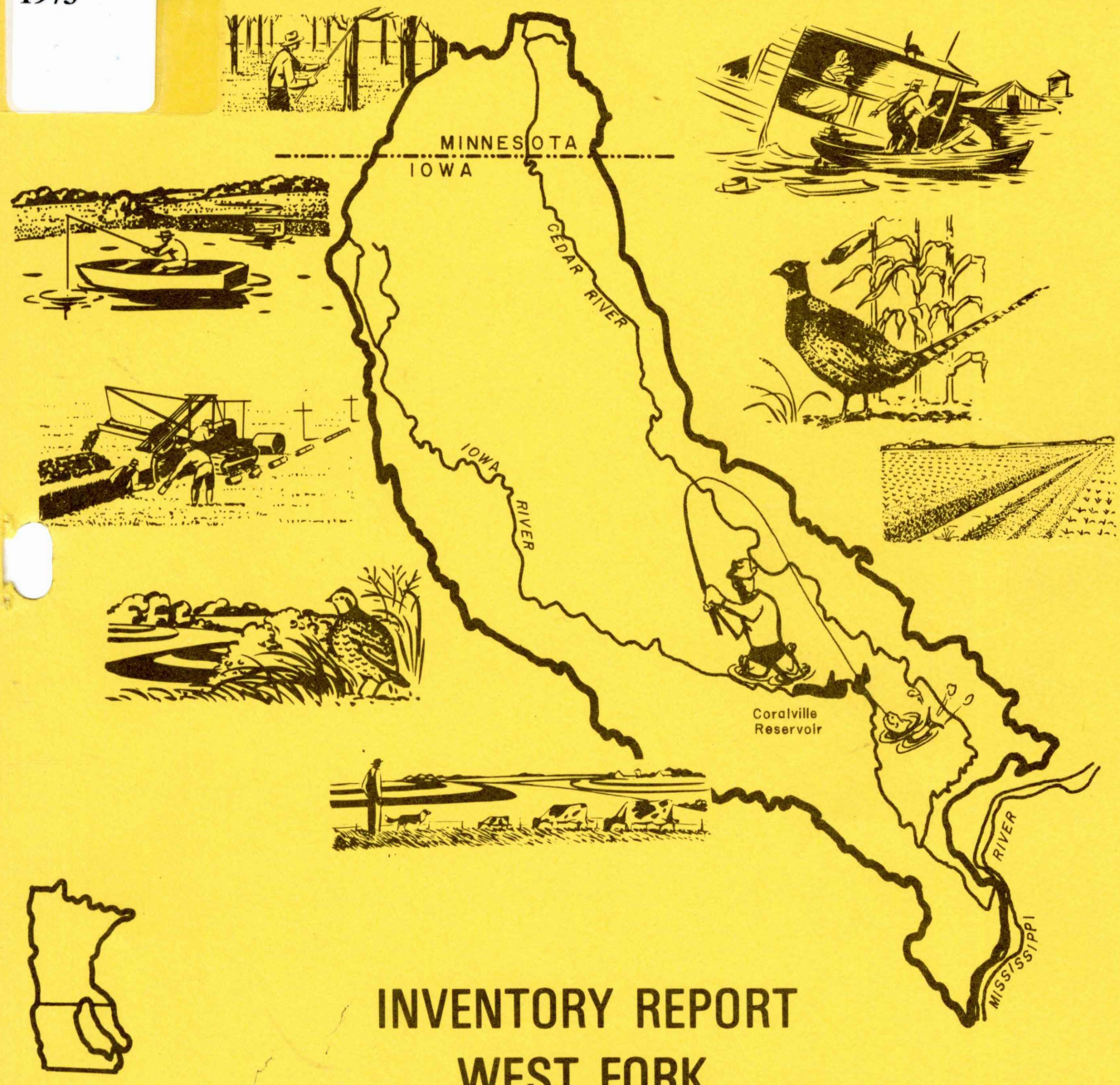
IOWA-CEDAR

RIVERS BASIN STUDY



INVENTORY REPORT
WEST FORK
CEDAR RIVER SUBBASIN

U.S. DEPARTMENT OF AGRICULTURE
Soil Conservation Service
Economic Research Service
Forest Service

INVENTORY REPORT

WEST FORK CEDAR RIVER SUBBASIN
Iowa-Cedar Rivers Basin

I. DESCRIPTION

A. Drainage Area

The West Fork Cedar River Subbasin extends from central Cerro Gordo County across Franklin and Butler Counties and enters the Cedar River in Black Hawk County (Figure 1). A very small portion of the Subbasin is located in extreme southwest Bremer County. The West Fork Cedar River Subbasin comprises 856 square miles or 547,840 acres.

West Fork Cedar River rises in Cerro Gordo County and flows in a southeast direction into the Cedar River just a few miles east of Finchford. The drainage area is fan shaped with the widest portion lying to the western portion of the study area. It is about 60 miles long and 30 miles across at the widest point. The West Fork has numerous tributaries. The larger streams are: Beaver Dam Creek, 145 square miles; Hartgrave Creek, 185 square miles; Maynes Creek, 135 square miles; and Bailey Creek, 94.8 square miles.

B. Climatic Data

The climate of the Subbasin is typical continental. At Mason City, just north of the Subbasin, the average annual temperature is about 47° F. The frost-free season averages 148 days.

The average annual precipitation varies from 30 inches at Mason City to 32 inches at the mouth of the river. The mean annual snowfall is about 31 inches.

C. Economy

The 1970 population of the West Fork Cedar River Subbasin was 20,000. Of this, 50 percent live in urban areas, 10 percent are rural non-farm residents, and the remaining 40 percent or 8,000 persons live on farms. The Subbasin comprises 14 percent of the Iowa-Cedar Rivers Basin and has two percent of its population.

Agriculture, wholesaling and retailing and manufacturing were the three largest sources of employment in the Subbasin. Agriculture, the largest employer, decreased 22 percent between 1950 and 1960. Wholesaling and retailing, the next largest employer, increased 7 percent during this period. Manufacturing, ranked third in employment, increased 44 percent from 1950 to 1960. Finance, insurance, and real estate were up 11 percent as a category during this time period, while transportation and construction, and utilities remained about constant.

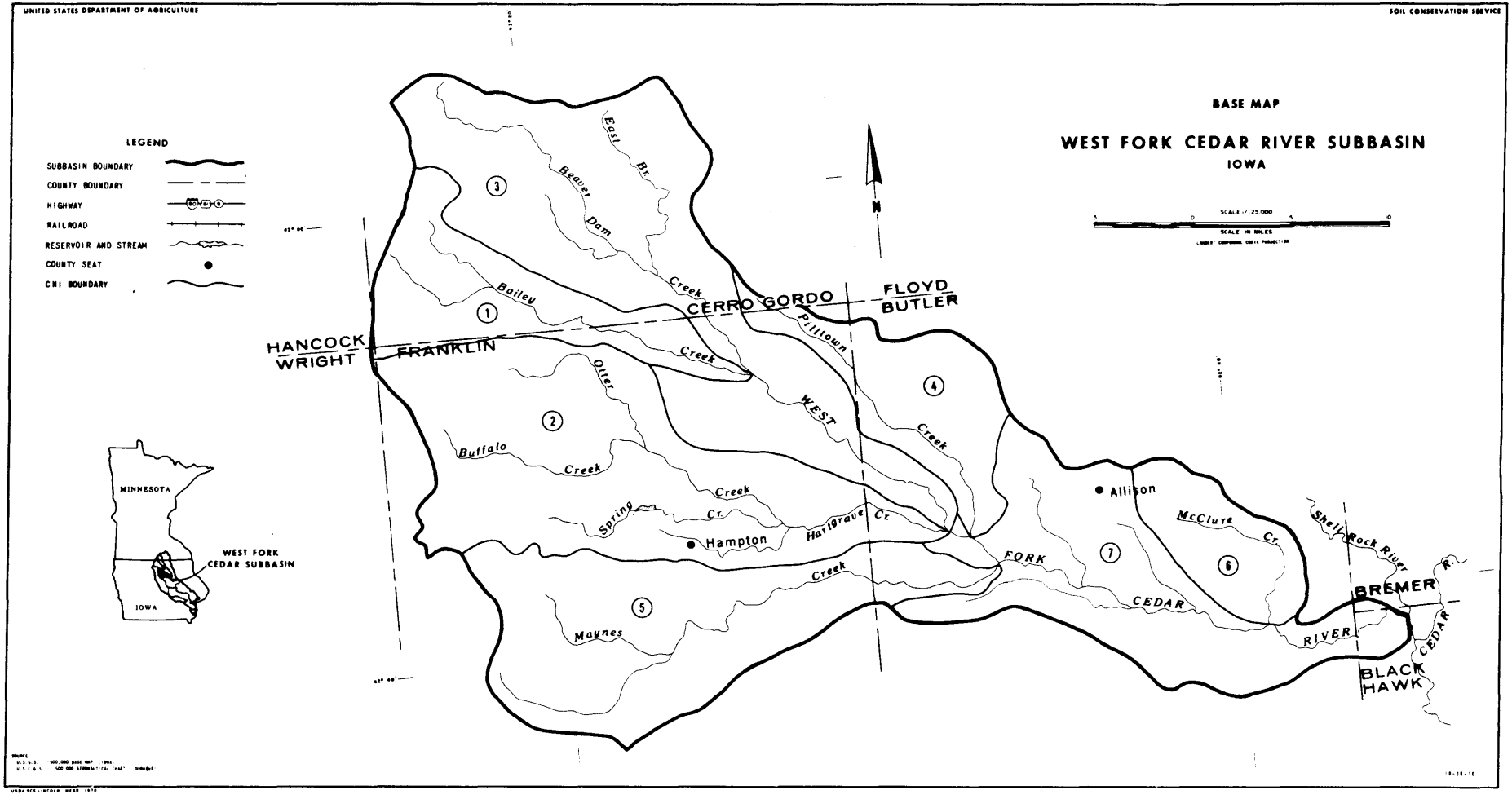

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
BASE MAP
WEST FORK CEDAR RIVER SUBBASIN
IOWA
LEGEND
SUBBASIN BOUNDARY
COUNTY BOUNDARY
HIGHWAY
RAILROAD
RESERVOIR AND STREAM
COUNTY SEAT
CNI BOUNDARY
SCALE 1:250,000
SCALE IN MILES
N
East Br.
Beaver
Dam
Creek
Bailey
Creek
Pilltown
Creek
CERRO GORDO
FLOYD
BUTLER
HANCOCK
WRIGHT
FRANKLIN
Otter
Creek
WEST
FORK
CEDAR
RIVER
Buffalo
Creek
Spring
Cr.
Creek
Harlgrave
Cr.
Hampton
Allison
McClure
Cr.
Shell Rock River
BREMER
CEDAR
R.
BLACK
HAWK
Maynes
Creek
MINNESOTA
IOWA
WEST FORK
CEDAR SUBBASIN
1
2
3
4
5
6
7

Figure 1

Family income is distributed as follows in the Subbasin:

Income Category	West Fork Subbasin	Iowa Cedar River Basin
Less than $3,000	32%	27%
$3,000 to $10,000	60%	63%
More than $10,000	8%	10%

The total number of farms declined from 3,817 farms in 1950 to 2,592 in 1970, a 32 percent decrease.

Livestock farms other than dairy or poultry farms are the largest and represented 42 percent of the farms in 1965 compared to 64 percent in 1950. The decline in actual number of farms classified in this category was 1,186 farms or 49 percent from 1950. Poultry farms also decreased 57 percent over this period but dairy more than tripled in numbers.

Cash grain farms have increased from 346 farms in 1950 to 790 farms in 1965. This represents a 128 percent increase and a change from 9 to 27 percent of the total number of farms.

Farms classified as other farms decreased from 209 in 1950 to 208 farms in 1965. This is a change from 5 to 7 percent in the category of the total number of farms.

Average farm size in the Subbasin was 239 acres in 1970, an increase of 73 acres per farm from 1950. The 1970 average value of land and buildings in the Subbasin is approximately $478 per acre. This represents a value of $114,668 in land and buildings for each farm.

The trend in the Subbasin in farm tenure from 1950 to 1970 has been a decrease in the percentages of full owners and tenants and an increase in the percentage of part owners (Table 1).

In 1950, full owners accounted for 41 percent of the farm tenure. This increased to 45 percent of the farm tenure in 1970. At the same time, the percentage of part owners has increased from 13 percent in 1950 to 26 percent in 1970. This may be explained by the consolidation of farm units and capital accumulation. The number of tenants has dropped 56 percent during the 20 year period and has dropped from 46 to 30 percent of total tenure.

Crop and livestock sales in the Subbasin totaled 70.5 million dollars in 1970. Livestock and livestock product sales accounted for 70 percent of the total crop and livestock sales by farmers in the Subbasin. This share of total sales was down from 82 percent in 1950. Receipts from dairy products in the Subbasin have remained fairly constant in actual numbers, but have dropped from 12 to 6 percent of total livestock sales (Table 2). Receipts from poultry and poultry products in the Subbasin have remained constant in actual numbers but have declined from 9 to 5 percent as a share of total livestock sales. Other livestock and

TABLE 1 - FARM TENURE
West Fork Cedar River Subbasin
Iowa-Cedar Rivers Basin
(Number)

Year	Full Owners	Part Owners	Managers	Tenants	Total
1950	1,576	486	12	1,743	3,817
1954	1,493	503	7	1,690	3,693
1960	1,364	561	6	1,433	3,365
1964	1,170	612	8	1,165	2,957
1970	1,158	666	-	767	2,592

Source: U. S. Department of Commerce, Bureau of Census, Agriculture Census: 1950, 1954, 1959, 1964, 1970.

TABLE 2 - CROP AND LIVESTOCK SALES
West Fork Cedar River Subbasin
Iowa-Cedar Rivers Basin
(1000 dollar)

	1950	1955	1960	1965	1970
Crop sales	6,196	10,687	13,189	17,353	19,337
Grains	5,638	10,230	12,803	16,917	18,616
Field seeds & roughage	-	-	-	-	394
Other crops	-	-	-	-	59
Vegetables	101	109	77	124	162
Fruits, nuts & berries	4	2	5	3	6
Nursery & greenhouse	450	338	-	-	98
Forest products	3	7	304	310	2
Livestock Sales	28,116	28,397	37,110	38,063	51,209
Poultry & poultry products	2,582	2,746	3,088	3,039	2,353
Dairy products	3,252	2,793	3,251	4,217	3,160
Dairy cattle & calves	-	-	-	-	1,231
Other cattle & calves	-	-	-	-	22,246
Hogs, sheep & goats	-	-	-	-	22,182
Other livestock & products	-	-	-	-	37
Livestock & livestock products other than dairy & poultry	22,282	22,858	30,771	30,806	45,694

Source: U. S. Department of Commerce, Bureau of Census, Agriculture Census: 1950, 1954, 1959, 1964, 1969.

livestock products sales have increased both in numbers and as a share of total livestock sales increasing from 79 to 89 percent of livestock sales from 1950 to 1970.

Crop sales have tripled during the period 1950 through 1970. Field crops are by far the largest source of crop receipts accounting for 91 percent in 1950 and 96 percent in 1970.

The use of commercial fertilizers and agricultural chemicals in recent years has been one means by which the farmer could increase production without expanding the size of operation. Herbicides have, in certain instances, taken the place of hired labor which at times is in short supply.

These factors have helped to make expenditures for fertilizers and chemicals a very important input to agriculture. The amount of fertilizer used in the Subbasin has more than doubled between 1955 and 1970, although both total number of farms and those applying fertilizer have declined (Table 3). The use of lime increased by 26 percent for this period.

The use of herbicides and insecticides have become increasingly more important to the agriculture industry. The use of chemicals is expected to be more extensive in the future. Prior to 1964, census data are not available, but an indication of current usage is given in Table 3.

The wood-using industries in and adjacent to the Subbasin, while not extensive, contribute to the total economy of the area through increased employment, income, and expenditures.

One sawmill, producing about fifty thousand board feet annually, is located within the Subbasin. Also, several other mills are located adjacent to the Subbasin and utilize hardwood timber resources growing in the Subbasin.

In addition to these primary wood-using mills, there are four secondary plants located inside the Subbasin producing cabinets, agricultural structures, prefabricated buildings, and trusses.

The total annual timber harvest from forest land within the basin includes the following:

sawlogs and veneer logs	3,000 board feet
fence posts	185 number
firewood and fuelwood	178 cords
Christmas trees	210 number

Additional markets for low-quality hardwoods and wood residues are needed for better management and utilization of the forest resource.

D. Physiography and Geology

The Subbasin of the West Fork of the Cedar River comprises portions of Cerro Gordo, Franklin, Butler, and Black Hawk Counties in north-central Iowa. The West Fork rises from the combined drainage of Beaverdam Creek and the East Branch of Beaverdam Creek, which in turn have their origins among the knob-like hills and poorly drained depressions of the glacial

TABLE 3 - FERTILIZER AND LIME USED ON FARMS
West Fork Cedar River Subbasin
Iowa-Cedar Rivers Basin

	1955	1960	1965	1970
Fertilizer				
Number of farms	2,890	2,719	2,570	1,957
Amount in tons	18,043	23,548	26,222	38,476
Area applied in acres	223,791	273,492	240,689	223,352
Lime				
Number of farms	501	262	357	333
Total amount in tons	24,770	14,525	32,161	31,470
Area applied in acres	10,869	7,242	12,859	13,487
Agricultural chemicals				
Control of crop insects (acres)	-	-	43,576	78,758
Control of weeds, grass, and brush (acres)	-	-	125,680	191,353
Control of livestock insects (head)	-	-	217,609	-
(Farms)	-	-	1,334	523

end moraine bounding the Wisconsin-age glacial deposits in western Cerro Gordo County. Clear Lake, which occupies one of the larger depressions in this morainal belt, is partially drained by Beaverdam Creek. The elevation of the terrain in this headwater area of the West Fork Cedar River is 1,225 feet to 1,250 feet, and the landscape is underlain by a considerable thickness of sandy and bouldery glacial till.

From this area of irregular, hummocky topography and poorly defined drainage systems, the gathering waters of the West Fork emerge onto the "Iowan Surface", an older landscape of gently rolling hills and well established drainage. The course of the West Fork Cedar River through this area exhibits a wide alluvial plain with abundant sand and gravel deposits, a low stream gradient, and valley sides that generally merge in long smooth slopes with the uplands. The three principal tributaries are Bailey, Hartgrave, and Mayne Creeks, all entering the West Fork from the west as it traverses Franklin and Butler Counties. The materials underlying this portion of the Subbasin are Kansan-age glacial drift overlain by a thin, discontinuous mantle of loess, or wind-blown silt. However, the glacial materials of this area are only partially responsible for the surface topography. The glacial drift here is thin, and consequently the topography is often a reflection of horizontal beds of limestone and shale near the surface. Along the West Fork, Devonian-age strata are responsible for many of the prominent topographic features, and rock can be found outcropping along the river valley and in hill slopes under a thin veneer of glacial drift and loess. Eventually the West Fork Cedar River joins the Cedar River in northwest Black Hawk County at an elevation of 870 to 880 feet.

As mentioned, the bedrock surface throughout parts of the Subbasin is near enough to the land surface to influence the character of the topography. The geological formations underlying the mantle of Pleistocene glacial deposits include rocks of Mississippian and Devonian-age. The Mississippian formations belong the the Kinderhook Series and are dominantly limestones and dolomites. The Devonian units belong to the Yellow Spring Group, Lime Creek Formation, and Cedar Valley Formation; these units are dominated by shales, limestones, and dolomites. Because of the gentle southwesterly dip of the rock strata in Iowa and the resulting overlap of younger on older formations, the outcrop patterns of each unit extend along northwest-southwest trends. The younger Mississippain formations are encountered in approximately the southwestern half of the Subbasin, and the older Devonian formations found in the northeastern half.

E. Land Resources

The total geographic area of the Subbasin is 547,840 acres. The following tabulation shows the total land use distribution.

Land Use	Acres	Percent
Cropland	456,500	83
Pasture	47,760	9
Forest	7,990	1
Other	13,140	2
Urban	22,320	5
Federal	0	0
Water	130	*
	547,840	

*Less than 1 percent

Of the total 525,390 acres of cropland, pasture, woodland, and other land, more than 95 percent, or 502,898 acres, in Land Capability Classes I, II, and III are suitable for regular cultivation (Table 4 and Figure 2). Of this, 88 percent, or 442,430 acres are being cultivated. Urban and Federal land and water areas are not included in the total.

Of the total land in Classes I, II, and III, 48,492 acres are in pasture and woodland. Much of this acreage would be available, if needed, for crop production but much of it requires clearing, draining, or other improvement to fit the land for cultivation. Some of this land is located in small or irregular areas which cannot be farmed efficiently with modern machinery. It would not be economically feasible in the foreseeable future to bring many of these small areas into cultivation. Operating farm units usually need a reasonable amount of pasture and woodlots, even on soils suitable for cultivation.

An area of about 123,000 acres is high quality Class I land with a minimum of problems as far as erosion, drainage, and continuing use are concerned. About 94 percent of this acreage is being cultivated. The 380,000 acres in Classes II and III require moderate to intensive treatment for protection, improvement, and continuing production. About 86 percent of this acreage is being cultivated.

About 13,000 acres of Class IV land is suitable for limited or occasional production with intensive conservation treatment. Much of it is considered marginal for the common cultivated crops but is suitable for other uses. Nearly three-fourths of this land is being cultivated.

About 4,200 acres being used as cropland are unsuited for cultivation. This land is in Classes V, VI, and VII, with just over half of it in Class VI.

TABLE 4
LAND CAPABILITY CLASSES BY LAND USE 1/
FOR NON-URBAN LAND 2/

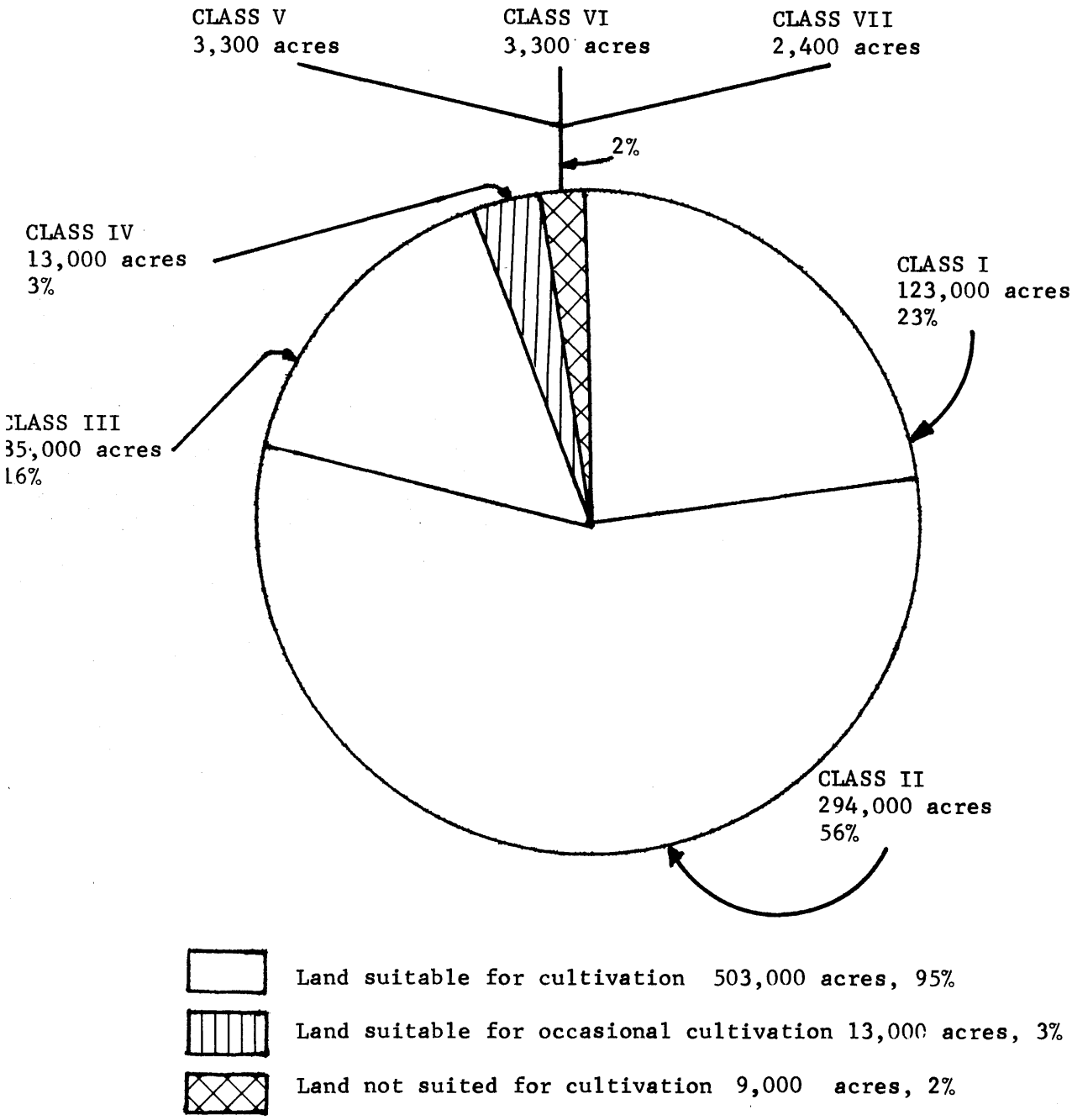
West Fork Cedar River Subbasin
Iowa-Cedar Rivers Basin

Class	Cropland	Pasture	Forest	Other	Total	Percent Distribution
I	115,543	4,310	390	2,750	122,993	23.4
II	257,004	29,630	1,169	6,688	294,491	56.1
III	69,883	7,926	5,067	2,538	85,414	16.3
Total I-III	442,430	41,866	6,626	11,976	502,898	95.8
IV	9,822	1,712	780	1,164	13,478	2.6
Total I-IV	452,252	43,578	7,406	13,140	516,376	98.4
V	972	1,709	584	0	3,265	0.6
VI	2,318	991	0	0	3,309	0.6
VII	958	1,482	0	0	2,440	0.4
VIII	0	0	0	0	0	0
Total V-VIII	4,248	4,182	584	0	9,014	1.6
TOTAL	456,500	47,760	7,990	13,140	525,390	100.0
Percent of Inventory land	87.0	9.0	1.5	2.5	100.0	

1/ Based on the hydrologic subareas of the Basin.

2/ Total geographic area 547,840 acres; total land area 547,710 acres; total water area 130 acres.

Source: USDA Conservation Needs Inventory, 1967.



LAND CAPABILITY CLASSES

WEST FORK CEDAR RIVER SUBBASIN

Figure 2

Nearly all of the area is in farms with about four-fifths in cropland. Corn, soybeans, and other feed grains are the main cash crops. Some hay is grown. Less than 10 percent is in pasture.

About one percent of the total West Fork Cedar River Subbasin is in forest land and encompasses 7,990 acres. A variety of native hardwood species occur within the bottomland and upland areas of the Subbasin. Most of the forest area bears mixtures of oak and hickory or elm, ash, and cottonwood. Eastern red cedar, growing primarily on drier sites in association with several of the oaks and hickories, is an occasional tree within the forest area.

Over 95 percent of the woodland is in private holdings--primarily small individual woodlots. The remainder is essentially State and local government trusts.

Water Resources

Surface Water

The availability of the surface water resource is measured at one gaging station at Finchford. The West Fork at Finchford has a drainage area of 846 square miles, an average discharge of 413 cubic feet per second and an average runoff of 6.63 inches. A flow of 147 cfs 1/, 0.174 CSM, is available half the time; a flow of 22 cfs, 0.026 CSM is available 95 percent of the time; and a flow of 9.7 cfs, 0.012 CSM is available 99 percent of the time.

1/ From Iowa Natural Resources Council Bulletin No. 10

Groundwater

The source of groundwater in the West Fork Cedar River Subbasin is precipitation that falls on the surface and percolates into the soil, loess, glacial drift and bedrock formations. Most of the water falling on the surface runs off in streams or is evaporated into the atmosphere again. Part of the water that soaks into the ground is withdrawn later by evaporation and by transpiration of plants. Only a relatively small portion of the precipitation seeps down to the water table and recharges the groundwater reservoir. Some water moves into and out of the basin area by underflow through deep bedrock formations.

Recharge is determined by several factors including the amount of precipitation, the topography of the land surface, the amount and type of vegetation, the season, and the permeability of the surficial materials and bedrock. Most of the recharge occurs during the periods of heaviest precipitation in the spring and fall. Recharge seldom occurs during the growing season when plants take up most of the moisture, except during floods, or during the winter when the ground is frozen.

Unconsolidated soil, loess, alluvium and glacial drift clay, the latter two containing appreciable sand and gravel, and indurated limestones, dolomites, shales, sandstones and siltstones, comprise the surficial and bedrock units of the West Fork Cedar River Subbasin. These materials have varying abilities to store and transmit water. Clays and shales are relatively impermeable and have low water-yielding capacities. However, the more permeable alluvial and glacial sands and gravels, creviced limestones and dolomites, and porous sandstones make good water-yielding strata.

The principal aquifers from which water can be recovered by wells in the West Fork Cedar River Subbasin are: (1) shallow alluvial sand and gravel, (2) sand and gravel zones within or at the base of the glacial drift, (3) the upper bedrock formations, mainly the Cedar Valley limestone and dolomite of Devonian age, and (4) the deep-lying St. Peter-Prairie du Chien-Jordan strata, that are sandstones and dolomites, of Ordovician and Cambrian age (Fig. 3 & 4).

Although the alluvial plains of the West Fork Cedar River and some of its tributaries are quite wide and the outwash sands and gravels in these valleys have considerable potential as aquifers, they do not seem to be used as much as they might, probably because they are restricted to the valleys and generally are only 10 to 30 feet thick. Nevertheless, these deposits are capable of yielding moderate to large water supplies in some places as at Sheffield and along Hartgrave Creek in Franklin County. The combined yield of the two shallow municipal wells at Sheffield is about 375 gpm, and irrigation wells and pits along Hartgrave Creek produce between 500 and 1,000 gpm. This water generally is of good quality, but may be subject to contamination from infiltrating surface drainage.

The Pleistocene drift deposits generally are less than 50 feet thick in the upper part of the basin in Cerro Gordo County and in the lower part of the basin near the confluence with the Shell Rock River. In the middle reaches of the Subbasin the drift thickens to as much as 150-200 feet. The glacial till is a relatively impermeable boulder clay and does not yield significant quantities of water to wells. However, interbedded or basal sand and gravel layers may yield adequate water for domestic or stock use in many areas.

Limestones and dolomites belonging to the Aplington, Lime Creek, Shell Rock and Cedar Valley Formations of Devonian age are the upper bedrock aquifer in the West Fork Cedar River Subbasin. Water occurs in crevices and solution openings in the rock. The quantity available from a well depends on the number and size of the openings penetrated by the well bore. Shales in the Sheffield and Lime Creek Formations are aquicludes that retard the circulation of water to and from the Cedar Valley. For maximum yield a well should be drilled to the base of the Cedar Valley Formation to assure that all available openings are penetrated. The yield from the upper bedrock aquifer ranges from 10 to as much as 200 gpm with small to moderate drawdowns. For example, the Hansell town well tested at 133 gpm with only 3 feet of drawdown, while the Rockwell town well produced 150 gpm with 92 feet of drawdown. Generally, the water from the upper bedrock is hard and contains excess iron and might require treatment to prevent undesirable staining.

TABLE 5 - TABULATION OF WATER ANALYSIS [1/]
West Fork Cedar River Subbasin
Iowa-Cedar Rivers Basin
(Dissolved constituents in parts per million)

Town - Well No. Owner	Date of Coll.	Depth (ft.)	Geol. Source	°F	Diss. Solids	Fe	Mn	Ca	Mg	K	Na	CO_3	HCO_3	SO_4	Cl	F	NO_3	Hardness cal as $CaCC_3$ tot.	Hardness cal as $CaCC_3$ carb.	Hardness cal as $CaCC_3$ non-carb.	pH	Cond
Swaledale Creamery (1937)	12/1/49	128	Shell-Rock Fm.		541	.15	0	106	40	-	18	0	356	78	23	0.1	12	429	292	137	7.6	-
Rockwell Town No. 2 (1967)	10/12/71	459	Cedar Valley		423	.28	<.01	77	36	10	25	0	459	20	8	2.3	<0.1	340	340	0	6.9	710
Thorton Town (1955)	12/29/59	539	Cedar Valley	51	435	.32	<.05	76	44	12	21	0	490	10	9.0	1.8	<.44	371	371	0	7.3	750
Sheffield Town 2 wells dug & drilled	12/16/70	25 28	Alluvial sd&gr.		340	<.02	<.05	82	24	1.1	4.9	0	273	35	9	.15	46	304	224	80	7.1	590
Geneva Town (1949)	1/22/63	160	Apling-ton Fm.		644	2.6	<.05	142	46	1.0	15	0	492	108	32	.25	0.6	545	403	142	7.1	1000
Hansell Town (1958)	1/18/71	470	Cedar Valley		533	.72	<.05	100	39	5.3	9.4	0	315	180	4	2.2	<0.1	410	258	152	7.1	770
Hampton Town No.3 (1952)	8/30/68	1875	Jordan		612	.83	<.05	96	32	21	68	0	386	200	11	1.1	0.5	372	316	56	7.0	960
Coulter Town (1923)	1/26/70	672	Cedar Valley	52	395	1.6	.05	98	32	4.8	12	0	456	31	2	0.5	0.4	376	374	2	7.3	710
Dumont Town	10/6/70	285	Cedar Valley		357	1.0	<.05	85	22	1.3	8.2	0	303	91	<0.5	0.7	0.4	304	248	56	7.2	590
Bristow Town No. 1 (1922)	8/21/67	165	Cedar Valley		294	<.02	<.05	70	20	0.5	4.0	0	264	39	5	.15	11	260	216	44	7.6	510

1/ From Iowa Geologic Survey

Bedrock Map of Iowa-Cedar Rivers Basin (To be added later)

Figure 3

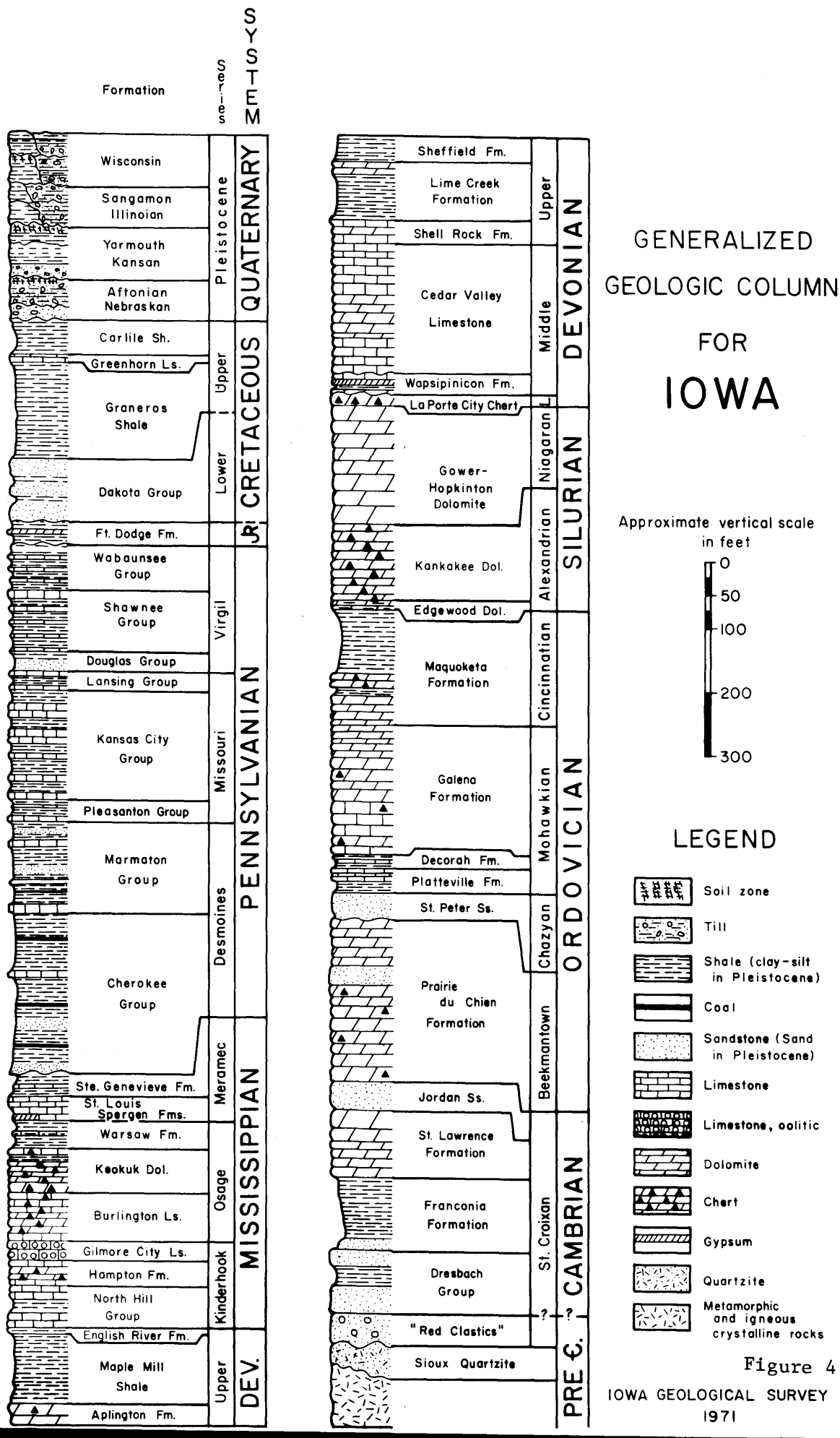


Figure 4

IOWA GEOLOGICAL SURVEY
1971

The next promising zone for moderate to large water supplies to wells is the deep-lying St. Peter-Prairie du Chien-Jordan sequence. The Maquoketa, Galena and Decorah-Platteville strata at intermediate depths apparently are of minor importance as aquifers, although they probably do contain minor quantities of water and may yield small supplies in some areas. The Hampton city wells seem to be the only wells penetrating the the Jordan aquifer in the West Fork Cedar River Subbasin. The St. Peter generally will yield 50 to 100 gpm or so. The Jordan is practically certain to yield a minimum of several hundred gallons a minute at specific capacities of 8-10 gpm/ft. of drawdown. Both of these sandstones may be rather poorly cemented and have a tendency to cave into wells if developed too strongly resulting in sand-pumping troubles. Mineral analyses indicate the water to be acceptable for drinking and all other general uses.

The Iowa Geological Survey in cooperation with the U. S. Geological Survey maintains a file of well logs and other hydrogeologic data on the West Fork Cedar River Subbasin. Computer printouts of well logs are available at a cost. Research on the hydrology of the aquifers underlying the basin is an integral part of this cooperative program.

G. Recreation and Fish and Wildlife Resources

Data provided by the Iowa State Conservation Commission indicates that there are 30 recreation, wildlife, or water access areas in the Subbasin.

There are quite a few species of wildlife in the area. Those with high density are oppossum, striped skunk, raccoon, badger, and water fowl; moderate density are, fox squirrel, jack rabbit, pheasant, and red fox; low density species are, Hungarian partridge, beaver, cottontail, weasel and muskrat. Deer inhabitants are infrequent.

The listing of all known public and private recreation facilities within the Subbasin is based upon a general statewide inventory maintained by the State Conservation Commission. The outdoor recreation area classification system developed by the Outdoor Recreation Resources Review Commission of 1962 is utilized where applicable.

General Outdoor Recreation Area Classification System

Class I. High-Density Recreation Areas

Generally located within or near urban centers, and "user-oriented" in design. Diverse and varied recreation opportunities, appropriate to the terrain and location and "mass" accommodations are provided. Intensive day or weekend type of activities.

Class II. General Outdoor Recreation Areas

The natural resource is utilized for the recreation opportunity it provides, irrespective of location. These areas are readily accessible, equipped with a wide variety of man-made facilities, and vary from the simple to the elaborate. Activities are generally of a localized nature and "mass" use is not generally a feature as in Class I.

Class III. Natural Environment Areas

Generally large areas which provide traditional outdoor recreation activities. The user is encouraged to use the area in its natural state with a minimum of man-made developments necessary for access and sanitation. Scattered use is more likely than concentrated use. The area may be used in conjunction with other resource uses.

Class IV. Unique-Natural Areas

These areas are unique in scenic splendor, natural wonder, and/or scientific importance. Recreation activities are strictly limited to those which will not affect the unique value of the natural features.

Class V. Primitive Areas

The essential characteristics of these areas are that the natural environment has not been distrubed by commercial utilization, and that mechanized transportation is non-existent. The natural, wild, and undeveloped characteristics are the distinguishing factors. The area must be sifficiently large to remove the user from the sights, sounds, and smells of civilization and provide the recreationist with a "feeling" of true wilderness experience.

Class VI. Historic and Cultural Sites

Sites associated with history, tradition, or cultural heritage and are of sufficient significance to merit preservation or restoration. Management is directed to restoration, preservation and interpretation for sightseeing, enjoyment, and study of the historic and cultural features. Limited day-use facilities may be provided when such facilities do not detract from nor interfere with the primary purpose and value of the site.

Class VII. Reserved Open Spaces and Undeveloped Lands

Lands and waters in the classification are those desirable recreation sites which are acquired, pending eventual development, to preserve them from loss to conflicting or undesirable uses. They may be located anywhere such areas are found and acquired through several methods from easement agreement to fee simple title. When finally developed, such areas whould be reclassified under the appropriate category.

Wildlife Areas

Includes lands and waters specifically developed and managed for wildlife purposes. Areas in this class may be open to hunting or closed as in the case of refuges. In either situation the intent is for wildlife management. Other recreational facilities may be available, however, they are essentially provided to serve and facilitate the hunter.

Water Access

This category includes those relatively small areas developed to essentially provide boating or fishing access to the waters of the State. Other recreational facilities may be available, but similar to wildlife areas their original intent is specific, in this situation boating or fishing access.

Rest Areas

Highway oriented areas specifically developed to provide the highway traveller with a place for rest, relief and relaxation from driving. They are relatively small and generally not intended for overnight use, or for use as destination recreation areas. They are incidental and serve to facilitate travel to other larger destination type recreation areas.

Other

A general classification encompassing a variety of specific or specialized recreation endeavors. Areas in this category tend to be organization program or facility oriented rather than being dependent on any particular natural resource attribute. These include club areas, organizational areas, resorts, vacation farms, miniature golf, sports areas, race tracks, etc. This grouping includes any areas that can't be classed in the other categories.

General Recreation Area Listing

The General Recreation Area listing is based upon a recent (1968-1970) updating of the inventory of every known category of park and recreation land in the State. Details concerning the facilities available is summarized in Table 6, Recreation Inventory. This list provides general information as to the type of area, size, management, ownership, and services provided. Municipal recreation areas have not been listed. This listing is provided as a specific aid to local and regional planning efforts.

Figure 5 shows the general location of recreation facilities in the Subbasin as well as the location of river reaches well suited for fishing and fishing and boating.

H. Mineral Resources

In addition to the rich agricultural soils developed from the Pleistocene materials, other naturally occuring economic resources are found in the Subbasin. Limestone is quarried primarily from the Devonian carbonate rocks, and the clay shales of the Devonian Lime Creek Formation are used in the manufacture of brick and tile. Sand and gravel operations are located throughout the region, principally associated with stream valley deposits.

I. Archeologic and Historic Sites

There are 15 historic areas, markers, or points of interest in the Subbasin. These are listed in Table 7.

RECREATION INVENTORY
W. Fork Cedar Subbasin
Iowa-Cedar Rivers Basin

County	Name	Location	Ownership and Management					Recreation Classification or Specialization	Acreage			Camping			Vacation Cabins	Picnicking		Modern Comfort Station	Showers	Shelters	Trails	Boat Access	Fishing		Hunting	Swimming	Other
			Fed.	St.	Co.	Munic.	Priv.		Land	Water	Total	Mod.	Non-Mod.	Un. dev.		Dev.	Un-dev.						Cold Water	Warm Water			
Black Hawk Co.	Thunder-Woman Co. Park	Finchford			■			II	92	4	96		*			*					*			*			
Butler Co.	Wayside Allison Jct. #3 & 14	S. of Allison		O		X		Rest Area								*										
	Considine Lake	4 Mi. S.W. Bristow			■			VII	78	12	90															
	Big Marsh	5 Mi. N. of Parkersburg		■				Wildlife Area	1,763	1,050	2,813													*	*		Canoe Landing
	Allison Sportsmens Club	Allison					■																				Trapshooting, Target Range
	Circle O Farm	Allison					■		160		160																
	Christian Service ChurchCamp	Bristow					■	Service Unknown																			
Cerro Gordo Co	Zirbel Slough	6½ Mi. S.E. Clear Lake			■			Wildlife Area	130		130														*		
	Ingebret-son Park	Thornton			■			VII	23		23																
	Linn Grove Park	Rockwell			■			II	33	5	38	*				*								*			Handicapped Facilities
	Happy Holi-day Farm	Thornton					■	Service Unknown																			
	Municipal Rec. Area																										
Franklin Co.	Beeds Lake	3 Mi. N.W. Hampton		■				II	189	130	319		*			*		*	*	*		*	*	*	*		Concession

O - Ownership
X - Management
■ - Ownership and Management

RECREATION INVENTORY
W. Fork Cedar Subbasin
Iowa-Cedar Rivers Basin

County	Name	Location	Ownership and Management					Recreation Classification or Specialization	Acreage			Camping			Vacation Cabins	Picnicking		Rodent Control Station	Showers	Shelters	Trails	Boat Access	Hunting	Fishing		Hunting	Swimming	Other
			Fed.	St.	Co.	Munic.	Priv.		Land	Water	Total	Mod.	Non-Mod.	Un. dev.		Dev.	Un-dev.							Cold Water	Warm Water			
Franklin Co.	West Fork Access	7 Mi. N.E. Hansen		O	X			River Access	75	5	80					*								*	*		Outdoor Classroom.
	Burkley Park	1½ Mi. W. Geneva			■			VI	6		6		*			*									*		Riding Trails Outdoor Classroom
	Fairgrounds Baseball Field	Hampton			■			I	4		4																Playfield
	Galvin Park	Sheffield			■			II	6		6		*			*									*	*		
	Handorf Park	8 Mi. E. Hampton		O	X			Rest Area	4		4	*				*				*							Playground Equipment
	Hawkins Game Area	3 Mi. E. Alexander			■			Wildlife Area	1		1															*	
	Latimer Cons. Park	Latimer			■			I	3		3		*			*											Playfield
	Loomis Mem. Park	6 Mi. N.E. Alexander			■			VI	1		1		*			*											
	Geneva Pits	Hampton					■	Service Unknown																			
	Mallory Park	6½ Mi. S.W. Hampton			■			II	71		71	*				*					*					*		Outdoor Classroom & Bridle Trail
	Robinson Park	3 Mi. N.E. Hampton			■			II	27	3	30	*				*					*				*	*		Bridle Trail Outdoor Classroom
	Sheffield Game Mgt. Area	2 Mi. W. Sheffield			■			Wildlife Area	14	2	16											*	*		*	*		
	WKW Park	2 Mi. N.E. Hampton			■			II	54		54		*			*					*					*		Bridle Trail Outdoor Classroom Playfields

O - Ownership
X - Management
■ - Ownership and Management

TABLE 8 (cont'd)

RECREATION INVENTORY
W. Fork Cedar Subbasin
Iowa-Cedar Rivers Basin

County	Name	Location	Ownership and Management					Recreation Classification or Specialization	Acreage			Camping			Vacation Cabins	Picnicking		Lodge/Comfort Station	Showers	Shelters	Trails	Boat Access	Fishing		Hunting	Swimming	Other
			Fed.	St.	Co.	Munic.	Priv.		Land	Water	Total	Mod.	Non-Mod.	Un. dev.		Dev.	Un-dev.						Cold Water	Warm Water			
Franklin Co.	Zion-St. John Park	3 Mi. E. Sheffield			⊠			II	2		2		*			*										
	Hwy. 65 Wayside	4 Mi. S. Hampton		⊠				Rest Area								*										
	Happy Holiday Farm	Sheffield					⊠	Vac. Farm																		
	Chapin Pits	Sheffield					⊠	Service Unknown																		

O - Ownership
X - Management
⊠ - Ownership and Management

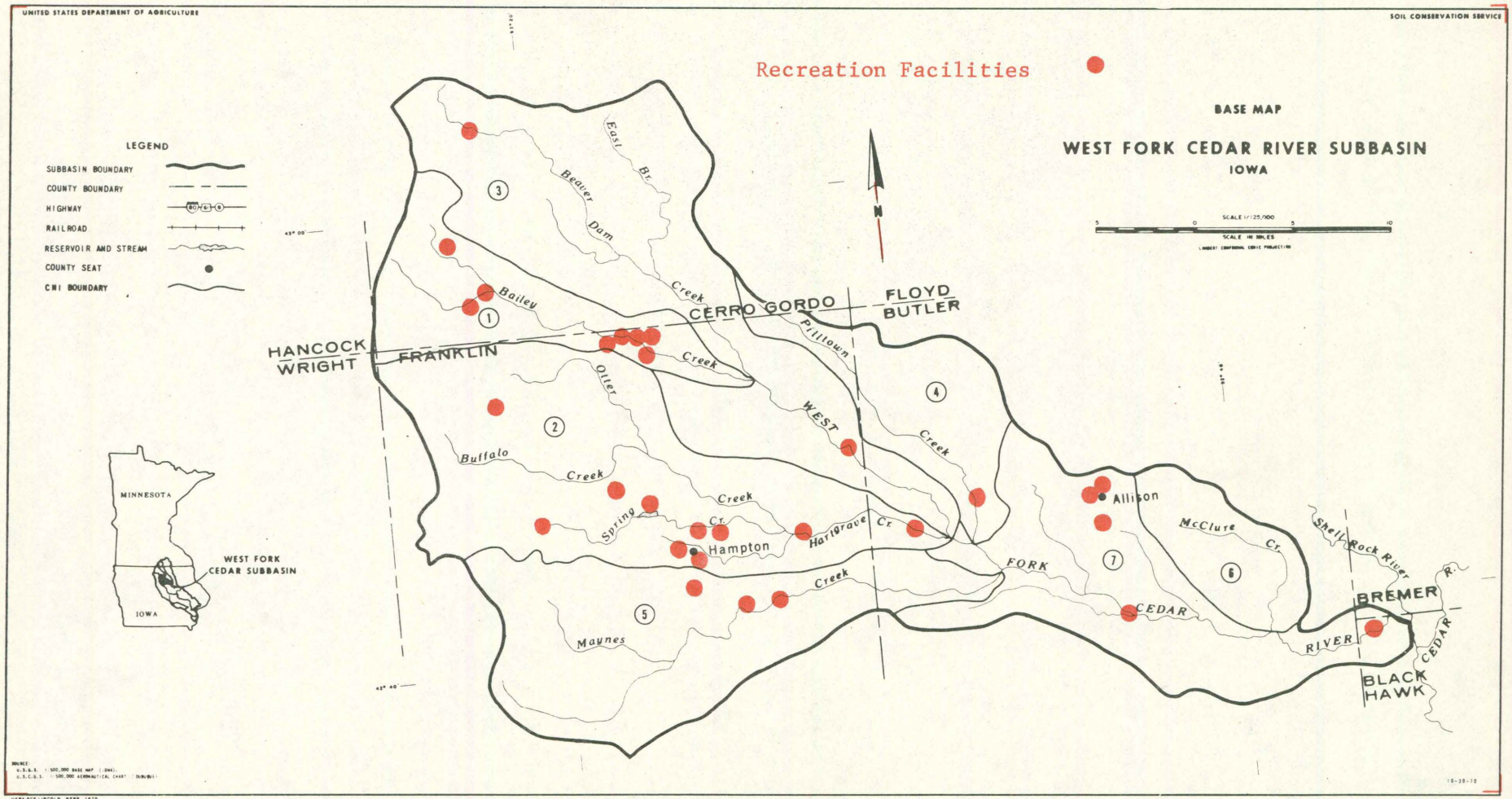

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
Recreation Facilities
BASE MAP
WEST FORK CEDAR RIVER SUBBASIN
IOWA
LEGEND
SUBBASIN BOUNDARY
COUNTY BOUNDARY
HIGHWAY
RAILROAD
RESERVOIR AND STREAM
COUNTY SEAT
CMI BOUNDARY
SCALE 1:125,000
SCALE IN MILES
LAMBERT CONFORMAL CONIC PROJECTION
N
HANCOCK
WRIGHT
FRANKLIN
CERRO GORDO
FLOYD
BUTLER
Bailey
Creek
East Br.
Beaver
Dam
Creek
Pilltown
Creek
Otter
Creek
WEST
FORK
CEDAR
RIVER
Buffalo
Creek
Creek
Spring
Cr.
Hartgrave
Cr.
Hampton
Creek
Maynes
Creek
Allison
McClure
Cr.
Shell Rock River
BREMER
CEDAR
R.
BLACK
HAWK
MINNESOTA
IOWA
WEST FORK
CEDAR SUBBASIN
1
2
3
4
5
6
7

Figure 5

TABLE 7 - STATE HISTORIC AREAS, MARKERS AND POINTS OF INTEREST
West Fork Cedar River Subbasin
Iowa-Cedar Rivers Basin

Item	County	Location	Ownership	Comment
Fort Sumpter	Butler	5 mi. S.W. of Allison, Iowa		(Not Known)
Indian War Site	Butler	N. of Aredale, Ia.		(Not Known)
Little Yellow County Schoolhouse	Butler	City square in Allison, Iowa	Butler Co. Hist. Soc.	School Museum
Pilot Rock	Butler	3½ mi. N.W. of Allison, Iowa		Pioneer Landmark.
Burkley Historical Area	Franklin	1½ mi. W. of Geneva, Iowa	Franklin Co. Cons. Board	Stone house being restored.
Camp of First Settlers	Franklin	Hampton, Iowa		Marker on site.
First Burial Ground in County	Franklin	Benson Towle Farm		
First Cabin in County	Franklin			Boulder with marker placed by D.A.R.*
Franklin County Pioneers	Franklin	Hampton, Iowa		Boulder with marker placed by D.A.R.*
Hansbury Gristmill	Franklin	Beeds Lake State Park	State	Lake originally formed in 1857 for the gristmill.
Job Garner's Cabin	Franklin	Hampton, Iowa		Marker on site placed by D.A.R.*
Loomis Wisner Center Community Park	Franklin	4 mi. N. and 2 mi. E. of Alexander, Ia.	Franklin Co. Cons. Board	Rural Schoolhouse.
Maysville Schoolhouse	Franklin	S. of Hampton, Ia.		Originally the first post office in the County.
Site of Maysville	Franklin	Hampton, Iowa		Marker
Site of First Schoolhouse	Franklin	Hampton, Iowa		Boulder with bronze tablet.

*Daughters of the American Revolution

J. Early History

Settlement of the area by white men began in the early 1850's. The first white settlers....."found a land that was a veritable hunter's paradise. Buffalo, deer and elk were plentiful. With these were bear, lynx, foxes, wildcats, ground hogs, weasels, racoons, otter, beaver, muskrats, partridges, wild turkeys, wild geese, and numerous other wild beasts and fowls. From 1851 to 1856, hunting was the main employment of many of the earliest settlers."

First settlements were made along timbered streams. Original entries of land purchases revealed that the first lands selected for homesteads were uniformly covered wholly or in part by timber.

Many of the first white settlers came from the eastern and central states, from England, Ireland, and Germany.

Initially settlement was relatively slow. However, with the coming of the railroads, around 1855, settlement of the area increased.

II. WATER AND RELATED LAND RESOURCE PROBLEMS

A. Land Resource Problems

There are 504,300 acres of crop and pasture land in the West Fork Cedar River Subbasin.

Wind and water erosion is a problem on about 180,000 acres of crop and pasture land. Of this, only 13,000 acres or 7 percent, are considered adequately treated to control soil erosion according to present standards. The remaining 167,000 acres, or 93 percent, are in need of conservation treatment. Erosion is by far the most critical land and water problem in the Subbasin. Expanding use of fertilizers and insecticides may make erosion an even greater problem in future years. Sediment from erosion is a carrier of water pollutants such as insecticides and phosphates that can damage our lakes and streams.

The Subbasin has 183,700 acres of cropland and pasture with a wetness hazard. A total of 147,400 acres or 80 percent, are adequately treated to solve this drainage problem. The remaining 36,300 acres, or 20 percent, need to be treated for optimum production.

There are 49,900 acres of upstream floodplain with floodwater and sediment damage problems. All of these acres require project action for solving the floodwater and sediment problems. This does not mean, however, that these projects could be economically justified, but rather that group action is required for the problem solution.

In addition, there are 10,700 acres of floodplain along the main streams which also have floodwater and sediment damage problems and also require project action for problem solution.

The only urban area identified as having some degree of floodwater and sediment problem is Dumont.

The 1967 Conservation Needs Inventory for Watersheds identified seven watershed areas in the West Fork Cedar Subbasin. Table 8 lists these watersheds and identifies the flooding and drainage problems in each.

B. Forest Resource Problems

Numerous uses are made of the forest resource including recreation, wildlife, livestock grazing, timber harvesting, and watershed protection. In many instances, several of these land uses can and do occur on the same piece of land simultaneously. However, in other cases, because of land use intensities and other factors, some uses are not compatible. For instance, excessive grazing of forest land can damage the forest resource to the extent that recreation, water quality, long-term timber harvesting, and wildlife values deteriorate. New subdivisions with a forested setting,

TABLE 8
WEST FORK CEDAR RIVER SUBBASIN

Conservation Needs Inventory for Watersheds Information, 1967

WATERSHED		Drainage Area	Agric., Floodwater & Sediment Damage		Drainage	
Name	Number	Acres	Acres with Problems	Acres Needing Project Action	Acres with Problems	Acres Needing Project Action
Bailey Creek	1	60,670	4,300	4,300	34,000	23,000
Otter Creek	2	118,400	6,200	6,200	74,000	42,000
Beaverdam Creek	3	130,700	18,900	18,900	86,000	60,000
Boylan Creek	4	38,460	3,100	3,100	26,000	23,000
Jaynes Creek	5	86,400	4,300	4,300	55,000	34,000
McClure Creek	6	24,060	2,400	2,400	8,000	8,000
Lower Main & Tribs	7	89,150	10,700	10,700	65,000	65,000
TOTALS		547,840	49,900	49,900	348,000	255,000

while quite desirable from the owners standpoint, can effectively modify or eliminate other uses including various recreational activities, wildlife, timber harvesting, and watershed protection.

Other uses occur which unalterably eliminate the forest resource. Conversion to cropland or pasture, municipal-industrial development, transportation and utility rights-of-way, and water developments are probably the most significant uses contributing to a decline in forest acreage.

From the standpoint of maintaining or improving the forest resources for multiple use values now and in the future, the following problems and needs are recognized within the Subbasin. Reforestation is needed on 1,400 acres, timber stand improvement is needed on 2,400 acres, forage improvement on 2,200 acres, and grazing reduction or elimination needed on over 3,400 acres.

C. Water Problems--Quality and Quantity (Groundwater)

Agricultural, Rural Domestic and Livestock

There seem to be few groundwater problems that affect rural usage within the West Fork Cedar River Basin. If adequate supplies are not found in the unconsolidated materials, the rocks of Devonian age that make up the upper bedrock aquifer generally will supply at least 10 gpm. A small problem with quality does exist in that the water from the Devonian aquifer in the basin is hard and contains excess iron which can cause undesirable staining. However, both of these conditions are of importance only for domestic usage, and both can be controlled quite readily with home water treatment units.

Throughout much of the Subbasin the mantle of unconsolidated material is quite thin, which makes the upper bedrock aquifer vulnerable to contamination from surface materials. It is important that new wells be constructed in a manner that will prevent contamination and that abandoned wells be properly plugged.

Municipal and Industrial

The rather minor problems that apply to rural usage also are applicable to municipal and industrial usage. However, for those users requiring larger supplies the deeper aquifers are available. Those users that contemplate going to the deeper aquifers should be aware that sand-pumping problems are not unusual in this area and care is required in the development of wells.

III. SUBBASIN RESERVOIR SITE INVENTORY

Reservoir sites are very limited in number in this Subbasin. There are probably no sites that would be economically feasible for floodwater control. Most of the valleys are wide with flat grades and right-of-way for sites would encompass much valuable cropland.

There are a few small sites that would provide 25 to 50 surface acres of water for recreation areas. The State of Iowa has one artifical reservoir in this Subbasin constructed that has a surface area of over 100 acres and is utilized for recreation in Beed's State Park near Hampton in Franklin County. There are a few similar sites available for recreation and about all are located in Land Resource Area 108.

IV. SUBBASIN ENVIRONMENTAL QUALITY PROBLEMS

Environmental quality problems in the West Fork Cedar River Subbasin are not as readily apparent as in other Subbasins. The most severe one is sheet erosion that is resulting in pollution and sediment problems. Damages occurring as a result of this erosion include siltation of lakes, farm ponds, floodways, drainage ditches, road and highway ditches and culverts. This sediment also reduces the water quality of streams and lakes by being a carrier of pollutants. Other environmental quality problems include inadequate wildlife cover and over-grazing of some of the existing woodland cover. Some streambank erosion exists along the West Fork Cedar River. Many abandoned automobiles were noted in areas of the Subbasin creating sight pollution and tending to destroy the aesthetic values of these areas.

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