67. Pawnee	9	-	-	-
68. Perkins	3	2	-	2
69. Phelps	4	3	-	3
70. Pierce	1	-	-	-
71. Platte	24	3	-	3
72. Polk	9	1	-	1
73. Red Willow	24	2	1	2
74. Richardson	50	1	2	3
75. Rock	16	1	-	1
76. Saline	12	3	-	3
77. Sarpy	35	5	6	8
78. Saunders	41	1	3	4
79. Scotts Bluff	10	1	3	4
80. Seward	7	-	-	-
81. Sheridan	23	2	-	2
82. Sherman	13	-	-	-
83. Sioux	25	1	1	2
84. Stanton	12	1	-	1
85. Thayer	5	-	-	-
86. Thomas	3	1	-	1
87. Thurston	16	2	-	2
88. Valley	15	2	1	3
89. Washington	19	4	2	4
90. Wayne	-	2	-	2
91. Webster	14	4	3	6
92. Wheeler	-	-	-	-
93. York	4	-	-	-
	1,973	151	68	200

which was the first military post in present Nebraska; and Long, who led the scientific and exploratory aspects of the expedition, traveled overland along the Platte valley to the Rocky Mountains.

Figure 5 shows the approximate routes of some of these expeditions.

Trappers. Trappers or fur traders added much to the knowledge of the geography of Nebraska, which was a great highway of fur trade. Both the Missouri River and the Platte valley were used extensively by the trappers. There was a fur trading post near the present site of Bellevue as early as 1810. Peter A. Sarpy, who came to Bellevue in the 1830's to run a fur post which had been established by the American Fur Company, was probably the most famous fur trader in Nebraska.

Migration Trails. Nebraska has been an important corridor for east-west travel across the United States. The Missouri River was the route of the explorers and fur traders, and during the steamboat days, it was an important roadway for commerce. The steamboats helped establish river towns like Rulo, Brownville, Nebraska City, Omaha, and Dakota City.

The Platte valley has been one of the world's most useful natural highways because of its great width, gentle gradient, absence of major tributaries to be forded, and the presence of trees for repairs and fuel. It has been estimated that over 250,000 emigrants traveled over this valley by covered wagon to Oregon, California, and Utah between 1841 and 1869. The emigrant routes were followed by freighting caravans, stage coaches, and the Pony Express. The first transcontinental telegraph and railroad followed the Platte valley.

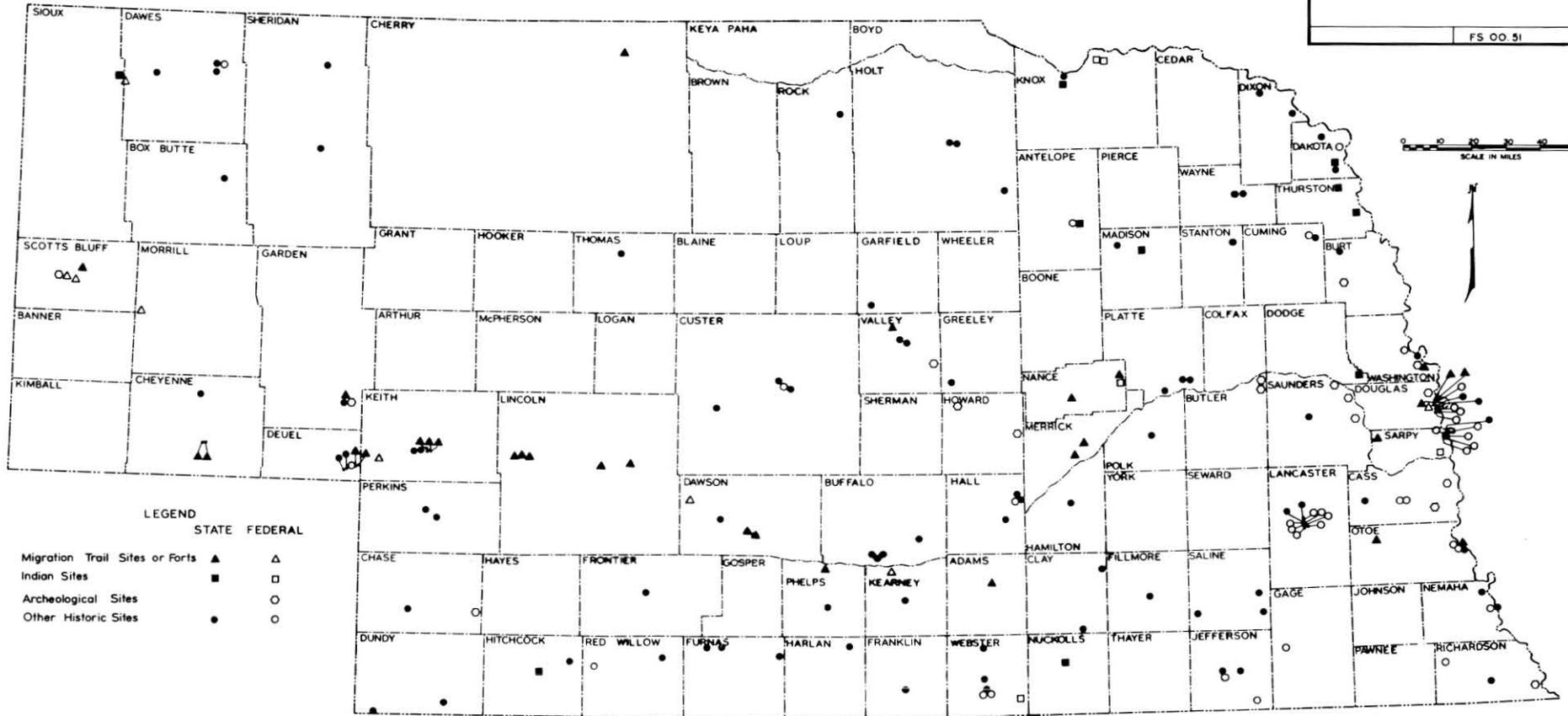
The Oregon Trail was the best known migration route through the Platte valley. It began at Independence, Missouri, and entered Nebraska along the Gage and Jefferson County lines. The trail followed the Little Blue River valley across Nebraska until it joined the Platte valley in Kearney County, and then followed the south side of the Platte and South Platte Rivers until it crossed the South Platte near Big Springs in Keith County. From this point, the trail followed the south side of the North Platte River into Wyoming. Traces of this trail can still be found at some points in Nebraska. Nine State Historical Markers and National Historic Places along the trail are shown in Figure 6.

There are several alternate routes along the Platte valley, and the particular route followed by the emigrants depended upon such factors as the condition of the trail and the availability of grass. Numerous places were used as crossing points on the South Platte River from as far east as the confluence of the North and South Platte Rivers to as far west as Julesburg, Colorado. After gold was discovered in present Colorado, some emigrants followed the South Platte River to Denver and the mining camps. Another variation of the Oregon Trail, which developed for overland freight wagons, was the Nebraska City-Fort Kearny Cutoff. This road, which was developed in the 1860's, ran

LOCATION OF HISTORICAL MARKERS

State of Nebraska
 NATURAL RESOURCES COMMISSION
 Planning Division

FS 00 51



LEGEND
 STATE FEDERAL

- Migration Trail Sites or Forts ▲ △
- Indian Sites ■ □
- Archeological Sites ● ○
- Other Historic Sites ● ○

0 10 20 30 40
 SCALE IN MILES



almost due west from Nebraska City to the Platte valley where it eventually joined the Oregon Trail.

Another major migration route through Nebraska was the Mormon Trail, which began near Florence (now part of Omaha), crossed the Elkhorn River, joined the Platte valley near Fremont, and followed the north side of the Platte valley through Nebraska. This trail was started by Brigham Young, when he led the Mormons west in 1847. The Mormons used the north side of the valley to avoid meeting other pioneers because they had been previously persecuted for their religious beliefs. Five State Historical Markers and National Historic Places shown in Figure 6 mark the route of this trail.

Two other important trails through Nebraska were the Sidney-Black Hills Trail and the Overland Freight Trail. The Sidney-Black Hills Trail was developed after gold had been discovered in the Black Hills in 1874. It was primarily a freight trail for freight being hauled from Sidney to the Black Hills after it came to Sidney by railroad. The Overland Trail consisted of several trails from different eastern terminals such as Nebraska City and Omaha in Nebraska, St. Joseph and Independence in Missouri, and Leavenworth and Atchinson in Kansas. Near Fort Kearny these eastern trails converged and followed the Oregon Trail along the Platte valley.

Stage coach routes and the Pony Express followed the Platte River valley through much of Nebraska. Stage lines used different routes in the eastern part of Nebraska depending upon their eastern terminal, but they usually followed the Oregon Trail from Fort Kearny westward in Nebraska. The Pony Express, which operated from April 1860 to July 1861 until the transcontinental telegraph was finished, followed the Oregon Trail in Nebraska. Four Pony Express stations that have been marked or preserved are shown on Figure 6.

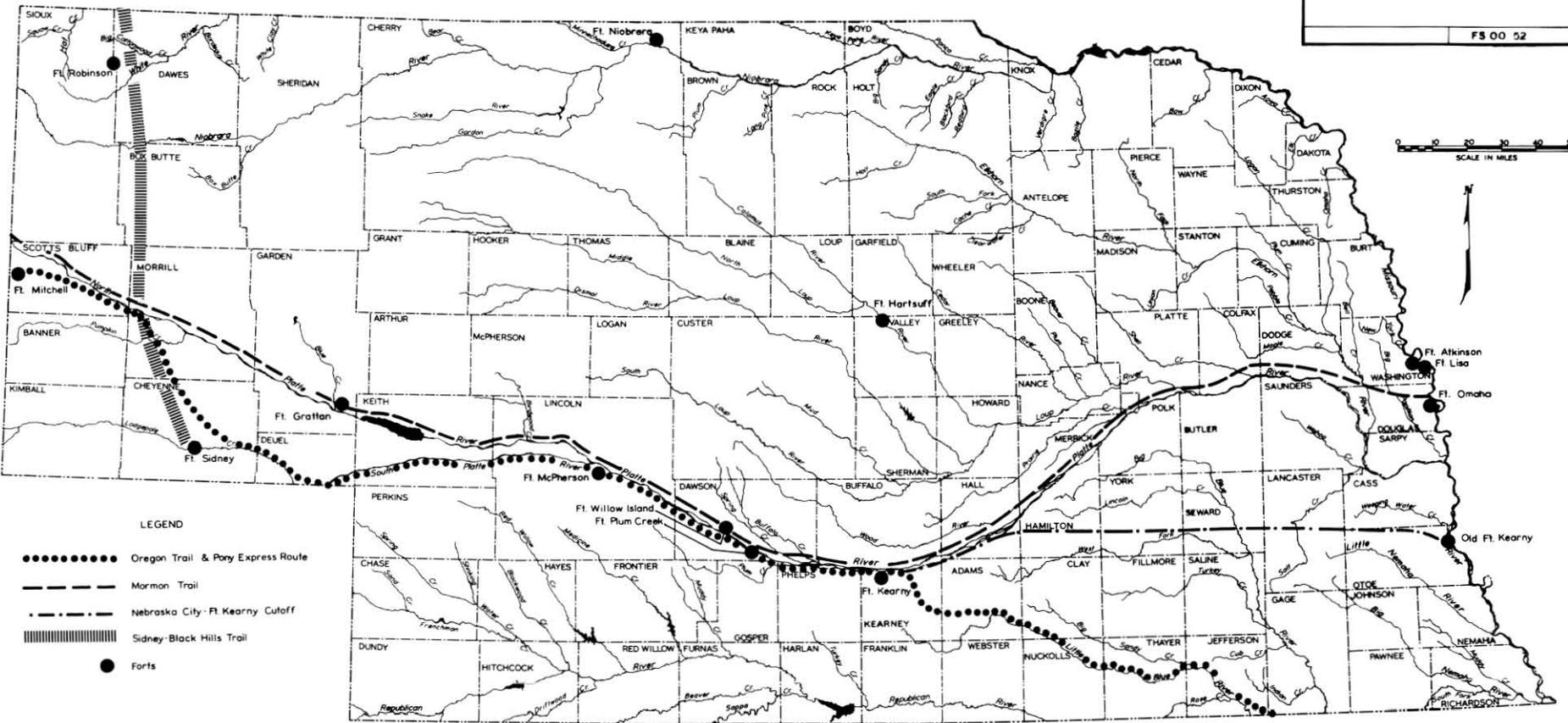
Figure 7 shows the paths of the above migration routes and some of the stage and freight stations in Nebraska. The location of several historic forts are also included on this figure. Many of these forts were established to protect the emigrants as they traveled through Nebraska.

Forts. Several historic forts had been built and maintained in Nebraska to provide different types of services. Fort Lisa, which was established in 1812 near Council Bluff, was privately owned by fur traders. As part of the Yellowstone Expedition, Cantonment Missouri was founded in 1819 at Council Bluff (the site of Lewis and Clark's historic council with the Indians) near the present site of Fort Calhoun. The camp was moved the following year, and it became Fort Atkinson-- the first permanent military post in present Nebraska. It was abandoned by the U.S. Army in 1827.

After white men began migrating through Nebraska and settling in Nebraska, forts were built to protect these people from hostile Indians. Fort Kearny, which was originally situated at Nebraska City

LOCATION OF MIGRATION TRAILS AND HISTORIC FORTS

State of Nebraska
 NATURAL RESOURCES COMMISSION
 Planning Division
 FS 00 52



- LEGEND
- Oregon Trail & Pony Express Route
 - Mormon Trail
 - · - · - · - · Nebraska City - Ft. Kearny Cutoff
 - ▨▨▨▨▨▨▨▨ Sidney-Black Hills Trail
 - Forts

-09-

Fig. 7

In 1846, was built to protect the pioneers who were migrating through Nebraska. This fort was moved in 1847 after the military realized that it was located out of the mainstream of the migration routes. It was operated at a site south of the Platte River in Kearney County from 1847 to 1871. Other forts that were built and maintained were: Fort McPherson from 1864 to 1880, Fort Sidney from 1867 to 1894, Fort Hartsuff from 1874 to 1881, Fort Robinson from 1874 to 1949, and Fort Niobrara from 1880 to 1906. Figure 7 shows the location of the historic forts in Nebraska.

Early Non-Indian Settlements. Non-Indian settlement in Nebraska was not officially allowed until 1854 when the Nebraska Territory was established. The first settlers in 1854 were from Iowa and Missouri, and later settlers came from other states and countries. Bellevue was the only settlement of any size when the territory was established, but several other towns were founded along the Missouri River in 1854.

Types of Historical Sites. The Nebraska State Historical Society has examined and evaluated several buildings, archeological sites, trails, etc. according to their historical significance. Over 150 historical sites have been judged worthy of special recognition, and they have been marked with Nebraska State Historical Markers.^{8/} Nearly 100 historical sites in Nebraska have been judged worthy of special national recognition. These sites are on the National Register of Historic Places.^{9/} Figure 6 shows the approximate location of some of the State Historical Markers and sites in the National Register of Historic Places. Table 8 lists the number of these sites in each county. This table also contains the number of archeological sites per county, and it should be noted that archeological sites can also be State Historical Markers and sites in the National Register of Historic Places.

Biological Features

Determining biological features that are significant environmentally presents a problem in interpreting what is significant. No comprehensive inventory of unique or valuable biological areas could be found.

Habitats. Nebraska has been divided by the Nebraska Game and Parks Commission into seven major habitat types, which can be separated

8/ Nebraska State Historical Markers, Brown, Elinor L., 1973.

9/ The National Register of Historic Places, U.S. Dept. of Interior, Office of Archeology and Historic Preservation, U.S. Government, Printing Office, Washington, D.C., 1972. Federal Register, U.S. Dept. of Interior, National Park Service, Volume 38, Number 39, Part II (Feb. 28, 1973).

into numerous subtypes.^{10/} Grasslands, which vary from the tall grass prairies in the eastern counties to the mixed grasses typical of the Sandhills and the short grasses in the high plains of western Nebraska, occupy about 55.4 percent of the State. Croplands comprise about 37.7 percent of the State. The major crops are wheat, corn, sorghum, and alfalfa. Woodlands contain both the western softwoods (conifers) and the eastern hardwoods (deciduous). Water areas consist of rivers, lakes, ponds, canals, reservoirs, and marshes. Developed areas include cities, towns, industrial sites, airports, and roads. Badlands, which occur in the northwest corner of the State are composed of highly eroded lands largely devoid of vegetation. Other lands include miscellaneous units of land not fitting into the other six categories.

The Game and Parks Commission has published a series of maps showing the locations of the major types of habitats and the distribution of game animals associated with such habitat.

Platte River Islands. Over 150 Platte River Islands from the mouth of the Loup River downstream to Valley, Nebraska, comprise one of the last reserves of undeveloped land remaining in Nebraska and the Great Plains. These islands created by the meandering Platte River and its tributaries have been classified by the Bureau of Outdoor Recreation, U.S. Department of Interior, as outstanding islands that merit national recognition in the Islands of America report.^{11/} Although most of the islands are privately owned, they represent over 5,000 acres of land which could provide excellent educational and recreational opportunities for the people of the region, including the urban population of Omaha and Lincoln. These islands with their vast and ecologically unique fauna and flora are worthy of preservation in their present natural condition.

There are also numerous other islands throughout the State along the Platte River and other streams that possess recreational and educational values.

^{10/} The Nebraska Fish and Wildlife Plan, Volume I, Nebraska Wildlife Resource Inventory, Nebraska Game and Parks Commission, 1972.

^{11/} Islands of America, Department of Interior, Bureau of Outdoor Recreation, Washington, D.C., 1970.

CHAPTER 4. LAND USE

This chapter presents estimates of the amount of land in Nebraska used for different purposes. Land use inventories were made using available conventional data. Data from Earth Resources Technology Satellites are not sufficiently sophisticated to replace other sources yet, but an example of this method is also presented.

Inventory of Land Use

Land uses in this State have been divided into the following categories: agricultural; recreation, fish, and wildlife; transportation; incorporated communities; built-up and other areas; water; mineral; and military. A summary of primary land uses is shown in Table 9.

Data from the Nebraska Conservation Needs Inventory, 1969 show that agriculture dominates land use in Nebraska, utilizing slightly over 95 percent of the total area. Over one-half (51 percent) of the total area is used for pasture and range purposes, and 40 percent of the total area is used for croplands. The other four percent in agricultural use includes forests and woodlands and other uses.

The remainder of the State (4.8 percent) is used for non-agricultural purposes. Lands used primarily for recreation, fish, and wildlife purposes comprise 0.6 percent of the total area of Nebraska. This does not include water areas, which comprise 1.2 percent of the State's area, because water areas are inventoried separately. Transportation uses, incorporated communities, and built-up and other areas constitute about three percent of the State's total land use. These three land uses are increasing and causing a slight decrease in agricultural areas. Mineral and military areas are minor land use areas comprising about 0.1 percent of the State's area.

Secondary uses are those for which certain areas can be utilized in addition to, or concurrently with, primary uses. Secondary uses are especially important to recreation, fish, and wildlife. Nearly all the agricultural lands and a large portion of the water areas have potential for secondary uses as recreation, fish, and wildlife areas. However, the actual acres of agricultural lands and water areas that have secondary uses as recreation, fish, and wildlife areas are restricted by land owners limiting access to these lands and waters. Secondary recreation, fish, and wildlife uses available on transportation, mineral, and military lands and the areas used for indoor recreational activities in incorporated communities and built-up areas are unknown. Known secondary uses for recreation, fish, and wildlife purposes amount to approximately 47,462,800 acres. Secondary uses other than for recreation, fish, and wildlife have not been inventoried.

TABLE 9
SUMMARY OF PRIMARY USES OF LAND AND WATER AREAS

Use	Acres	Percent
Agricultural Areas	47,168,600	95.2
Croplands	(20,014,200)	(40.4)
Forest and Woodlands	(976,100)	(2.0)
Pasture and Range	(25,342,900)	(51.1)
Other Land in Farms	(729,300)	(1.5)
Rural Non Farm Lands	(106,100)	(0.2)
Recreation, Fish and Wildlife	301,100	0.6
Transportation	964,300	1.9
Incorporated Communities ^{a/}	286,500	0.6
Built-up and Other Areas	185,400	0.4
Water Areas	583,000	1.2
Mineral Areas	25,000	0.1
Military Use Lands	<u>21,100</u>	<u>0.0</u>
TOTAL	49,535,000	100.0

^{a/} Does not include urban roads, which are included in Transportation.

Agricultural Lands

Within Nebraska there are significant variations in the proportion of the land devoted to various agricultural uses, both in terms of major land uses and specific cropping patterns. These differences occur because of physical characteristics of the land, climatic conditions, or economic reasons. Changes in the amounts of specific crops planted and harvested have also occurred over the past few years.

Cropping Patterns. Table 10 lists the crops, the average number of acres harvested, and yield per acre for the State during the five year period from 1966 through 1970.

Crop Changes. Table 11 shows the number of acres of major crops harvested in recent years. It illustrates the differences between the five-year average (1966-1970) for crop acreages and the yearly crop acreages for 1967 through 1972.

TABLE 10
AVERAGE STATE CROPPING PATTERN FOR
PERIOD 1966-1970

Crop	Acres	Yield per Acre ^{a/}
Non-Irrigated Cropland		
Wheat	2,884,089	32.6 B
Corn	2,534,513	57.5 B
Corn Silage	273,410	10.0 T
Sorghum Grain	1,629,652	58.8 B
Sorghum Silage	110,190	10.0 T
Other Small Grains	564,293	39.8 B
Soybeans	733,256	25.9 B
Dry Beans	289	1,774.6 P
Alfalfa Hay	1,295,649	2.2 T
Other Hay	822,919	1.3 T
Orchards	500	ND
Cropland Pasture	829,114	3.0 AUM
Summer Fallow	1,785,229	ND
Temporary Idle	400	ND
Conservation Use	2,452,163	ND
Irrigated Cropland		
Wheat	8,408	32.4 B
Corn	2,248,041	106.6 B
Corn Silage	160,588	16.8 T
Sorghum Grain	179,556	89.8 B
Sorghum Silage	18,023	17.8 T
Other Small Grains	26,154	56.0 B
Soybeans	62,278	34.7 B
Dry Beans	85,470	1,795.0 P
Sugar Beets	82,558	16.9 T
Alfalfa Hay	342,482	3.8 T
Other Hay	38,161	0.8 T
Other Row	9,444	ND
Cropland Pasture	27,319	6.5 AUM
Temporary Idle	1,000	ND
Conservation Use	616,131	ND
Pasture and Range		
Range-Wild Native Hay	1,330,112	0.2 T
Range-Adequate Treatment	10,698,941	ND
Range-Needs Treatment	11,818,697	ND
Range-Not Treatable	193,300	ND
Pasture-Adequate Treatment	373,114	ND
Pasture-Needs Treatment	1,234,410	ND
Pasture-Not Treatable	26,094	ND
Pasture-Irrigated	42,753	ND
Forest and Woodland		
Commercial Forest Not Grazed	18,431	ND
Commercial Forest Grazed	112,326	ND
Non-Commercial Forest Not Grazed	162,170	ND
Non-Commercial Forest Grazed	471,625	ND
Other Agricultural Lands	873,205	ND
Total Agricultural Lands	47,176,457	

^{a/} B = bushel; T = ton; AUM = animal unit month (cow and calf grazing for one month); P = pound; and ND = not determined.

Source: Economic Research Service and Soil Conservation Service adjusted data compiled from Nebraska Conservation Needs Inventory, 1969 and Nebraska Agricultural Statistics, 1966-1970.

TABLE 11
AREA OF MAJOR CROPS
HARVESTED IN NEBRASKA

Crop	Five Year	1967	1968	1969	1970	1971	1972 ^{a/}
	Average (1966-1970)						
(1,000 Acres)							
Non-irrigated							
Wheat	2,933	3,315	3,153	2,773	2,548	2,426	2,548
Corn for grain	2,536	2,670	2,274	2,588	2,585	2,774	2,683
Grain Sorghum	1,613	1,932	1,550	1,416	1,390	1,896	1,619
Oats	511	472	450	538	563	505	380
Alfalfa	1,524	1,556	1,505	1,499	1,495	1,448	1,390
Soybeans	728	746	727	714	748	579	707
Irrigated							
Corn for grain	1,919	1,840	1,965	2,032	2,220	2,256	2,487
Grain Sorghum	211	261	204	145	130	161	138
Alfalfa	240	238	236	242	255	250	260
Sugar Beets	73	63	72	87	79	78	83
Dry Beans	80	69	80	92	86	88	95
Soybeans	50	36	56	52	64	30	39

^{a/} Preliminary data.

Source: Nebraska Agricultural Statistics, Annual Report 1966, 1967, 1968, 1969, 1970, and 1971, U.S. Department of Commerce, Bureau of Census, 1967, 1968, 1969, 1970, 1971, 1972, and 1973.

The acres of wheat harvested have decreased from 1967 to 1972 and the acres of irrigated dry beans and sugar beets have increased. Non-irrigated corn acres appear to have remained stable, while irrigated corn acres have increased. There appears to be a slight trend toward irrigating more alfalfa while non-irrigated alfalfa acres have decreased slightly. No pronounced trends are apparent in the data for the other crops.

Recreation, Fish, and Wildlife Lands

The total area of Nebraska which is used for recreation is not accurately known. The amount of land used primarily for public urban and non-urban outdoor recreation is known, but the area of these types of lands provided by the private sector is unknown. Also, public and private indoor facilities, such as tracks, gyms, and bowling alleys, have not been inventoried, and the absence of data on these facilities creates a void in our knowledge of recreational facilities and lands in Nebraska.

The area of the State used primarily for fish and wildlife purposes is more accurately known than the area used for recreational purposes. Nevertheless, some difficulties are encountered when fish, wildlife, and recreation lands are inventoried as secondary uses. Agricultural lands are generally inventoried as providing secondary recreation, fish, and wildlife uses.

Table 12 lists the areas in Nebraska available for primary outdoor recreation, fish, and wildlife uses. The total primary recreation, fish, and wildlife uses listed in this table do not correspond with this same category listed in Table 9 because public urban areas and water areas used for primary recreation, fish, and wildlife uses included in this table are not included in Table 9.

Lands available for secondary outdoor recreation, fish, and wildlife uses comprise a large proportion of the State. Agricultural lands provide 47,168,600 acres for these secondary uses and water areas provide an additional 358,600 acres. Transportation lands, incorporated communities, and built-up and other areas also have some areas which have not been inventoried that provide the above secondary uses.

Table 13 provides a listing of the public non-urban areas available for recreation, fish, and wildlife purposes. Both primary and secondary uses are included.

Table 14 provides a summary of the municipal outdoor recreation resources in Nebraska. Urban municipalities are defined as those with populations over 2,500.

TABLE 12
LANDS AVAILABLE FOR PRIMARY OUTDOOR RECREATION,
FISH, AND WILDLIFE USES

Type of Area	Land (Acres)	Water (Acres)	Total (Acres)
Public Non-urban	295,488	135,201	430,689
Public Urban ^{a/}	23,526	1,164	24,690
Private	<u>5,591</u>	<u>88,032</u>	<u>93,623</u>
TOTAL	324,605	224,397	549,002

^{a/} Incorporated communities with population over 2,500.

Source: Outdoor Recreation For Nebraska - A Comprehensive
Final Draft, Nebraska Game and Parks Commission, 1

TABLE 13
PUBLIC NON-URBAN AREAS AVAILABLE FOR RECREATION,
FISH, AND WILDLIFE PURPOSES

Areas	Managing Agency	County	Acres
Scotts Bluff Nat'l Monument	National Park Service	Scotts Bluff	3,050
Agate Fossil Beds Nat'l Monument	National Park Service	Sioux	2,997
Homestead Nat'l Monument	National Park Service	Gage	163
Harlan County Reservoir	Corps of Engineers	Harlan	30,265
Papio Watershed (under development)	Corps of Engineers	Douglas & Sarpy	2,046
Fort McPherson Nat'l Cemetery	Corps of Engineers	Lincoln	60
Lewis and Clark Reservoir	Corps of Engineers	Knox and Cedar	15,108
DeSoto Nat'l Wildlife Refuge	Bureau of Sport Fisheries and Wildlife	Washington	4,324
Valentine Nat'l Wildlife Refuge	Bureau of Sport Fisheries and Wildlife	Cherry	71,516
Crescent Lake Nat'l Wildlife Refuge	Bureau of Sport Fisheries and Wildlife	Garden	45,996
North Platte Valley Nat'l Wildlife Refuge	Bureau of Sport Fisheries and Wildlife	Scotts Bluff	2,137
Fort Niobrara Nat'l Wildlife Refuge	Bureau of Sport Fisheries and Wildlife	Cherry	19,122
Crawford Nat'l Fish Hatchery	Bureau of Sport Fisheries and Wildlife	Dawes	501
41 Waterfowl Production Areas	Bureau of Sport Fisheries and Wildlife	Gosper, Phelps, York, Fillmore, Clay, & Kearney	14,002
Bessey Division, Nebraska Nat'l Forest	Forest Service	Thomas, Blaine	90,444

TABLE 13 (Page 2)

Areas	Managing Agency	County	Acres
McKelvie Division, Nebraska Nat'l Forest	Forest Service	Cherry	115,638
Pine Ridge Division, Nebraska Nat'l Forest	Forest Service	Dawes, Sioux	49,998
Oglaia Nat'l Grasslands	Forest Service	Sioux, Dawes	94,344
Chadron State Park	Game and Parks Comm.	Dawes	802
Fort Robinson State Park	Game and Parks Comm.	Dawes	12,377
Indian Cave State Park	Game and Parks Comm.	Richardson & Nemaha	2,731
Niobrara State Park	Game and Parks Comm.	Knox	408
Ponca State Park	Game and Parks Comm.	Dixon	803
54 State Recreational Areas	Game and Parks Comm.	34 Counties	93,694
25 State Wayside Areas	Game and Parks Comm.	18 Counties	711
8 State Historical Parks	Game and Parks Comm.	7 Counties	1,725
110 State Special Use Areas	Game and Parks Comm.	47 Counties	92,628
6 State Fish Hatcheries	Game and Parks Comm.	6 Counties	1,579
Aerospace Museum	Dept. of Economic Development	Sarpy	42
Lake North	Loup River Public Power District	Platte	1,250
Big Indian	Lower Big Blue Nat. Res. District	Gage	223
Chimney Rock	State Hist. Society & Nat'l. Park Service	Morrill	83
Fontenelle Forest	Quasi-Public	Sarpy	1,300

Source of Data: Outdoor Recreation For Nebraska-A Comprehensive Plan - Final Draft,
Nebraska Game and Parks Commission, 1973.

A comprehensive inventory of the State's private recreational facilities is not available. The Nebraska Game and Parks Commission^{12/} has compiled private recreation data from several sources, but their data is incomplete. Table 15, which was developed by the Nebraska Game and Parks Commission, summarizes the available data on outdoor recreation resources provided by the private sector in Nebraska.

Transportation

Roads, railroads, airports, and waterways provide the major modes of transportation in Nebraska. The water system is primarily barge traffic up and down the Missouri River from South Sioux City southward. This water system requires a small amount of land for channelization, harbors, docks, etc. The other three systems require much more land. Table 16 lists the lands used by roads, railroads, and airport systems. These three types of transportation systems use almost two percent of Nebraska's total area.

Incorporated Communities

Data on the area of incorporated communities are incomplete and difficult to find even though over 1,200,000 Nebraskans live in incorporated communities. The area of incorporated communities, 286,500 acres or 0.6 percent of the State's area, in Table 9 was estimated by using population densities of 0.5 acres per person for communities with populations of 2,500 and less and 0.2 acres per person for communities with populations above 2,500. The total area was obtained by multiplying the population for the two community types by the appropriate population density and subtracting 57,496 acres for urban roads from the total.

Table 17, which gives the distribution of incorporated communities within certain population ranges, illustrates the preponderance of small communities with populations of 500 or less in Nebraska. Of 528 incorporated communities in 1970, there were 336 with populations of 500 or less and 484 with populations of 2,500 or less. Table 17 does not list communities which are not incorporated, but there are a large number of these communities in Nebraska. There are 65 which have a United States Post Office and many others that do not. A large majority of these non-incorporated communities will fall within the 1-500 population range.

Built-up and Other Areas

This category, which totals 185,400 acres, includes non-incorporated communities, built-up areas outside incorporated communities, and other areas that do not fit in any other category. The exact number of non-incorporated communities is unknown, but there are 65 non-incorporated

^{12/} Outdoor Recreation For Nebraska - A Comprehensive Plan - Final Draft, Nebraska Game and Parks Commission, 1973.

TABLE 14

MUNICIPAL OUTDOOR RECREATION RESOURCES

Type of Municipality	Number of Municipalities	Land (Acres)	Water (Acres)	Total (Acres)
Urban ^{a/}	47	16,310	810	17,120
Other	<u>425</u>	<u>7,216</u>	<u>354</u>	<u>7,570</u>
TOTAL	472	23,526	1,164	24,690

a/ Population over 2500.

Source of Data: Outdoor Recreation for Nebraska - A Comprehensive Plan - Final Draft, Nebraska Game and Parks Commission, 1973.

TABLE 15

OUTDOOR RECREATION RESOURCES IN NEBRASKA
PROVIDED BY THE PRIVATE SECTOR

Type of Enterprise by Primary Type of Opportunity	Number	Land (Acres)	Water (Acres)	Total (Acres)
Fee Fishing Areas	103	10,635	28,612	39,247
Fee Hunting Areas	78	274,509	5,539	280,048
Vacation Cabins, Cottages, and Home Site Areas	58	6,666	3,846	10,512
Golf Courses ^{a/}	51	2,400	18	2,418
Camping Areas ^{a/}	26	1,560	22,056	23,616
Field Sports Areas	26	612	10	622
Water Sports Areas	25	1,145	27,938	29,083
Riding Stables	12	2,613	6	2,619
Natural, Scenic, and Historic Areas	9	1,631	2	1,633
Vacation Farms and Ranches	<u>9</u>	<u>5,220</u>	<u>6</u>	<u>5,226</u>
TOTAL	397	307,991	88,032	395,018

a/ Primary uses, other uses not footnoted are secondary.

Source of Data: Outdoor Recreation For Nebraska - A Comprehensive Plan - Final Draft, Nebraska Game and Parks Commission, 1973.

TABLE 16
AREA USED FOR TRANSPORTATION IN NEBRASKA

Type of Transportation	Acres
Roads	861,298
Interstate	(18,147)
Primary	(77,887)
Secondary	(53,424)
Local Roads and Streets	(711,840)
Railroads	67,642
Airports	<u>35,357</u>
TOTAL	964,297

Source of Data: Nebraska Department of Roads and State Office of Planning and Programming.

TABLE 17
POPULATION RANGES OF INCORPORATED COMMUNITIES
IN NEBRASKA

Population Range	Number of Incorporated Communities
1 - 500	336
501 - 2,500	148
2,501 - 10,000	32
10,001 - 50,000	10
50,001 - 100,000	0
Over 100,000	2

Source of Data: 1972 Highway Map of Nebraska, Nebraska Department of Roads.

communities which have post offices. Built-up areas are lands outside community boundaries not used for agricultural; recreation, fish, and wildlife; transportation; mineral; or military uses. Examples of land uses that would fall into this category are rural non-farm homes, rural industrial plants, and rural cemeteries. Other lands are residual areas which do not fall into any of the other land use categories.

Water Areas

There are about 583,000 acres of water areas in the State, which is about 1.2 percent of the State's area. Large water areas cover approximately 457,400 acres and small water areas utilize about 125,600 acres. These areas fluctuate during wet and dry years. The major water areas in the State consist mainly of numerous natural Sandhills lakes and several manmade reservoirs.

Mineral Areas

The use of land in 1973 for mineral industries is estimated at approximately 25,000 acres by the Conservation and Survey Division of the University of Nebraska. This includes old and currently operating mineral sites. Map 1 shows the location of these mineral sites, which are predominantly sand and gravel quarries, limestone quarries, clay pits, and gas and oil sites.

Military Areas

The Department of Defense administers 21,079 acres of land in Nebraska which is used for military installations. Major portions of this area are included in the Cornhusker Ordnance Plant near Grand Island and Offutt Air Force Base south of Omaha.

Inventory by Remote Sensing

Remote sensing techniques have been used for a number of years for mapping and inventorying the earth's features. Many of these techniques have been developed for military use, particularly from airplanes, and adapted for civilian use. Recently, other vehicles for carrying equipment have expanded the capabilities of remote sensing in the field of resources and land use.

The launch of NASA's first Earth Research Technology Satellite (ERTS-1) on July 23, 1972, was a major step toward developing systems for more efficient management of the earth's resources. A second ERTS satellite is scheduled to be launched in 1976.

The ERTS observatory operates in a polar orbit, passing over from northeast to southwest, 500 nautical miles above the earth. It is designed to return images from two independently functional multispectral

sensors. The satellite passes over a given area approximately every 18 days, covering the entire State in four to five days, thereby providing continuous and repetitious coverage. A data collection system on board the observatory gathers information and relays this data to the ground processing facility via radio, where it is processed into both black and white and color images. Each reproduction covers approximately 100 by 100 nautical miles. The images are in a 10 inch by 10 inch frame at a scale of 1:1,000,000, which can be reproduced at a variety of scales.

With funds provided through the continuation of a University Affairs grant from NASA, with assistance provided by the Nebraska State Office of Planning and Programming and the Nebraska Natural Resources Commission, and with assistance from the College of Engineering and Technology, a user-oriented Remote Sensing Center has been established within the Conservation and Survey Division of the University of Nebraska-Lincoln.

Through this joint effort, a Level I, or first order, land-use classification map of Nebraska utilizing satellite imagery has been compiled. The Level I map is based on the U.S. Geological Survey Land Use Classification System, which includes nine Level I categories, seven of which apply to Nebraska as shown on Map 2. The Level I map can be refined to a Level II map, which is a breakdown of the nine major categories of land use into more descriptive classifications. This requires more data from aircraft imagery or photographs, ground-truth surveys, or other special analysis of available data on the areas. A statewide Level II map will be available in the future.

CHAPTER 5. LAND OWNERSHIP

The purpose of this chapter is to present an inventory of land ownership within the State. Approximately 94 percent of the total land area of Nebraska is in private ownership and the remaining six percent is in public ownership.

Private Ownership

Privately owned lands are used for agricultural, residential, commercial, industrial, and recreational purposes. The majority of the privately owned land is used for agricultural purposes.

Agriculture

For a number of years, several trends in agriculture have been apparent: (1) the number of farms and ranches has been decreasing, and at the same time, (2) the average size of farms and ranches has been increasing. Data from the 1964 and 1969 Census of Agriculture show a continuation of these trends. The number of farms in Nebraska declined from about 80,000 in 1964 to about 72,000 in 1969. At the same time, the average farm size continued to increase, from 596.2 acres in 1964 to 634.3 acres in 1969.^{13/}

The number of farms by size for 1964 and 1969 is listed in Table 18. Two trends are occurring in farm sizes. There has been an increase in the number of smaller farms, from 1 to 49 acres, from 1964 to 1969. This apparently indicates the growth in popularity of small acreages near cities. The second trend has been the decline in the number of farms between 50 and 499 acres and the increase in the number of farms greater than 500 acres since 1964. This second trend indicates the tendency toward fewer farmers who manage more land.

The tenure of Class 1-5 farms, which are farms that sold agricultural products worth at least \$2,500, is shown on Table 19 for 1964 and 1969. In 1969, farms operated by part owners, full owners, and tenants amounted to 59.7 percent, 22.0 percent, and 18.3 percent of the farmland, respectively.

Incorporated Communities

A large percentage of the land area in incorporated communities is privately owned. This percentage varies from community to community, but detailed data on public and private lands in communities are not

^{13/} 1969 Census of Agriculture, Part 20. Nebraska, Section 2. County Data, Volume 1. Area Reports, U.S. Department of Commerce, Bureau of Census, 1972.

TABLE 18
FARM SIZE DATA FOR 1964 AND 1969

Acres	Number of Farms	
	1964	1969
1 to 49	6,352	7,081
50 to 499	52,936	43,848
500 and over	20,875	21,328
1,000 and over	8,677	9,004
TOTAL	80,163	72,257

Source of Data: 1969 Census of Agriculture, Part 20. Nebraska, Section 2. County Data, Volume 1. Area Reports, U.S. Department of Commerce, Bureau of Census, 1972.

TABLE 19
TENURE OF CLASS 1-5 FARMS^{a/}

Operated by	1964		1969	
	No. of Farms	Acres	No. of Farms	Acres
Full owners	19,880	NA ^{b/}	21,872	9,805,709
Part owners	25,582	NA	25,472	26,645,980
Tenants	<u>22,296</u>	<u>NA</u>	<u>16,041</u>	<u>8,206,846</u>
Total Class 1-5 Farms	68,115	45,974,031	63,385	44,658,535

^{a/} Class 1-5 farms produced agricultural products that sold for at least \$2,500.

^{b/} Not available.

Source of Data: 1969 Census of Agriculture, Part 20. Nebraska, Section 2. County Data, Volume 1. Area Reports, U.S. Department of Commerce, Bureau of Census, 1972.

readily available. The area of incorporated communities, 286,500 acres, listed in Table 9 includes all publicly owned lands except the area of urban roads.

Recreation

Recreational facilities are provided by the private sector, but there has not been a complete inventory of such facilities from which the area they occupy can be determined. Both incorporated and non-incorporated communities have numerous private indoor recreational facilities, but there are no data available on these facilities. However, the area of some private outdoor recreational facilities has been estimated by the Nebraska Game and Parks Commission. This information is shown in Table 15.

Public Ownership

Title to publicly owned lands in Nebraska is held by the federal government, state agencies, local districts, counties, and municipalities. Federally owned lands are administered primarily by three agencies; the Departments of Agriculture, Defense, and Interior.

Large Tracts of Publicly Owned Land and Water Areas

Table 20 lists tracts of publicly owned lands over 2,000 acres, and Figure 8 shows their approximate location. Over 350,000 acres of these lands are contained in four national forests administered by the U. S. Forest Service of the Department of Agriculture. The majority of the other 35 sites is State recreational areas.

Federal Lands

Federally owned lands administered by the Departments of Agriculture, Defense, and Interior are listed in Table 21. Information given is for lands owned by the federal government in 1973.

State Lands

Table 22 contains a listing of state owned or managed lands by county and agency. All of the lands recorded under Educational Lands are owned by the State, and most of the lands listed under the Game and Parks Commission and the Agricultural Experiment Station are owned by the State. Lands listed under Other are state owned or managed lands. The Agricultural Experiment Station also administers 640 acres at the Meat Animal Research Center in Clay Center, Nebraska, which is a federally owned center that covers 35,000 acres.

TABLE 20

LARGE TRACTS OF PUBLICLY OWNED LAND AND WATER

Areas	Acres
1. Oglala National Grasslands	94,344
2. Pine Ridge Division of the Nebraska National Forest	49,998
3. Fort Robinson State Park	12,377
4. James Ranch	10,295
5. Peterson Special Use Area	2,401
6. Wood Reserve	10,000
7. Gilbert Baker Special Use Area	2,462
8. Ponderosa Special Use Area	3,660
9. Agate Fossil Beds National Monument	2,997
10. Box Butte Recreation Area	2,212
11. Scotts Bluff National Monument	3,050
12. North Platte Valley National Wildlife Refuge	2,137
13. Lake Minatare Recreation Area	2,970
14. Crescent Lake National Wildlife Refuge	45,996
15. High Plains Agricultural Laboratory	2,410
16. Lake McConaughy Recreation Area	41,642
17. Clear Lake Special Use Area	6,009
18. McKeivie Division of the Nebraska National Forest	115,638
19. Fort Niobrara National Wildlife Refuge	19,122
20. Valentine National Wildlife Refuge	71,515
21. Merritt Reservoir Recreation Area	9,053
22. Bessey Division of the Nebraska National Forest	90,440
23. Sutherland Reservoir Special Use Area	3,054
24. Johnson Lake Recreation Area	2,142
25. Enders Reservoir Recreation Area	5,350
26. Swanson Reservoir Recreation Area	8,931
27. Red Willow Recreation Area	5,948
28. Medicine Creek Recreation Area	8,494
29. Sacramento - Wilcox Special Use Area	2,240
30. Harlan County Reservoir	30,265
31. Sherman Reservoir Recreation Area	7,567
32. Cornhusker Ordnance Plant	11,963
33. Clay Center Meat Animal Research Center	35,000
34. Lewis and Clark Recreation Area (Nebraska only)	15,108
35. Bazile Creek Special Use Area	4,500
36. Branched Oak Lake Recreation Area	5,595
37. Pawnee Lake Recreation Area	2,544
38. DeSoto National Wildlife Refuge (Nebraska only)	4,324
39. Offutt Air Force Base	2,486
40. University of Nebraska Field Laboratory	9,400
41. Indian Cave State Park	2,731

Source of Data: Outdoor Recreation for Nebraska-A Comprehensive Plan-Final Draft, Game and Parks Commission, 1973.

LARGE TRACTS OF PUBLICLY OWNED LAND AND WATER AREAS

State of Nebraska
NATURAL RESOURCES COMMISSION
Planning Division

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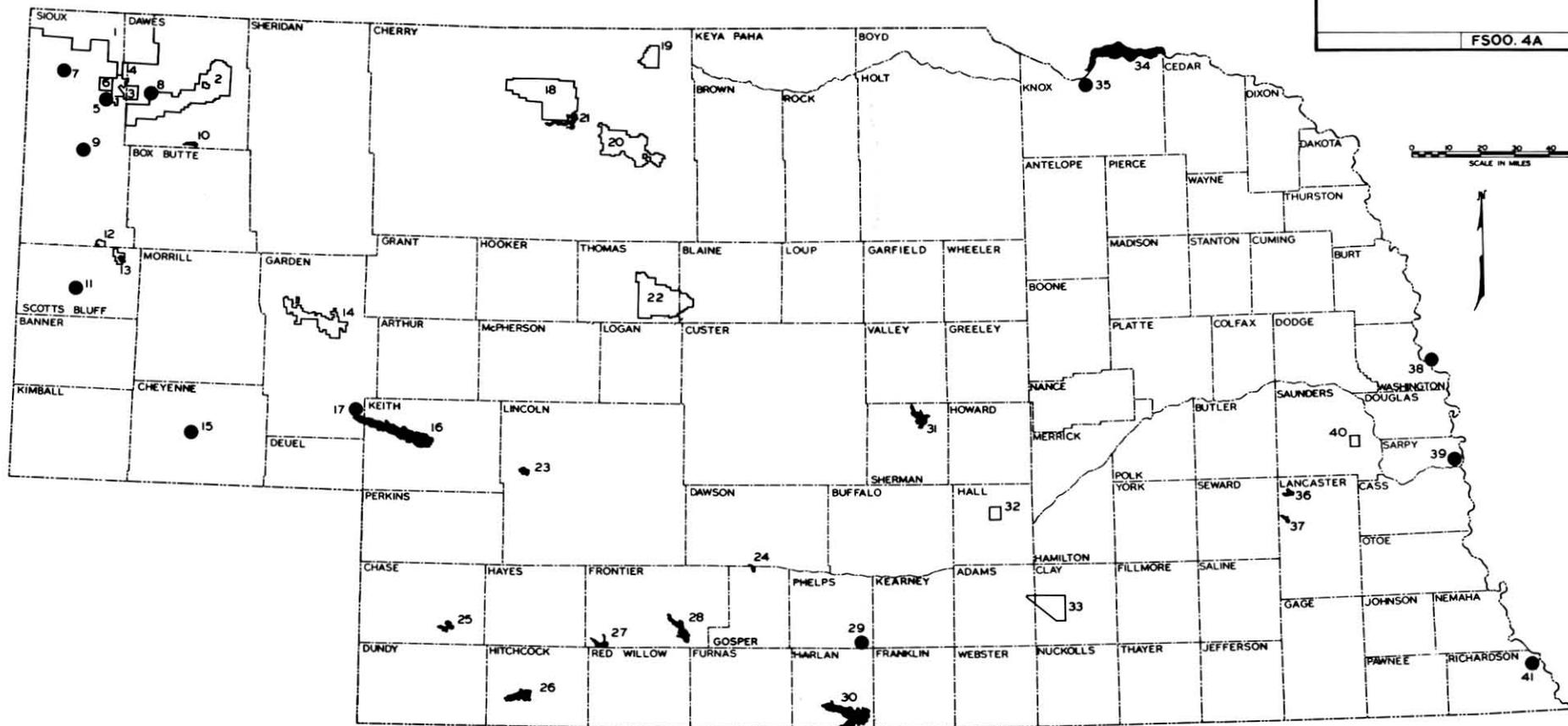


TABLE 21
FEDERALLY OWNED LANDS BY ADMINISTERING AGENCIES

County	Department of Agriculture ^{a/}	Department of Defense ^{b/}	Department of Interior ^{c/}	Total Federal Land
Adams		1,315		1,315
Antelope				
Arthur				
Banner		44	89	133
Blaine	10,547		1,590	12,137
Boone				
Box Butte			411	411
Boyd			39	39
Brown			3,766	3,766
Buffalo				
Burt		76		76
Butler				
Cass				
Cedar		695	40	735
Chase			6,210	6,210
Cherry	115,703		88,819	204,522
Cheyenne		74	661	735
Clay	35,144	1,931	4,438	41,513
Colfax				
Cuming				
Custer			2,962	2,962
Dakota		804		804
Dawes	60,045		3,764	63,809
Dawson				
Deuel			347	347
Dixon				
Dodge				
Douglas		2,472		2,472
Dundy			2	2
Fillmore			2,366	2,366
Franklin			3,077	3,077
Frontier			14,903	14,903
Furnas			1,673	1,673
Gage			163	163
Garden			45,778	45,778
Garfield				
Gosper			1,452	1,452
Grant			130	130
Greeley				
Hall		11,963	1	11,964
Hamilton				
Harlan		30,265	834	31,099
Hayes			731	731
Hitchcock			11,406	11,406
Holt			369	369
Hooker			296	296
Howard			3,907	3,907
Jefferson				
Johnson				
Kearney			2,714	2,714
Keith			189	189
Keya Paha			7	7

TABLE 21 (Page 2)

County	Department of Agriculture ^{a/}	Department of Defense ^{b/}	Department of Interior ^{c/}	Total Federal Land
Kimball		68	326	394
Knox		14,413	56	14,469
Lancaster		7,636		7,636
Lincoln		20	4	24
Logan				
Loup			80	80
McPherson			120	120
Madison				
Merrick				
Morrill			1,089	1,089
Nance		354		354
Nemaha		84		84
Nuckolls			1,243	1,243
Otoe		2		2
Pawnee				
Perkins				
Phelps			1,526	1,526
Pierce				
Platte				
Polk				
Red Willow			3,455	3,455
Richardson				
Rock			255	255
Saline				
Sarpy		1,760		1,760
Saunders		2,954		2,954
Scotts Bluff			10,781	10,781
Seward		684		684
Sheridan			1,031	1,031
Sherman			9,924	9,924
Sioux	84,610		4,064	88,674
Stanton				
Thayer				
Thomas	79,913		242	80,155
Thurston		443	14	457
Valley			568	568
Washington			4,331	4,331
Wayne				
Webster			1,728	1,728
Wheeler			72	72
York			559	559
TOTAL	385,962	78,057	244,602	708,621

^{a/} Information provided by Soil Conservation Service for lands owned in 1973.

^{b/} Nebraska lands owned by the Departments of Air Force and Army in 1973. Information provided by Corps of Engineers, Missouri River Division.

^{c/} Information provided by the Missouri River Basin Planning Office. Information is for lands owned in 1973.

TABLE 22

STATE OWNED OR MANAGED LANDS BY COUNTY AND AGENCY

County	Educational Lands ^{a/}	Game & Parks Commission ^{b/}	Agricultural Experimental Station ^{c/}	Other	Total
Adams	1,440	77			1,517
Antelope	11,560	1,624			13,184
Arthur	25,690				25,690
Banner	25,860				25,860
Blaine	24,780	672			25,452
Boone	2,716	27			2,743
Box Butte	36,360	2,212	480		39,052
Boyd	12,999	120			13,119
Brown	40,710	476			41,186
Buffalo	7,298	356			7,654
Burt	528	55			583
Butler	480	8			488
Cass	80	1,502	240		1,822
Cedar	1,961				1,961
Chase	29,049	5,527			34,576
Cherry	221,996	14,463			236,459
Cheyenne	38,905		3,530		42,435
Clay	80				80
Colfax	13	216			229
Cuming					
Custer	50,526	2,646			53,172
Dakota	1,026	358			1,384
Dawes	43,280	27,148			70,428
Dawson	7,228	4,244			11,472
Deuel	13,831				13,831
Dixon	1,464	803	320		2,587
Dodge	68	871			939
Douglas	326	964			1,290
Dundy	31,644	221			31,865
Fillmore		7			7
Franklin	5,868	560			6,426
Frontier	19,121	14,442	480		34,043
Furnas	12,379	44			12,423
Gage	200	531	1,120		1,851
Garden	51,970	1,037			53,007
Garfield	16,585				16,585
Gosper	2,920	2,142			5,062
Grant	21,499				21,499
Greeley	7,240	9			7,249
Hall	1,954	1,132			3,086
Hamilton					
Harlan	4,586	341			4,927
Hayes	21,934	119			22,053
Hitchcock	22,798	8,931			31,729
Holt	73,753	408			74,161
Hooker	25,306				25,306
Howard	4,462	20			4,482
Jefferson	1,520	793			2,313
Johnson	390				390
Kearney	3,271	1,544			4,815
Keith	32,518	48,310			80,828
Keya Paha	23,282				23,282
Kimball	34,844	17			34,861

TABLE 22 (Page 2)

County	Educational Lands ^{a/}	Game & Parks Commission ^{b/}	Agricultural Experimental Station ^{c/}	Other	Total
Knox	16,153	13,504			29,657
Lancaster	1,850	13,153	1,700	556	17,259
Lincoln	68,507	6,294	1,973		76,774
Logan	17,692				17,692
Loup	15,984				15,984
Madison	2,430	307			2,737
McPherson	30,167				30,167
Merrick	2,526	303			2,829
Morrill	45,841	197			46,038
Nance			320		320
Nemaha	353	23			376
Nuckolls	664	40			704
Otoe	240	106			346
Pawnee	79	1,795			1,874
Perkins	29,475				29,475
Phelps	1,480	2,560			4,040
Pierce	6,073				6,073
Platte	1,089				1,089
Polk	920				920
Red Willow	12,473	109			12,582
Richardson	570	2,806			3,376
Rock	33,476				33,476
Saline	260	5			265
Sarpy	289	337		42	668
Saunders	40	220	9,400		9,660
Scotts Bluff	11,210	4,156	1,120		16,486
Seward	75	1,296			1,371
Sheridan	81,030	2,128			83,158
Sherman	6,610	7,633			14,243
Stoux	73,322	4,863			78,184
Stanton	400	389			789
Thayer	721				721
Thomas	24,151				24,151
Thurston					
Valley	2,824	15			2,839
Washington	1,472	147			1,619
Wayne	10	25			35
Webster	2,020	3			2,023
Wheeler	17,899	67			17,966
York	873				873
TOTAL	1,531,542	197,458	20,683	598	1,750,281

a/ Forty-Eighth Biennial Report of the Board of Educational Lands and Funds, (1970 - 1972).

b/ Lands are owned, leased, or operated under license by the Nebraska Game and Parks Commission. Material taken from Outdoor Recreation for Nebraska-A Comprehensive Plan-Final Draft, Game and Parks Commission, 1973.

c/ Lands owned by the University of Nebraska or by a University of Nebraska Foundation and operated by the Agricultural Experiment Station.

The State Board of Technical Community Colleges owns and leases property for their colleges. It has been estimated that during 1973 the State owned between 1,000 and 2,000 acres which are used for these colleges.

Land and water areas administered by the Nebraska Game and Parks Commission, which total 207,458 acres, are listed in Table 13. Most of these lands are owned by other agencies.

Community Lands

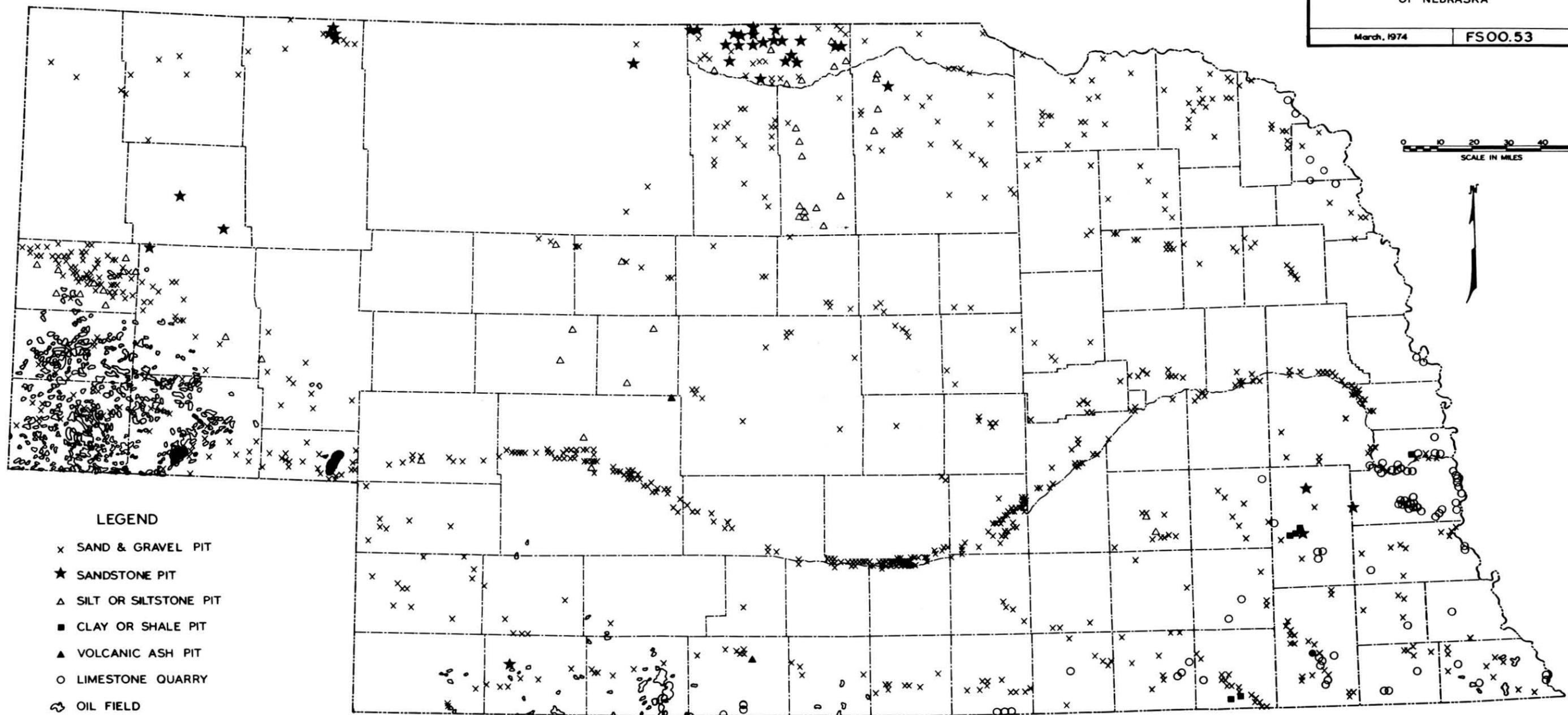
Publicly owned lands in incorporated communities have not been completely inventoried. Table 14 gives the area of municipal outdoor recreation resources, but there is no inventory of other lands owned by local governments.

State of Nebraska
NATURAL RESOURCES COMMISSION
Planning Division

MINERAL RESOURCES
OF NEBRASKA

March, 1974

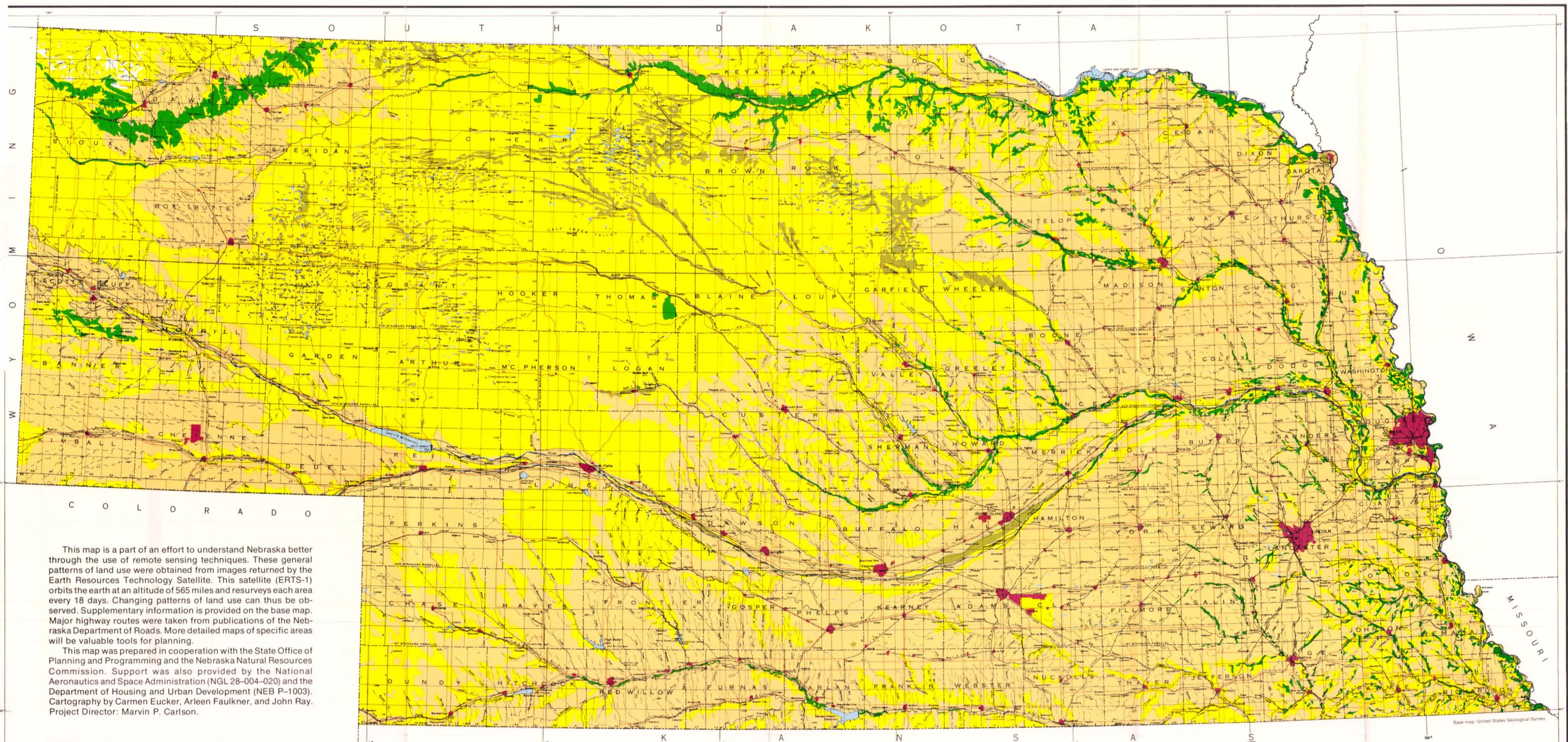
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LEGEND

- x SAND & GRAVEL PIT
- ★ SANDSTONE PIT
- △ SILT OR SILTSTONE PIT
- CLAY OR SHALE PIT
- ▲ VOLCANIC ASH PIT
- LIMESTONE QUARRY
- ⊖ OIL FIELD
- ⊖ GAS FIELD

SOURCE: CONSERVATION AND SURVEY DIVISION, UNIVERSITY OF NEBRASKA-LINCOLN



This map is a part of an effort to understand Nebraska better through the use of remote sensing techniques. These general patterns of land use were obtained from images returned by the Earth Resources Technology Satellite. This satellite (ERTS-1) orbits the earth at an altitude of 565 miles and resurveys each area every 18 days. Changing patterns of land use can thus be observed. Supplementary information is provided on the base map. Major highway routes were taken from publications of the Nebraska Department of Roads. More detailed maps of specific areas will be valuable tools for planning.

This map was prepared in cooperation with the State Office of Planning and Programming and the Nebraska Natural Resources Commission. Support was also provided by the National Aeronautics and Space Administration (NGL 28-004-020) and the Department of Housing and Urban Development (NEB P-1003). Cartography by Carmen Eucker, Arleen Faulkner, and John Ray. Project Director: Marvin P. Carlson.

- URBAN and BUILT UP—areas of intensive use such as cities, industry, communications and transportation routes and facilities.
- AGRICULTURE—areas used for production of farm commodities, mostly cultivated, and including some areas of forage crops and pasture.
- RANGELAND—areas primarily of natural grasses, including some improved pasture, forage crops, or special public use.
- WETLANDS—areas including naturally subirrigated meadows and seasonally flooded flats.
- FOREST—areas with more than 10 percent tree cover and little evidence of other use.
- BARREN—areas with limited ability to support life and little or no vegetation.
- WATER—areas predominantly or persistently water covered.



GENERAL LAND USE IN NEBRASKA – SUMMER 1973

Remote Sensing Center
Conservation and Survey Division
University of Nebraska-Lincoln
March 1974