Water Resources Survey

Carbon County, Montana

(Resurvey)

Part I:

HISTORY OF LAND AND WATER USE ON IRRIGATED AREAS

and

Part II:

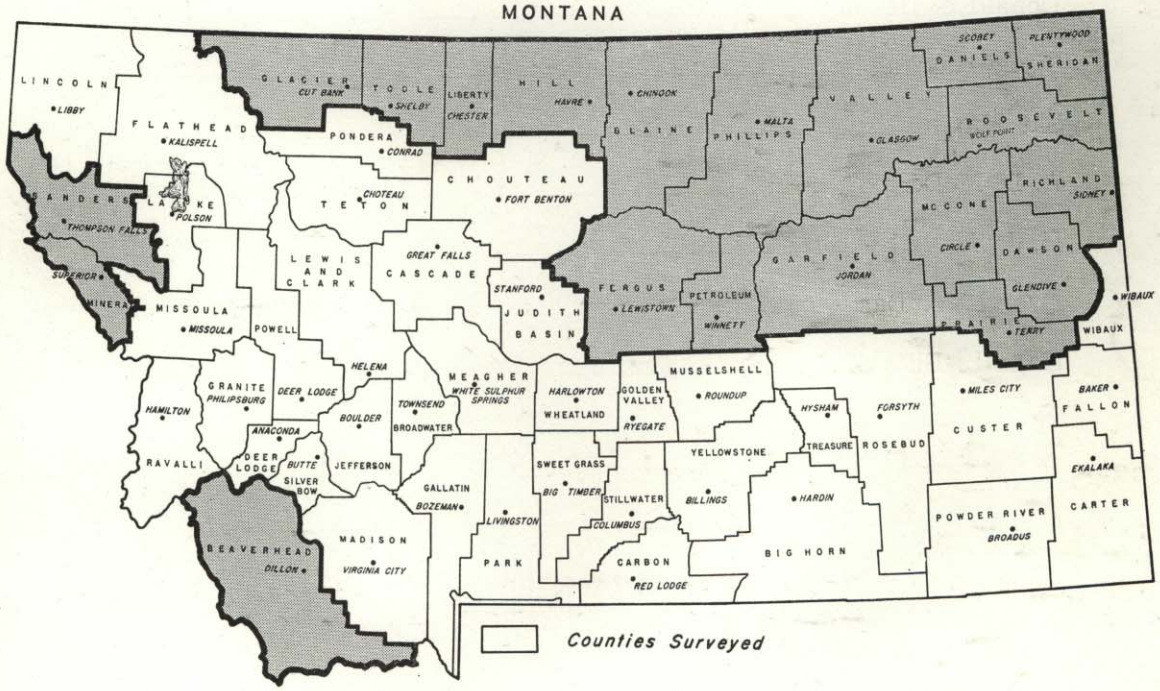
MAPS SHOWING IRRIGATED AREAS IN COLORS DESIGNATING THE SOURCES OF SUPPLY

Published by
STATE WATER CONSERVATION BOARD
Helena, Montana — June, 1966

WATER RESOURCES SURVEY

CARBON COUNTY
MONTANA

Part I
History of Land and Water Use
on Irrigated Areas



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June, 1966

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TRIBUNE PRINTING CO.

June, 1966

Honorable Tim M. Babcock
Governor of Montana
Capitol Building
Helena, Montana

Dear Governor Babcock:

Submitted herewith is a consolidated report on a resurvey of Water Resources for Carbon County, Montana.

This resurvey was undertaken to obtain up-dated information regarding water rights and water use along the Clarks Fork of the Yellowstone and its tributaries in Montana in order to insure more efficient administration of the Yellowstone River Compact between the State of Montana and Wyoming. The Compact became effective on January 1, 1950, approximately 3½ years after publication of the original survey, dated May, 1946, and most water developments in Carbon County since the date of the original study were unknown to the State until the resurvey was completed.

The report is divided into two parts: Part I consists of history of land and water use, irrigated lands, water rights, etc., and Part II contains the township maps in the County showing in colors the lands irrigated from each source or canal system.

Work has been completed and reports are now available for the following counties: Big Horn, Broadwater, **Carbon,** Carter, Cascade, Chouteau, Custer, Deer Lodge, Fallon, Flathead, Gallatin, Golden Valley, Granite, Jefferson, Judith Basin, Lake, Lewis and Clark, Lincoln, Madison, Meagher, Missoula, Musselshell, Park, Pondera, Powder River, Powell, Ravalli, Rosebud, Silver Bow, Stillwater, Sweetgrass, Teton, Treasure, Wibaux, Wheatland, and Yellowstone.

The office files contain minute descriptions and details of each individual water right and land use, which are too voluminous to be included herein. These office files are available for inspection to those who are interested.

The historical data on water rights contained in these reports can never become obsolete. If new information is added from time to time as new developments occur, the records can always be kept current and up-to-date.

Respectfully submitted,

A. D. McDERMOTT, Director
State Water Conservation Board

ACKNOWLEDGMENTS

A survey and study of water resources involves many phases of both field and office work in order to gather the necessary data to make the information complete and comprehensive. Appreciation of the splendid cooperation of various agencies and individuals who gave their time and assistance in aiding us in gathering the data for the preparation of this report is hereby acknowledged.

CARBON COUNTY OFFICIALS

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Frank DeVille, Commissioner — Elmer G. Duncan, Commissioner

Frank Danichek, Clerk and Recorder

Clara H. Timonen, Clerk of District Court

Albert W. Whited, Assessor — Walter A. Sandine, Surveyor

James Kirby, Land Reclassification Office

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Gerald Koch — Secretary, Bridger Ditch Co.
Dry Creek Canal & Irrigation Co.
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TABLE OF CONTENTS

CARBON COUNTY

TABLE OF CONTENTS (Continued)

FOREWORD

SURFACE WATER

Our concern over surface water rights in Montana is nearly a century old. When the first Territorial Legislature, meeting in Bannack, adopted the common law of England on Jaunary 11, 1865, the Territory's legal profession assumed that it had adopted the Doctrine of Riparian Rights. This doctrine had evolved in England and in the eastern United States where the annual rainfall is generally more than twenty inches. It gave the owners of land bordering a stream the right to have that stream flow past their land undiminished in quantity and unaltered in quality and to use it for household and livestock purposes. The law restricted the use of water to riparian owners and forbade them to reduce appreciably the stream flow, but the early miners and ranchers in Montana favored the Doctrine of Prior Appropriation which permitted diversion and diminution of the streams. Consequently, the next day the legislature enacted another law which permitted diversion by both riparian and non-riparian owners. Whether or not this action provided Montana with one or two definitions of water rights was not settled until 1921 when the Montana Supreme Court in the Mettler vs. Ames Realty case declared the Doctrine of Prior Appropriation to be the valid Montana water right law. "Our conclusion," it said, "is that the common law doctrine of riparian rights has never prevailed in Montana since the enactment of the Bannack Statutes in 1865 and that it is unsuited to the conditions here . . ."

The appropriation right which originated in California was used by the forty-niners to divert water from the streams to placer mine gold. They applied to the water the same rules that they applied to their mining claims—first in time, first in right and limitation of the right by beneficial use. Those who came to the Montana gulches brought with them these rules, applying them to agriculture as well as to mining.

The main points of consideration under the Doctrine of Prior Appropriation are:

1. The use of water may be acquired by both riparian and non-riparian landowners.

2. It allows diversion of water regardless of the reduction of the water supply in the stream.

3. The value of the right is determined by the priority of the appropriation; i.e., first in time is first in right.

4. The right is limited to the use of the water. Stream waters in Montana are the property of the State and the appropriator acquires only a right to their use. Moreover, this use must be beneficial.

5. A right to the use of water is considered property only in the sense that it can be bought or sold; its owner may not be deprived of it except by due process of law.

The State Legislature has provided methods for the acquisition, determination of priority and administration of the right. No right may be acquired on a stream without diversion of water and its application to a beneficial use. On unadjudicated streams, the Statutes stipulate that the diversion must be preceded by posting a notice at a point of intended diversion and by filing a copy of it within 20 days in the county clerk's office of the county

in which the appropriation is being made. Construction of the means of diversion must begin within 40 days of the posting and continue with reasonable diligence to completion. However, the Montana Supreme Court has ruled that an appropriator who fails to comply with the Statutes may still acquire a right merely by digging a ditch and putting the water to beneficial use.

To obtain a water right on an adjudicated stream one must petition the District Court having jurisdiction over the stream for permission to make an appropriation. If the other appropriators do not object, the court gives its consent and issues a supplementary decree granting the right subject to the rights of the prior appropriators.

Inasmuch as the Montana Laws do not require water users to file official records of the completion of their appropriations, it becomes advisable as soon as the demand for the waters of a stream becomes greater than its supply, to determine the rights and priorities of each user by means of an adjudication or water right suit. This action may be initiated by one or more of the appropriators who may make all the other claimants parties to the suit. Thereupon the Judge of the District Court examines the claims of all the claimants and issues a decree establishing priority of the right of each water user and the amount of water he is entitled to use. The court decree becomes in effect the deed of the appropriator to his water right.

Whenever scarcity of water in an adjudicated stream requires an allocation of the supply according to the priority of rights, the Judge, upon petition of the owners of at least 15 percent of the water rights affected, must appoint a water commissioner to distribute the water. Chapter No. 231, Montana Session Laws 1963, Senate Bill 55 amended Section 89-1001 R.C.M. 1947, to provide that a water commissioner be appointed to distribute decreed water rights by application of fifteen percent (15%) of the owners of the water rights affected, or, under certain circumstances at the discretion of the Judge of the District Court —**"provided that when petitioners make proper showing they are not able to obtain the application of the owners of at least fifteen percent (15%) of the water rights affected, and they are unable to obtain the water to which they are entitled, the Judge of the District Court having jurisdiction may, in his discretion, appoint a water commissioner."** After the Commissioner has been appointed the Judge gives him instructions on how the water is to be apportioned and distributed in accordance with the full terms of the decree.

The recording of appropriations in local courthouses provides an incomplete record of the water rights on unadjudicated streams. In fact, the county records often bear little relation to the existing situation. Since the law places no restriction on the number or extent of the filings which may be made on an unadjudicated stream, the total amount of water claimed is frequently many times the available flow. There are numerous examples of streams becoming over appropriated. Once, six appropriators each claimed all the water in Lyman Creek near Bozeman. Before the adjudication of claims to the waters of Prickley Pear Creek, 68 parties claimed thirty times its average flow of about 50 cfs. Today, the Big Hole River with an average flow of about 1,000 cfs. has filings totaling 173,912 cfs. A person is unable to distinguish in the county courthouses the perfected rights from the unperfected ones since the law requires no official recordation of the completion of an appropriation. Recognition by the courts of unrecorded appropriations adds to the incompleteness of these records. To further complicate the situation, appropriators have used different names for the same stream in their filings. In Montana many of the streams flow through several counties; consequently, water right filings on these inter-county streams are found dis-

tributed in two or more county courthouses. Anyone desirous of determining appropriations on a certain river or creek finds it difficult and expensive to examine records in several places. In addition, the records are sometimes scattered because the original nine counties of 1865 have now increased to 56. As the original counties have been divided and subdivided, the water right filings have frequently not been transcribed from the records of one county to the other. Thus, a record of an early appropriation in what is at present Powell County may be found in the courthouse of the original Deer Lodge County.

It can readily be seen that this system of recording offers little protection to rights in the use of water until they are determined by an adjudication. In other words, an appropriator does not gain clear title to his water right until after adjudication and then the title may not be clear because the Montana system of determining rights is also faulty. In the first place, adjudications are costly, sometimes very costly when they are prolonged for years. It is estimated that litigation over the Beaverhead River, which has lasted more than twenty years, has cost the residents of the valley nearly one-half million dollars. In the second place, unless the court seeks the advice of a compent irrigation engineer, the adjudication may be based upon inaccurate evidence. In the third place, if some claimant has been inadvertently left out of the action, the decree is not final and may be reopened for consideration by the aggreived party. Another difficulty arises in determining the ownership of a water right when land under an adjudicated stream becomes subdivided in later years and the water is not apportioned to the land by deed or otherwise. There is no provision made by law requiring the recording of specific water right ownership on deeds and abstracts.

The Legislative Session of 1957 passed Chapter 114 providing for the policing of water released from storage to be transmitted through a natural stream bed to the place of use. The owner of the storage must petition the court for the right to have the water policed from the storage reservoir to his place of use. If there are no objections, the court may issue the right and appoint a water commissioner to distribute the water in accordance therewith. This law applies only to unadjudicated streams.

Administration of water on adjudicated streams is done by the District Court, but it has its drawbacks. The appointment of a water commissioner is often delayed until the shortage of water is acute and the court frequently finds it difficult to obtain a competent man for a position so temporary. The present administration of adjudicated streams which cross the county boundaries of judicial districts creates problems. Many of the water decrees stipulate head gates and measuring devices for proper water distribution, but in many instances the stipulation is not enforced, causing disagreement among water users.

Since a water right is considered property and may be bought and sold, the nature of water requires certain limitations in its use. One of the major faults affecting a stream after an adjudication is the failure of the District Court to have some definite control over the transfer of water rights from their designated places of use. The sale and leasing of water is becoming a common practice on many adjudicated streams and has created serious complications. By changing the water use to a different location, many of the remaining rights along the stream are disrupted, resulting in a complete breakdown of the purpose intended by the adjudication. To correct this situation, legal action must be initiated by the injured parties as it is their responsibility and not the Court's.

At one time or another all of the Western Reclamation States have used similar meth-

ods of local regulation of water rights. Now all of them except Montana have more or less abandoned these practices and replaced them by a system of centralized state control such as the one adopted by the State of Wyoming. The key characteristics of the Wyoming system are the registration of both the initiation and completion of an appropriation in the State Engineer's Office, the determination of rights and administration by a State Board of Control headed by the State Engineer. These methods give the Wyoming water users titles to the use of water as definite and defensible as those which they have to their land.

When Montana began to negotiate the Yellowstone River Compact with Wyoming and North Dakota in 1939, the need for some definite information concerning our water and its use became apparent. The Legislature in 1939 passed a bill (Ch. 185) authorizing the collection of data pertaining to our uses of water and it is under this authority that the Water Resources Survey is being carried on. The purpose of this survey is six fold: (1) to catalogue by counties in the office of the State Water Conservation Board, all recorded, appropriated, and decreed water rights including the use rights as they are found; (2) to map the lands upon which the water is being used; (3) to provide the public with pertinent water right information on any stream, thereby assisting in any transaction where water is involved; (4) to help State and Federal agencies in pertinent matters; (5) to eliminate unnecessary court action in water right disputes; (6) and to have a complete inventory of our perfected water rights in case we need to defend these rights against the encroachments of lower states, or Wyoming or Canada.

GROUND WATER

Ground water and surface water are often intimately related. In fact, it is difficult in some cases to consider one without the other. In times of heavy precipitation and surface runoff, water seeps below the land surface to recharge underground reservoirs which, in turn, discharge ground water to streams and maintains their flow during dry periods. The amount of water stored underground is far greater than the amount of surface water in Montana, and, without seepage from underground sources, it is probable that nearly all the streams in the state would cease to flow during dry periods.

It is believed that Montana's ground-water resources are vast and only partly developed. Yet this resource is now undergoing an accelerated development as the need for its use increases and economical energy for pumping becomes available. Continued rapid development without some regulation of its use would cause a depletion of ground water in areas where the recharge is less than the withdrawal. Experience in other states has shown that once overuse of ground water in a specific area has started, it is nearly impossible to stop, and may result in painful economic readjustments for the inhabitants of the area concerned.

Practical steps aimed at conserving ground-water resources as well as correcting related deficiencies in surface water laws became necessary in Montana. Prior to the Legislative Session of 1961, there was no legal method of appropriating ground water. Proposed ground-water codes were introduced and rejected by four sessions of the Montana Legislative Assembly in 1951, 1953, 1955, and 1959.

In 1961, during the 37th Legislative Session, a bill was introduced and passed which created a Ground-Water Code in Montana. (Chapter 237, Revised Codes of Montana, 1961.) This bill became effective as a law on January 1, 1962, with the State Water Conservation Board designated as "Administrator" to carry out provisions of the Act.

Some of the important provisions contained in Montana's New Ground-Water Law are:

Section 1. DEFINITIONS OR REGULATIONS AS USED IN THE ACT.

(a) "Ground-Water" means any fresh water under the surface of the land including the water under the bed of any stream, lake, reservoir, or other body of surface water. Fresh water shall be deemed to be the water fit for domestic, livestock, or agricultural use. The Administrator, after a notice of hearing, is authorized to fix definite standards for determining fresh water in any controlled ground-water area or sub-area of the state.

(b) "Aquifer" means any underground geological structure or formation which is capable of yielding water or is capable of recharge.

(c) "Well" means any artificial opening or excavation in the ground, however made, by which ground-water can be obtained or through which it flows under natural pressures or is artifically withdrawn.

(d) "Beneficial use" means any economically or socially justifiable withdrawal or utilizations of water.

(e) "Person" means any natural person, association, partnership, corporation, municipality, irrigation district, the State of Montana, or any political sub-division or agency thereof, and the United States or any agency thereof.

(f) "Administrator" means State Water Conservation Board of the State of Montana.

(g) "Ground-Water area" means an area, which as nearly as known facts permit, may be designated so as to enclose a single distinct body of ground water, which shall be described horizontally by surface description in all cases and which may be limited vertically by describing known geological formations, should conditions dictate this to be desirable. For purpose of administration, large ground-water areas may be divided into convenient administrative units known as "sub-areas."

Section 2. RIGHT TO USE. Rights to surface water where the date of appropriation precedes January 1, 1962, shall take priority over all prior or subsequent ground-water rights. The application of ground water to a beneficial use prior to January 1, 1962, is hereby recognized as a water right. Beneficial use shall be the extent and limit of the appropriative right. As to appropriations of ground water completed on and after January 1, 1962, any and all rights must be based upon the filing provisions hereinafter set forth; and as between all appropriators of surface or ground water on and after January 1, 1962, the first in time is first in right.

Any ground water put to beneficial use **after** January 1, 1962 **must** be filed upon in order to establish a water right thereto.

Montana's Ground-Water Code originally provided for four different types of forms that could be filed.

Form No. 1 **"Notice of Appropriation of Ground Water"**—shall require answers to such questions as (1) the name and address of the appropriator; (2) the beneficial use for which

the appropriation is made, including a description of the lands to be benefited if for irrigation; (3) the rate of use in gallons per minute of ground water claimed; (4) the annual period (inclusive dates) of intended use; (5) the probable or intended date of first beneficial use; (6) the probable or intended date of commencement and completion of the well or wells; (7) the location, type, size, and depth of the well or wells contemplated; (8) the probable or estimated depth of the water table or artesian aquifer; (9) the name, address, and license number of the driller engaged; and (10) such other similar information as may be useful in carrying out the policy of this Act. This form is optional, but it has an advantage in that after filing the Notice of Appropriation, a person has 90 days in which to commence actual excavation and diligently prosecute construction of the well. Otherwise, a failure to file the Notice of Appropriation deprives the appropriator of his right to relate the date of the appropriation back upon filing the Notice of Completion. (Form No. 2)

Form No. 2 **"Notice of Completion of Ground Water by Means of Well"**—this form shall require answers to the same sort of questions as required by Form No. 1 (Notice of Appropriation of Ground Water), except that for the most part it shall inquire into accomplished facts concerning the well or means of withdrawal, including (a) information as to the static level of water in the casing or the shut-in pressure if the well flows naturally; (b) the capacity of the well in gallons per minute by pumping or natural flow; (c) the approximate drawdown or pumping level of the well; (d) the approximate surface elevation at the well head; (e) the casing record of the well; (f) the drilling log showing the character and thickness of all formations penetrated; (g) the depth to which the well is drilled; and similar information.

It shall be the responsibility of the driller of each well to fill out the Form No. 2, "Notice of Completion of Ground Water by Means of a Well," for the appropriator, and the latter shall be responsible for its filing.

Form No. 3 **"Notice of Completion of Ground-Water Appropriation Without a Well"**—is for the benefit of persons obtaining (or desiring to obtain) ground water without a well, such as by sub-irrigation or other natural processes so as to enable such persons to describe the means of using ground water; to estimate the amount of water so used; and requiring such other information pertinent to this particular type of ground water use.

Form No. 4 **"Declaration of Vested Ground Water Rights"**—shall be used by persons who have put ground water to a beneficial use (including sub-irrigation or other natural processes), prior to January 1, 1962. The appropriator must within four (4) years after January 1, 1962 (the original law called for two years but the 1965 Legislature extended the time to four years after January 1, 1962) file a declaration in the office of the county clerk of the county in which the claimed right is situated and the declaration shall contain the following information: (1) Name and address of the claimant; (2) the beneficial use on which the claim was based; (3) the date or approximate date of the earliest beneficial use, and how continuous the use has been; (4) the amount of ground water claimed; (5) if the beneficial use has been for irrigation, the acreage and description of lands to which such water has been applied and the name of the owner thereof; (6) the means of withdrawing such water from the ground and the location of each well or other means of withdrawal; (7) the date of commencement and completion of the construction of the well, wells or other works for withdrawal of ground water; (8) the depth of the water table; (9) so far as it may be available, the type, size and depth of each well or the general specifications of any other works for the withdrawal of ground water; (10) the estimated amount of ground

water withdrawn each year; (11) the log of the formations encountered in the drilling of each well; and (12) such other information of similar nature as may be useful in carrying out the policy of the Act.

Failure to file Form No. 4 "Declaration of Vested Ground-Water Rights" within the four-year period does not cause a forfeiture of a claimant's vested ground-water rights although he might be called upon at some future time to prove his rights in court. A valid filing of Form No. 4, however will be accepted by the courts as prima facie evidence of a ground-water right.

It shall be recognized that all persons who have filed a Water Well Log Form as provided for under Section 1 and 2 of Chapter 58, Session Laws of Montana, 1957, shall be considered as having complied with the requirements of this Act.

It is important to note that the ground-water law states, "UNTIL A NOTICE OF COMPLETION (form No. 2 or No. 3) IS FILED WITH RESPECT TO **ANY** USE OF GROUND WATER INSTITUTED **AFTER** JANUARY 1, 1962, **NO** RIGHT TO THAT USE OF WATER SHALL BE RECOGNIZED."

Copies of the forms used in filing on ground water are available in the County Clerk and Recorder's office in each of Montana's 56 counties. It shall be the duty of the County Clerk in every instance to file the original copy for the county records; transmit the second copy to the Administrator (State Water Conservation Board); the third copy to the Montana Bureau of Mines and Geology; and the fourth copy to be retained by the appropriator (person making the filing).

Accurate records and the amount of water available for future use are essential in the administration and investigation of water resources. In areas where the water supply becomes critical, the ground-water law provides that the administrator may define the boundaries of the aquifer and employ inspectors to enforce rules and regulations regarding withdrawals for the purpose of safeguarding the water supply and the appropriators (see the wording of the law for establishing a "controlled area").

The filings of water right records in a central office under control of a responsible State agency provides the only efficient means for the orderly development and preservation of our water supplies and it protects all of Montana's use—on both ground and surface water.

METHOD OF SURVEY

Water resources data contained in Part I and Part II of this report are obtained from courthouse records in conjunction with individual contacts with landowners. A survey of this type involves extensive detailed work in both the office and field to compile a comprehensive inventory of water rights as they apply to land and other uses.

The material of foremost importance used in conducting the survey is taken from the files of the county courthouse and the data required includes; landownership, water right records (decrees and appropriations), articles of incorporation of ditch companies and any other legal papers in regard to the distribution and use of water. Deed records of landownership are reviewed and abstracts are checked for water right information when available.

Aerial photography is used by the survey to assure accuracy in mapping the land areas of water use and all the other detailed information which appears on the final colored township maps in Part II. Section and township locations are determined by the photogrammetric system, based on government land office survey plats, plane-table surveys, county maps and by "on the spot" location during the field survey. Noted on the photographs are the locations of each irrigation system, with the irrigated and irrigable land areas defined. All the information compiled on the aerial photo is transferred and drawn onto a final base map by means of aerial projection. From the base map color separation maps are made and may include three to ten overlay separation plates, depending on the number of irrigation systems within the township.

Field forms are prepared for each landowner showing the name of the owner and operator, photo index number, a plat defining the ownership boundary, type of irrigation system, source of water supply and the total acreage irrigated and irrigable under each. All of the appropriated and decreed water rights that apply to each ownership are listed on the field forms with the description of intended place of use. During the field survey, all water rights listed on the field form are verified with the landowner. Whenever any doubt or complication exists in the use of a water right, deed records of the land are checked to determine the absolute right and use.

So far as known, this is the first survey of its kind ever attempted in the United States. The value of the work has become well substantiated in the counties completed to date by giving Montana its first accurate and verified information concerning its water rights and their use. New development of land for irrigation purposes by State and Federal agencies is not within the scope of this report. The facts presented are as found at the time of completion of each survey and provide the items and figures from which a detailed analysis of water and land use can be made.

The historical data contained in these reports can never become obsolete. If new information is added from time to time as new developments occur, the records can always be kept current and up-to-date.

Complete data obtained from this survey cannot be included in this report as it would make the text too voluminous. However, if one should desire detailed information about any particular water right, lands irrigated, or the number and amount of water rights diverting from any particular stream, such information may be obtained by writing the State Water Conservation Board in Helena.

Every effort is being made to produce accuracy of the data collected rather than to speed up the work which might invite errors.

WATER RESOURCES SURVEY

Carbon County, Montana

Part I

History of Land and Water Use

on Irrigated Areas

Published by
STATE WATER CONSERVATION BOARD

Helena, Montana
June, 1966

HISTORY AND ORGANIZATION

The territory comprising present Carbon County was first visited by white men when members of the Lewis & Clark Expedition journeyed down the Yellowstone River in the summer of 1806. The following year John Colter spent some time in the region drumming up fur trade for Manuel Liza, and in subsequent years the area was explored by many other fur traders and trappers. The trails blazed by Jim Bridger and John Bozeman in 1864 passed through this region and brought many white men into the area. Chief Joseph at the head of his Nez Perces in his famous retreat down the Clarks Fork River in September, 1877, temporarily dampened enthusiasm of the few whites who had ventured south of the Yellowstone River.

All of the land area of what is now Carbon County was included in the Crow Indian Reservation until 1877 when a small section around Red Lodge was withdrawn to permit development of extensive coal deposits located there. Mines were opened that year by the Rocky Fork Coal Company, and a year later the town of Red Lodge grew to a village of 400 inhabitants. The following year, in 1899, the Rocky Fork Branch of the Northern Pacific Railway from Laurel to Red Lodge was completed resulting in a great expansion of mining and an influx of settlers who began to develop the agricultural and stock raising possibilities of the region. Some of the early settlers before the railroad was completed were W. N. Hunter, Anthony Chaffin, A. A. Ellis, W. R. Mahan, and John W. Torreyson; but the handicap of reservation land prevented the usual prerailroad settlement. Finally the clamor of home seekers for admission to the Indian reserve became so great as to be heard in Washington, and the entire section was thrown open to settlement in 1892.

Farmers and Stockmen filled the land reserve rapidly and soon a separate county government was demanded.

The usual legislative battle occurred in the creation of Carbon County, but finally after a Senate deadlock the tie vote was broken by Lieutenant Governor Botkin, and Carbon County came into being from parts of Park and Yellowstone Counties on March 4, 1895. Red Lodge was named the temporary county seat in the creative Act but later acquired permanent possession by defeating Joliet in the general election of 1896.

Carbon County is located in the southcentral part of Montana. It is bounded on the south by Wyoming, on the east by Big Horn County, on the northeast by Yellowstone County, and on the north and west by Stillwater and Park Counties. The east wing-shaped section of the county is bisected by the Pryor Mountains, while in the extreme western part are the towering, rugged Beartooth Mountains with some of the highest peaks in the state. The northern boundary of the county is formed by the Yellowstone River into which drain the Clarks Fork River, Rock Creek, and Red Lodge Creek with their tributaries. The drainage area of these streams form the main agricultural valleys in Carbon County. In the western part the East Rosebud River flows northeastward out of the county into the Stillwater. The section east of the Pryor Mountains is drained by the Big Horn River.

The discovery and development of oil and gas fields in Montana and the changeover by the railroad from steam to diesel power brought about a gradual decline in the coal mining industry. Future development in the uses of coal may reactivate the mines in the Red Lodge area as well as in other parts of Montana.

The first evidences of oil were discovered near the coal deposits in the southwestern part

of Carbon County in 1900 where oil was found oozing out of the ground. It was here that Thomas Cruse and his associates drilled four wells and struck oil at a depth of several hundred feet; all the wells were lost from some cause or another. Dr. S. M. Souders with others discovered the Elk Basin field on the Montana-Wyoming line. The Ohio Oil Company developed the field on the Montana side, and the first well was brought into production on November 11, 1915. This field produces both oil and gas, and a pipline through the Clarks Fork Valley to Billings completed in 1926 supplies that city with natural gas. The same line supplies natural gas to the towns of Bridger, Fromberg, Edgar, and Joliet in Carbon County. What proved to be one of the better oil fields in the state is the Dry Creek field. The first well in this field was drilled by Dr. S. M. Souders in 1914 and struck production in 1915 shortly after the first well in the Elk Basin field. In this field there is an abundance of both oil and natural gas, and it supplies natural gas to Red Lodge, Roberts, and other towns in the southern part of the state.

Agriculture today is the most important source of income to the residents of Carbon County (See Crops and Livestock of this report). Livestock production, once the dominant agricultural activity, is still carried on to a great extent; however, farms have become smaller and diversified farming has gained importance as irrigation projects were developed.

Red Lodge, the county seat, is the largest town in Carbon County with a population of about 2,300. Tourists travel through Red Lodge during the summer months over the scenic Cooke City Highway to Silver Gate, the northeast entrance of Yellowstone National Park. The scenic area around Red Lodge has much to offer in the way of recreation with fishing, hunting, and boating during the summer, and skiing and other outdoor sports during the winter months. Other towns in the county are Fromberg, Roberts, Joliet, Bridger, Edgar, Bear Creek, Silesia, Belfry, Boyd, Luther and Roscoe.

Carbon County has a land area of 2,070 square miles and at the last census a population of 8,317.

CLIMATE

Carbon County, with its southern boundary coinciding with the Montana-Wyoming State line, has a topography ranging from flat valley bottoms north and east to extremely mountainous country south to west of Red Lodge (the County Seat). Some of Montana's highest mountain peaks are located in the southwest corner of the county, several with elevations greater than 12,000 ft. above sea level. The southeast corner is also mountainous (Pryor Mountains, peaks up to 9,000 ft.). Elevations within the county run from 12,610 ft. at Silver Run Peak southwest of Red Lodge down to about 3,300 ft. along the Yellowstone River southwest of Laurel. County drainage is generally toward the north or northeast, but in mountainous areas, drainages (particularly some of the smaller ones) can be found running in almost any direction.

The primary streams are Rock Creek, running north-northeastward from Red Lodge, and the Clarks Fork of the Yellowstone, which enters the county on the south from Wyoming and flows generally northward passing near the towns of Belfry, Bridger, Fromberg and Edgar. Rock Creek has its confluence with the Clarks Fork River in Carbon County, while the Clarks Fork River joins the Yellowstone just southeast of Laurel in Yellowstone County. This complex of mountains and streams is very important to the climate of the county. In the broadest sense, the climate of the area has to be classed as "continental," but there are several important modifications described below—most of which are more or less direct results of mountain-valley-plain configurations.

In both precipitation and temperature patterns, elevations and directions of slopes play a primary role. Precipitation variations are particularly note-worthy across the mountainous southern parts of the county, annual totals ranging from about 35 inches for a 12-year period at a mountain location 18 miles southwest of Red Lodge downward to a 10-year 5.51 average along the Clarks Fork 9 miles south-southwest of Belfry. Only about 25 miles separate these two points, and it may well be that the Belfry section of the Clarks Fork Valley is the driest part of Montana. One need only look to topography for possible reasons. The "rain shadow" effect, near Belfry, of the very high mountains during the prevailing west to southwest flow has to be considerable; and when the wind pattern reverses, the northeast upslope component at Red Lodge, for example, exceeds by several times the gradual slope up the Clarks Fork Valley at Belfry.

Northward from the mountains precipitation also decreases, but less markedly—to near 14 inches just south of the Yellowstone River. A summary of precipitation records in the county appears in the table, but the listings warrant a few pertinent comments. During the cold season nearly all precipitation over the county falls as snow. At the lower elevations snow seldom remains on the ground very long, but in the mountains and foothills snow begins accumulating in November most years, reaching greatest depths and water contents in March or early April. The melting of these mountain snowpacks during spring and early summer contributes in a large way to the stable and usually plentiful runoff experienced in most years in Northern Rocky Mountain country such as Carbon County, assuring interests along all principal drainages of plenty of water during midsummer when water needs are greatest. In an occasional year, heavy rains in late May or early June may coincide with periods of peak runoff, and about one year in 10 this combination will cause some degree of flooding in some streams.

Rains of a steady (several hours) character may occur in any year April-June, but summer precipitation almost always is showery. Cold season snows tend to be heaviest in late fall or early spring—the heaviest snowfall months at Red Lodge, for example, are March and April—nearly 40 inches for those two months in a yearly average total of a little over 100 inches. Average snowfall in the mountains is estimated to reach totals of several hundred inches, decreasing to less than 50 inches a year in lower northeastern parts of the county.

The range in temperatures across the county is fairly large. The mountain country southwest of Red Lodge no doubt averages less than 40°, while along the Yellowstone River annual averages reach about 47°. A comparative listing of temperature data appears in the table. In most of the county summertime warmth is fairly steady, seldom reaching oppressive levels. Red Lodge, for example, in a sample 30-year period, averaged only 3 days per year with maximums 90° or warmer, while at lower elevations in the north this frequency may approach 20 or 25 days. Also at Red Lodge, the same 30 years averaged only 26 days a year with low temperatures zero or colder. The 32° freeze-free season at Red Lodge averages 104 days from June 5 to September 17, but may run as long as 130 days along the Yellowstone (May 16-September 24). Hardier crops (able to withstand temperatures down to 24° for short periods) will find seasons averaging as long as 180 days in more favored locations.

Much of Carbon County is favorably situated with respect to the so-called "Chinook" winds of the Northern Rockies. When this wind develops following a winter cold spell, warming can be rapid—as much as 40 to 50 degrees in less than a day. The ease with which

this wind condition develops tends to shorten winter cold spells—seldom does an invasion of really cold Arctic air last more than three days. In some of the mountain valleys this particular wind type can develop considerable strength—perhaps as strong as 100 mph gusts in local, more exposed areas. Severe storms, as such, are not common; however, hailstorms, high winds, heavy snows, freezing rain and sleet, and tornadoes have been observed, at intervals of several years, somewhere in the county. Hail of damaging strength or size occurs one year in 10 along the lower elevations of the northern end, less frequently at higher elevations to the south. Tornadoes are rare and when observed they have always been small, and mostly in the north half of the county. But as a whole the county is not an unusually stormy area.

Various aspects of temperature and precipitation features are summarized in the following tables:

TEMPERATURE

Station	Years of Record	Elev.	Highest Year of Record	Lowest Year of Record	January Average	July Average	Annual Average
Bridger	1908-60	3680	110 (1933)	-35 (1936)	22.7	70.5	46.4
Joliet	1957-64	3700	104 (1960-61)	-34 (1963)	22.3	69.1	45.9
Red Lodge	1894-60	5575	101 (1931)	-40 (1899)	20.9	63.4	40.9

PRECIPITATION

Station	Years of Record	Elev.	Yearly Average Total	Growing Season Average Total	Percent Falling In Growing Season	Wettest Year	Driest Year
Belfry (9 SSW)	1951-60	4024	5.51	4.25	77	9.30 (1957)	2.97 (1960)
Bridger	1908-60	3680	10.23	7.19	70	15.94 (1944)	6.77 (1960)
Edgar (6 E)	1941-50	4063	15.98	11.22	70	21.67 (1944)	12.28 (1949)
Edgar (9 SE)	1951-60	4000	15.05	10.06	67	24.99 (1957)	10.42 (1960)
Joliet	1951-64	3700	14.09	10.05	71	22.13 (1957)	7.82 (1960)
Red Lodge	1894-60	5575	19.91	13.38	67	34.90 (1923)	11.17 (1914)
Red Lodge (18 SW)	1952-64	8608	35.23	21.05	60	43.13 (1955)	27.37 (1960)
Roberts	1951-60	4570	15.45	10.52	68	25.15 (1957)	9.79 (1960)

SOILS

Local rock formations furnish the material for soils found in a given locality. The physiography, drainage and glacial history of the area determined how these materials were deposited and account for some of the differences we find in the soils. Soil depth, density, texture and acidity or alkalinity are directly related, within limits, to the material from which the soil was formed.

The variations in soils we see today result from the alteration of geologic material, either in place or transported, by **climate** and living organisms, especially vegetation. The length of **time** these forces have been active and the **topography** on which the action has taken place also contribute to these variations.

The major geologic features that have influenced the soils of Carbon County are the strong bedrock structural control which gives rise to a series of steep east-facing escarpments with more gently sloping pediments toward the west, the wide alluvial-filled valleys of the major streams and the strong alpine glaciation from the highlands of the Beartooth Plateau. The sloping pediments control the depth of the pedisediments on the gently west slopes which in turn controls the depth of the soils formed on the pediments. The sediments deposited in the valleys are the source materials for the soils which make up the larger irrigated areas in Carbon County.

The highlands of the Beartooth Plateau were the source of the glaciers which deposited glacial till over part of Carbon County and this glacial till serves as an important source of material for the soils on the long sloping benches out from the mountain front. The soils on the highlands of the Beartooth Plateau are largely a result of glaciation and frost heaving associated with rigorous climates in areas on the periphery of large bodies of ice. The soils of this area are largely above timber line and compose the "Alpine Meadows." Little is known about the soils of these meadows but in general they contain large amounts of stone and gravels.

The Great Soil Groups most widely represented in Carbon County are Alluvial, Lithosol, Brown, Chestnut, Chernozem, Solodized-Solonetz, Gray Wooded, Brown Podzolic and Soils of the Alpine.

Alluvial soils (Entisols*) are young. They occur usually in areas along streams and may be flooded periodically. The only development that has occurred in these soils is the darkening of the surface by an accumulation of organic matter. The material below the surface is essentially the same as it was at the time of deposition. These soils are used mainly for production of grain and hay. These soils are important in the irrigated areas of Carbon County.

Lithosols (Entisols*) are soils developed in material that is less than 30 inches deep over bedrock. These are young soils without strongly contrasting horizons. Soil development has been confined largely to darkening of the surface by organic matter. These soils are used for grain and hay production and native range.

Brown soils (Aridisols*) in the natural state (not disturbed by cultivation) have a thin, light-gray surface soil usually less than 4 inches thick and a clay accumulation extending to about 8 or 9 inches. A lime accumulation underlies the clay accumulation. These soils occur where the annual precipitation is less than about 14 inches and are used for grain production and range.

Chestnut and Chernozem soils (Mollisols*) have a dark surface soil, usually a clayey, prismatic subsoil and a lime accumulation at 20-25 inches below the surface. This lime horizon may extend to 50 inches. The Chernozem soils are developed under a higher precipitation (16-24″) and have a darker surface than the Chestnut soils (12-16″ precipitation). The depth to the lime accumulation may be somewhat greater in the Chernozem soils. These soils are used mainly for grain and hay production and some native range.

Solodized-Solonetz soils (Natrargids*) generally occur in small areas in association with Chestnut and Brown soils. They are characterized by thin platy surface soils over dense hard clay-pan subsoils. The upper part of the subsoil often has a light-colored (bleached) zone 1-4 inches thick. This bleached zone should not be confused with the lime zone which is usually found below the clay-pan subsoil. These soils often occur as "Slick spots," "Scab land" or "Micropits." These show up under cultivation in all but the wettest years as spots —shorter plants surrounded by taller ones on the adjacent soils. Their use is generally the same as that of the associated Chestnut and Brown soils. Greasewood is often found on Solodized-Solonetz soils in their natural state. These soils are or have been affected by alkali and salts.

Gray Wooded soils (Alfisols*) occur principally in the mountain regions. The mean annual precipitation varies from about 12-25 inches. The vegetation consists mainly of coniferous forests. A dark surface layer of less than 4 inches may be present just under the forest litter. In the absence of the dark layer, a light gray to white zone 4-12 inches thick lies just beneath the litter. The subsoil—a mixture of surface soil and substratum — may extend to depths of 3-4 feet. The major clay accumulations lie below this zone of mixing and may extend to depths of 6 feet. These soils are used mainly for timber production.

Brown Podzolic soils (Spodosols*) occur principally in the mountain regions. They are found under a mean annual precipitation of 25-50″. The most striking feature of these soils is the brown or reddish-brown horizon just under the forest litter. This brown horizon may extend to a depth of 12 inches and is in striking contrast to the gray or nearly white horizon of the Gray Wooded soils. Timber production is the most important use of these soils.

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* New names for same soils. Based on the new Soil Classification System, 1960.—Soil Classification—A Comprehensive System. USDA, SCS.

CROPS AND LIVESTOCK

Carbon County is located in the south-central part of Montana on the southern boundary. It is bounded on the east by Big Horn County, on the north and east by Yellowstone County, on the west and north by Stillwater and Park Counties and on the south by the State of Wyoming. The eastern section of the county is bisected by the Pryor Mountains and this area also contains a large tract of Federally owned land referred to as the Dryhead area. In the extreme western part are the rugged, towering Beartooth Mountains which contain the highest and most beautiful mountain peaks in the State of Montana. The northern boundary of Carbon County is formed by the Yellowstone River into which drain the Clarks Fork and its tributaries. These rivers have formed agricultural valleys which extend to the mountains. The East Rosebud River in the western part of the county flows into the Stillwater River which drains the western part of the county. The eastern wing of Carbon County is drained by the Big Horn River. Yellowtail Dam is only a few miles east of the Carbon County line.

The area contains approximately 1,324,800 acres of which 49.3% is in farms. The economy of the area is largely agricultural. The average size of the farms in Carbon County is 838.8 acres, the 1960 census indicated 812 farms. Nineteen percent of the farms were tenant operated in 1960. Carbon County has 82,419 acres classed as irrigable land and 94,481 classed as dry tillable land, and 533,469 acres are classed as grazing land. Carbon County enjoys a mild climate, fertile soil and adequate irrigation water from the Clarks Fork River and Rock Creek, as well as numerous other mountain streams and creeks. The average rainfall is around 13 inches; however, the Red Lodge area, which is near the mountains, shows 22 inches or more. Snow to provide irrigation water is stored in the many deep canyons and glaciers in the mountains. The elevation ranges from 3,404 feet in Silesia to 5,557 feet at Red Lodge. Granite Peak, with an elevation of 12,850 feet, is the highest point in Montana and is situated in the southwest part of Carbon County. The county is divided into two main valleys which are: The Clarks Fork Valley of the Yellowstone in the eastern part which has the lowest elevation, and the Rock Creek Valley in the western part which reaches elevations over 5,000 feet. The Clarks Fork Valley, in which Belfry, Bridger, Fromberg, Edgar, and Silesia are located, raises the majority of the Great Northern and Pinto beans as well as approximately 4,800 acres of sugar beets. This is the row crop area of the county. Alfalfa, small grain, and many fruits, namely apples, are raised in this area.

The Rock Creek Valley, which includes the adjacent valleys of Willow Creek, Red Lodge Creek, and the East Rosebud, which are in the higher elevation, raise timothy and alsike hay, small grains, cattle and sheep. Some large ranch holdings are found in this area.

From Montana Agricultural Statistics—Volume X, December, 1964.

Crop Production—1963 Harvested Acres

	Irrigated		Non-Irrigated		Total	
Crop	Acres	Yield/A	Acres	Yield/A	Acres	Value
Sugar Beets	4,720	18.5			4,720	$ 1,309,800
Dry Beans	4,700	19.0			4,700	$ 544,700
Winter Wheat	1,600	44.0	20,700	33.0	23,000	$ 1,243,300
Spring Wheat	2,200	34.0	900	18.0	3,100	$ 159,200
Oats	3,800	58.0	1,000	36.0	4,800	$ 148,700
Barley	3,400	48.0	7,000	31.0	10,400	$ 296,600
Alfalfa Hay (@ $20/ton)	25,200	3.0	13,000	1.35	38,200	$ 764,000
Wild Hay (@ $15/ton)	900	1.5	400	1.1	1,300	$ 19,500
Alfalfa Seed	400	160 lbs.	200	150 lbs.	600	$ 23,000

Livestock on Farms—1964

All Cattle and Calves	Milk Cows	Sheep	Hogs	Chickens
52,400	2,600	45,700	6,800	31,900

SNOW SURVEYS

Snow surveys are made throughout the winter to determine the amount of water contained in the snow pack and the snow depth. Two-man teams travel on skis, snowshoes, or in over-

snow vehicle or helicopter to obtain the measurements at locations called snow courses. A core of snow is extracted from the snow pack with an aluminum tube and weighed to determine the amount of water. Usually 10 samples are obtained at specified locations on each snow course and their average reported as the snow measurement.

This information along with the amount of moisture in the soil and other climatological data is used to forecast the probable streamflow for the following spring and summer months.

From water supply forecasts, farmers and ranchers who depend on streamflow for irrigation, can adapt their crop plantings to the anticipated supply. Irrigation projects and reservoir operators can regulate delivery and storage of water to obtain the most beneficial use from the runoff. Other water management agencies can plan their operations before major runoff occurs. Other operations related to water supplies can make plans in advance based on the water supply forecast.

The following active snow courses in Carbon County are used to forecast runoff from snowfed streams.

Local Drainage	Name	Number	Elev.	Year Est.	Dates Measured*
Rock Creek	Camp Senia	9D01	7890	1937	3, 4, 5, 5½, 6
Red Lodge Creek	Grizzley Peak	9D05	8400	1961	1, 2, 3, 4, 5
Rock Creek	Timberline Creek	9D04	8850	1961	3, 4, 5, 5½, 6

Current information on winter snow accumulation and water supply forecasts is available from local Soil Conservation Service offices or the Soil Conservation Service, Bozeman, Montana.

* Number 1, 2, 3, 4, 5, 5½, 6 refer to Jan. 1, Feb. 1, March 1, April 1, May 1, May 15 and June 1 measurements.

STREAM GAGING STATIONS

The U. S. Geological Survey measures the flow of streams, co-operating with funds supplied by several state and federal agencies. The results have been published yearly in book form by drainage basins in Water-Supply Papers through the year 1960. Beginning with 1961, the stream-flow records have been published annually by the U. S. Geological Survey for the entire state under the title, "Surface Water Records of Montana." Data for 1961-65 and subsequent five year periods will be published in Water-Supply Papers. Prior to general issuance, advance copies of station records may be obtained from the U. S. Geological Survey. That agency's records and reports have been used in the preparation of this resume'.

Data given below cover the stream gaging records, which are available for Carbon County from the beginning of measurements through the water year 1964. The water year begins October 1 and ends September 30 of the following year.

Following are equivalents useful in converting from one unit of measurement to another:

(a) In Montana, one cubic foot per second equals 40 miner's inches.

(b) One acre-foot is the amount of water required to cover an acre one foot deep.

(c) One cubic foot per second will nearly equal two acre-feet (1.983) in 24 hours.

(d) A flow of 100 miner's inches will equal five acre-feet in 24 hours.

(e) One miner's inch flowing continuously for 30 days will cover one acre 1½ feet deep.

For reference purposes, the stream gaging stations are listed in downstream order.

East Rosebud Creek near Roscoe

The chain gage was about 6 miles upstream from Morris Creek and 6½ miles southwest of Roscoe. The drainage area is 105 square miles. Records are available from October 1920 to March 1921, May, June, 1921. The maximum discharge observed was 1,980 cfs (June 12, 1921) and the minimum observed, 25 cfs (February 27, 28). No diversions above station.

East Rosebud Creek at Roscoe

The wire-weight gage was at Roscoe, 1 mile downstream from Morris Creek. The drainage area is 125 square miles. Records are available from October 1921 to September 1924. The maximum discharge observed was 1,330 cfs (June 13, 1923) and the minimum observed, 4 cfs (January 12, 1923), result of freezeup. The highest annual runoff was 175,000 acre-feet (1924) and the lowest, 123,000 acre-feet (1922). There are several small diversions for irrigation above the station.

Clarks Fork Yellowstone River at Chance*

The water-stage recorder is 0.4 mile upstream from Sand Coulee and three-quarters of a mile north of Wyoming-Montana State line. The drainage area is 1,154 square miles. Records are available from July 1921 to date (1965). The maximum discharge observed was 10,900 cfs (May 26, 1928) and the minimum observed, 32 cfs (April 26, 1961), result of discharge measurement. The average discharge for 43 years was 926 cfs or 670,400 acre-feet per year. The highest annual runoff was 1,060,000 acre-feet (1928) and the lowest, 469,000 acre-feet (1931). There are diversions for irrigation of about 10,000 acres above the station.

Bluewater Creek near Bridger*

The water-stage recorder is 200 feet downstream from outflow of State fish hatchery, 6 miles northeast of Bridger, and 8 miles upstream from mouth. The drainage area is 27.5 square miles. Records are available from March 1960 to date (1965). The maximum discharge was 2,650 cfs (June 29, 1964) and the minimum, 19 cfs (July 14, 1960). The highest annual runoff was 20,420 acre-feet (1962) and the lowest, 19,490 acre-feet (1963). There are some small diversions for irrigation above the station.

Bluewater Creek at Fromberg

The water-stage recorder was 0.3 mile upstream from mouth and 0.7 mile southeast of Fromberg. The drainage area is 53.2 square miles. Records are available from June 1961 to June 1964. The maximum discharge was 500 cfs (June 9, 1964) and the minimum, 4.4 cfs (July 17, 1963). The highest annual runoff was 28,320 acre-feet (1963) and the lowest, 28,-280 acre-feet (1962). There are some small diversions for irrigation above the station.

Clarks Fork Yellowstone River at Fromberg

The chain gage was located at highway bridge, half a mile east of Northern Pacific Railway station at Fromberg. The drainage area is 1,940 square miles. Records are available from June to November 1905, April 1906 to November 1912, March to December 1913. The maximum discharge observed was 12,700 cfs (July 3, 1909) and the minimum, not determined. The average discharge for 6 years (1906-12) was 1,380 cfs or 999,100 acre-feet per year. The highest annual runoff was 1,220,000 acre-feet (1909) and the lowest, 765,000 acre-feet (1910). There are diversions for irrigation of about 40,000 acres above the station.

Clarks Fork Yellowstone River at Edgar*

The water-stage recorder is located just downstream from highway bridge, half a mile east of Edgar and 6 miles upstream from Rock Creek. The drainage area is 2,032 square miles. Records are available from July 1921 to date (1965). The maximum discharge observed was 10,900 cfs (June 2, 1936) and the minimum, 36 cfs (April 22, 1961). The average discharge for 43 years (1921-64) was 1,036 cfs or 750,000 acre-feet per year. The highest annual runoff was 1,128,000 acre-feet (1943) and the lowest, 505,000 acre-feet (1931). There are diversions for irrigation of about 41,500 acres, of which about 840 acres lies below station. In addition, about 6,300 acres of land above station are irrigated by diversions from the adjoining Rock Creek basin.

Rock Creek below Glacier Lake, near Red Lodge

The water-stage recorder was a quarter of a mile downstream from Glacier Lake Dam, 4½ miles upstream from Chain Creek and 18 miles southwest of Red Lodge. The drainage area is 3.89 square miles. Records are available from September 1960 to September 1964. The maximum discharge was about 90 cfs (July 10, 1963) and the minimum, no flow at times. The highest annual runoff was 8,800 acre-feet (1963) and the lowest, 3,550 acre-feet (1962). Flow completely regulated by Glacier Lake.

Rock Creek near Red Lodge*

The water-stage recorder is at downstream side of bridge, 3 miles upstream from West Fork and 5 miles southwest of Red Lodge. The drainage area is 124 square miles. Records are available from April to December 1932, May 1934 to present (1965). The maximum discharge was 3,110 cfs (June 4, 1957) and the minimum, 14 cfs (November 29, 1954). The average discharge for 30 years (1934-64) was 167 cfs or 120,900 acre-feet per year. The highest annual runoff was 182,100 acre-feet (1943) and the lowest, 83,870 acre-feet (1955). There are no diversions above the station.

West Fork Rock Creek below Basin Creek, near Red Lodge

The water-stage recorder was 0.6 mile below Silver Run Creek and 4 miles southwest of Red Lodge. The drainage area is 63.1 square miles. Records are available from July 1937 to October 1956 (no winter records). The maximum discharge was 933 cfs (June 6, 1952) and the minimum, 10 cfs (November 17, 1939). No known diversions above the station.

West Fork Rock Creek near Red Lodge

The staff gage was 2 miles upstream from mouth and 3 miles southwest of Red Lodge. The

drainage area is 66.9 square miles. Records are available from April to December 1932, May 1934 to September 1944. The maximum discharge was 1,850 cfs (June 22, 1937) and the minimum observed, 2.5 cfs (November 18, 1939). The average discharge for 10 years (1934-44) was 66.5 cfs or 48,140 acre-feet per year. The highest annual runoff was 80,550 acre-feet (1944) and the lowest, 24,500 acre-feet (1936). There are diversions above station for irrigation of about 3,000 acres, all of which is below station.

Red Lodge Creek above Cooney Reservoir, near Boyd*

The water-stage recorder is just upstream from Cooney Reservoir, nine miles west of Boyd. The drainage area is 143 square miles. Records are available from May 1937 to date (1965). No winter records prior to 1963. The maximum discharge was 1,360 cfs (June 17, 1957) and the minimum, no flow for many days in 1949. There are diversions for irrigation of about 5,100 acres above the station.

Willow Creek near Boyd*

The water-stage recorder is half a mile upstream from Cooney Reservoir and eight miles west of Boyd. The drainage area is 53.3 square miles. Records are available from June 1937 to date (1965). No winter records prior to 1963. The maximum discharge was 848 cfs (June 17, 1957) and the minimum discharge recorded, 0.4 cfs (November 26, 1948). There are diversions for irrigation of about 1,800 acres above the station. Some return flow from lands irrigated by water diverted from Rock Creek basin.

Red Lodge Creek below Cooney Reservoir, near Boyd*

The water-stage recorder is 400 feet upstream from Cottonwood Creek, 1 mile downstream from Cooney Dam, and 6 miles west of Boyd. The drainage area is 210 square miles. Records are available from September 1937 to date (1965). The maximum discharge was 3,590 cfs (June 17, 1957) and the minimum, no flow (October 6, 7, 1948). The average discharge for 27 years (1937-64) was 91.1 cfs or 65,950 acre-feet per year. The highest annual runoff was 128,600 acre-feet (1942) and the lowest, 17,630 acre-feet (1961). Flow completely regulated by Cooney Reservoir. There are diversions for irrigation of about 6,900 acres above the station. Some return flow from lands irrigated by water diverted from Rock Creek and East Rosebud Creek basins.

Red Lodge Creek near Boyd

The wire-weight gage was 1½ miles upstream from mouth and 1½ miles west of Boyd. The drainage area is 234 square miles. Records are available from April to December 1932, May 1934 to December 1936. The maximum discharge observed was 1,400 cfs (June 8, 1932) and the minimum, no flow (November 1, 1936). The annual runoff was 41,940 acre-feet (1935) and 32,000 acre-feet (1963). Flow completely regulated by Cooney Reservoir after September 1936. There are diversions for irrigation of about 7,300 acres above the station. Some return flow from lands irrigated by water diverted from Rock Creek and East Rosebud Creek basins.

Rock Creek at Joliet

The water-stage recorder was at bridge on U. S. Highway 212 at Joliet, 4 miles downstream

from Red Lodge Creek and 10 miles upstream from mouth. The drainage area is 539 square miles. Records are available from October 1945 to September 1953. The maximum discharge was 1,930 cfs (June 6, 1952) and the minimum daily discharge, 18 cfs (February 11, 1949). The average discharge for 8 years (1945-53) was 253 cfs or 183,200 acre-feet per year. The highest annual runoff was 242,800 acre-feet (1948) and the lowest, 133,100 acre-feet (1949). Flow is partly regulated by Cooney Reservoir on Red Lodge Creek. There are diversions for irrigation of about 46,600 acres, of which about 400 acres is below the station and 2,500 acres is in Clarks Fork Yellowstone River basin. Some return flow through Red Lodge from lands irrigated by water diverted from East Rosebud Creek basin.

Rock Creek at Rockvale

The wire-weight gage was 200 feet downstream from highway bridge, half a mile south of Rockvale, and 2 miles upstream from mouth. The drainage area is 569 square miles. Records are available from October 1920 to December 1921, March to September 1922, April 1932 to March 1933, February 1934 to September 1940. The maximum discharge observed was 2,310 cfs (June 8, 1932) and the minimum, no flow (July 14-16, 1935). The average discharge for 7 years (1920-21, 1934-40) was 133 cfs or 96,290 acre-feet per year. The highest annual runoff was 139,000 acre-feet (1921) and the lowest, 62,230 acre-feet (1940). Flow partly regulated by Cooney Reservoir on Red Lodge Creek since 1936. Diversions for irrigation of about 57,500 acres, of which about 1,500 acres is below station and 2,500 acres is in Clarks Fork Yellowstone River basin. Some return flow through Red Lodge Creek from lands irrigated by water diverted from East Rosebud Creek basin.

RESERVOIRS

Details of operation records of the following reservoirs are available in U. S. Geological Survey publications.

Glacier Lake near Red Lodge

The water-stage recorder was located at Glacier Dam on Rock Creek, 5 miles upstream from Chain Creek and 18 miles southwest of Red Lodge. The drainage area is 3.77 square miles. Records available, fragmentary record 1939-47 (probably full most of time), September 1960 to September 1964. The maximum contents was in excess of 4,200 acre-feet at times during most years or for all of some years and the minimum, 350 acre-feet (September 22, 1961). Storage began in November 1937. The usable capacity is 4,200 acre-feet. Water is used for irrigation.

Cooney Reservoir near Boyd*

The cable gage is at dam on Red Lodge Creek, 1 mile upstream from Cottonwood Creek and 6½ miles west of Boyd. The drainage area is 206 square miles. Records are available from May 1937 to date (1965). The maximum contents observed was 26,500 acre-feet (May 30, 1942) and the minimum observed, 120 acre-feet (September 30, 1960). The dam was completed in September 1936. The usable capacity is 27,400 acre-feet. Water is used for irrigation.

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* This gaging station is now in operation (1965).

ECONOMIC MINERAL DEPOSITS

Geologic Situation

Carbon County is situated so that its boundaries include a portion of the Beartooth uplift on the west, a northern extension of the Bighorn basin in the center, and the Pryor uplift on the east. Five miles north of Red Lodge the Bighorn basin is obliquely crossed by a trend of anticlinal folds about 50 miles long, known as the Nye-Bowler lineament. It parallels the northern margin of the Beartooth Mountains about 6 miles distant, and has several structural highs on which the Dry Creek and Golden Dome oil and gas fields are situated. Anticlinal folds not related to the Nye-Bowler lineament are responsible for several other oil fields and exposures of coal.

Consolidated strata range in age from the two-billion-years-old metamorphic complex of the Beartooth plateau to the coal-bearing Fort Union Formation of the Paleocene Epoch (50 million years).

The rather abrupt eastern and northeastern margin of the Beartooths rests on the Beartooth thrust fault, while the more gentle western slopes of the Pryors (part of the Bighorn uplifts) are related to domical uplift complicated by extensive faulting.

Igneous rocks in Carbon County are largely limited to ultrabasic dikes and other discordant bodies intrusive into the ancient crystalline complex exposed on the Beartooth plateau. Lode-type mineral deposits are generally associated with intrusive igneous rocks, and are therefore rare in the area.

Metallic Minerals

Chromite.—Chromite is a mineral consisting of the oxides of chromium and iron. It is present in a host rock of serpentine on Hellroaring plateau above Rock Creek. The deposit was worked briefly in World War II, at which time a mill was built in Red Lodge where the ore was concentrated and shipped by rail. Later the mill burned and operations ceased. The chromite is relatively low grade in this deposit, and is not economically competitive with foreign sources.

Uranium.—Uranium was discovered in 1955, near the crest of Big Pryor Mountain. Other showings were found on West Pryor and East Pryor. The deposits are in the upper cavernous and brecciated limestone of Mississippian age. The ore consists of the secondary uranium mineral "tyuyamunite" associated with collapsed caverns in the limestone. Some deposits consist entirely of low-grade siliceous breccia, and others of similar material with larger and more important amounts of partly replaced and recrystallized limestone with high-grade streaks of ore. The deposits are not large, but some of them have assayed approximately 6 percent U_3O_8 (some of the highest grade ore ever shipped in the United States).

According to the 1964 Directory of Mining Enterprises of the Montana Bureau of Mines and Geology, there were no metallic mineral mines in operation in Carbon County.

Gold.—There have been reports of gold-placer operations in the gravels of the Clarks Fork River. However, there is no record of sustained placer operations.

Nonmetallic Minerals

Gypsum.—The 1964 mining directory, previously mentioned, lists a gypsum mine as being developed in Sec. 19, T. 7S, R. 24E. Additional information is lacking at the present time (January 1966).

Limestone.—The Warren Quarry, 4 miles northeast of Warren, is operating at present. Production is about 750 tons per day, with 20 employees. The quarry is in the uppermost beds of the Mission Canyon Limestone where the formation rises on the west flank of the Pryors. The lime is sold to sugar refineries, and markets have been developed for agricultural limestone and grouting material.

Clay—No clay pits are presently being operated. A brickyard in Fromberg was active in the past. The June 1958 Progress Report on Clays of Montana (Montana Bur. Mines and Geol.) indicates the Fromberg clays are easily ground and processed. Plasticity is medium, and green strength is good. Drying and firing shrinkages are medium high, while firing range is 1900° to 2200°F. Fired color is red, and the clays are good materials for common brick and like processes.

Mineral Fuels

Oil and gas.—The first commercial discovery of oil in Montana was in the Elk Basin oil field in extreme southern Carbon County. The Elk Basin anticlinal structure was described as early as 1904, but oil was not discovered until 1915. The oil was produced from the Frontier Sandstone for 17 years before deeper drilling into the Tensleep found more oil, and even deeper drilling produced oil from the Madison.

In addition to the Elk Creek field, and discounting its northwest extension, seven other oil and gas fields have been delineated in Carbon County. These are Belfry, Clarks Fork, Dry Creek, Frannie, Golden Dome, and Jack Creek.

At present, Dry Creek, Elk Basin, and Golden Dome produce gas. Elk Basin, Northwest Elk Basin, Dry Creek, Belfry, Frannie, and Clarks Fork are producing oil.

It is not unlikely that additional oil reserves will be discovered by deeper drilling on known structures. Oil and gas have been and will continue to be a major source of revenue for Carbon County.

Additional information relative to petroleum in Carbon County may be found in the **Annual Review of the Montana Oil and Gas Conservation Commission** and in Bulletin 15, **Oil and Gas in Montana,** of the Montana Bureau of Mines and Geology.

Coal.—Carbon County was aptly named for it has within its boundaries large deposits of good-grade coal in the Fort Union Formation, which extends into the area from Wyoming. Coal may again become a strong factor in the county economy, particularly if strippable deposits are discovered northeast of Red Lodge.

The Bridger and Silvertip fields are in eastern Carbon County. The coal here is bituminous in rank, and occurs in the Eagle Sandstone. There are several seams, but mineable coal

is present in only one horizon at any one locality. Coal seams may be up to 6 feet in thickness, with 2 or 3 partings. Coal was mined near Joliet, Fromberg, and Bridger. The Silvertip field is south of the Bridger field at the Montana-Wyoming border. The Eagle is here brought to the surface by the Silvertip anticlinal structure. Both fields are extensively faulted, but the faults were not a serious obstacle when the mines were operating.

Red Lodge field.—This field lies near the base of the Beartooth Mountains. A bituminous coal-bearing zone occurs in the upper third of the Fort Union Formation between an upper and lower barren member. There are mines at Red Lodge and Bear Creek. Eight coal beds of 3.5 to 12 feet in thickness were worked in this field, and mining is currently going on in the Bear Creek area. The coal-bearing zone is terminated on the west by the Beartooth fault, but is believed to extend to the northwest beneath a cover of alluvium.

History of Carbon County coal mining.—The first coal mine was developed by the Rocky Fork Coal Co. in 1887. Later this property was acquired by the Northwestern Improvement Co., a subsidiary of the Northern Pacific Railway Co. This company operated two mines in Red Lodge, attained a production of a million tons in 1918, and employed 809 men. These mines were closed when the stripping operation at Colstrip began production.

Mr. J. C. McCarthy opened a mine in the Bear Creek area, about 5 miles east of Red Lodge in 1905. This property was later purchased by the Montana Coal and Iron Co., and was operated until 1946 as the Smith Mine. In the early phase of development the coal was hauled over the ridge to Red Lodge by team and wagon and shipped by rail. Later a railroad was built from Belfry to Bearcreek, and other mines were developed. The Montana Coal and Iron Co. then operated the Smith, Foster, and Scott Coulee mines. The latter two mines were noted for the number of fossils found.

The Bear Creek Coal Co. opened and operated a mine in the early 1900's to the east of the Smith mine, and the International mine began production about 1905.

The only presently operating coal mine in Carbon County is the Brophy mine. It was developed about 1905, and now employs about 40 men on a contract for the smelter in East Helena.

In the Bridger field, the Bridger Coal and Improvement Co. developed a mine northeast of Bridger. Employment in 1906 was 105 men.

Near the turn of the century, Marcus Daly sunk a shaft near Joliet, but because of excessive water and marginal quality of coal the mine operated only a few years.

Ground Water

Ground water supplies are important in Carbon County. Sandstone lenses and coal seams of the Fort Union Formation are generally capable of yielding small supplies for domestic and stock use. Larger supplies for irrigation and domestic use are potentially available from the Eagle, Kootenai, Tensleep, and Madison aquifers by deep drilling along the west side of the Pryor Mountains.

At this writing (January 1966) the files of the Bureau of Mines and Geology contain 197 filings for ground water appropriations. Of these, 182 are for wells and 15 are for springs. The vast majority of filings are for domestic and stock use.

The writer believes the use potential of the ground water resource is hardly touched in Carbon County.

SOIL AND WATER CONSERVATION DISTRICTS

Carbon County is served by the Carbon County Soil and Water Conservation District which was organized in 1948. The area of Carbon County is approximately 2,069 square miles.

The District is governed by a board of five supervisors who are elected for 3 year terms by land occupiers of the District. They carry out a program of complete resource conservation including erosion control, water conservation, soil management, land improvement, wildlife management, recreation, and land adjustment to proper use. This program is accomplished by providing technical assistance to groups and individual farmers and ranchers, on a voluntary basis, the analyzing of all resources, and planning and applying of economically sound conservation treatment.

Under State law, the supervisors have the power to call upon local, state, and federal agencies to assist in carrying on a soil and water conservation program. The Carbon County Soil and Water Conservation District has memoranda of understanding with the Soil Conservation Service, Extension Service, State Forestry Department, the U. S. Forest Service and Bureau of Land Management to provide technical assistance to District cooperators in carrying out sound soil and water conservation programs. Close working relations are maintained with the Farmers Home Administration, Agricultural Stabilization and Conservation Service, State Fish and Game Department, and Technical Action Panel for Rural Area Development.

The Soil Conservation Service assists the District by furnishing and interperting basic data on soils and plant cover and other land features. Technical data are interpreted in terms of acceptable alternative land uses and treatments to help guide the farm and ranch operators in developing sound individual or group conservation plans and Great Plains Contracts. It also aids cooperators in performing operations requiring technical skills beyond the experience of the individuals involved.

The Office of the State Forester and the U. S. Forest Service cooperate with the District by coordinating the programs of timber management, tree planting, forest and range fire control, and watershed management on federal, state, and private lands.

The Extension Service assists the District with its education and information program. An important function of the District is to inform land owners and occupiers of the benefits derived from the wise use of the communities' soil and water resources.

Cost sharing for many conservation practices is available through the Agricultural Conservation Program and conservation loans are available through the Farmers Home Administration.

The State Fish and Game Department cooperate in matters involving streams, lakes, ponds, and other wildlife aspects of the program.

One of the major problems of the District is to acquaint the urban people, who comprise a large percentage of the total population of the District, with the need for soil and water conservation.

Technical phases of the District's program include detailed soil surveys, range site and condition classes, ground water investigations, drainage studies, irrigation potentials, topographic and other engineering surveys. By a careful analysis of this basis resource information, proper land use and needed conservation treatment of each field can be determined. The technicians interpret the surveys and provide the District cooperator with alternatives in land use and treatment that will enable him to treat the hazards and limitations that occur on each tract of land. With this information and by counseling with technicians, the cooperator makes the final decisions. These decisions are recorded in the Great Plains Contract or Conservation Plan. The cooperator determines what will be done on his farm or ranch and when the jobs will be carried out.

After the contract or plan is completed the cooperator is given further technical assistance on design and layout work essential in establishing conservation practices on the land as called for in the Great Plains Contract or Conservation Plan. This technical assistance is provided without cost to the cooperating farmer or rancher.

There are approximately 84,800 acres of irrigated cropland, 92,000 acres of non-irrigated cropland, 543,274 acres of pasture and rangeland, 14,000 acres of woodland, and 12,753 acres of other lands such as water, roads, townsites, airports, and highways on which the District shares the conservation responsibility.

By 1975 it is estimated that 91,278 acres will be irrigated. This will put an even greater demand on our already limited water supply. The District Supervisors strongly recommend that a firm program of ditch consolidation be adopted to reduce needless waste of irrigation water.

There are 552,021 acres of federal lands (U. S. Forest Service, and Bureau of Land Management), and 41,551 acres of State land. This land is largely range and forest land.

The major enterprises on agricultural lands are sugar beets, grain and livestock production. Beef cattle, sheep and swine are produced. Much of the range for beef-type cattle is provided through lease of Bureau of Land Management lands. Cash crops besides grains are sugar beets and field beans.

Work done since the organization of the District on cropland consists largely of improved cropping systems, improved management of crop residues, improvement and installation of irrigation systems—both sprinkler and flood, seeding of pastures and haylands to adapted grasses and legumes, installation of water and erosion control structures, farm drainage systems, soil management, and improvement of wildlife habitat. On dryland pasture and range, the work has consisted of improvement of existing cover by brush control, proper range use, fencing, livestock water development, and improvement of wildlife habitat.

Since the District was organized, assistance has been given on proper cropping systems and residue management on 139,483 acres, 24 sprinkler systems, 96 surface irrigation systems, 95 irrigation tailwater recovery systems, 32 irrigation reservoirs, 3,015 structures for water and erosion control, 173 miles of irrigation canal and field ditches, 4,443 acres of land

cleared, 7,867 acres of hay and pasture planted, pasture and range management on 266,048 acres, 282 livestock water ponds constructed, 327 springs developed, 114 miles of drain ditch constructed, 9 miles of tile drain installed, 179 acres of farmstead and feedlot windbreaks planted, 68 miles of field windbreaks established, 45 acres of trees planted, 24 ponds stocked with fish, and wildlife habitat preservation (natural areas) and planting on 1,836 acres, 21,-003 acres of brush control on rangeland, 39 diversion dams constructed, 6,719 acres of land leveled, 27,952 feet of irrigation pipelines installed, 9,100 feet of pipeline for livestock water installed, 50,496 acres of deferred grazing on rangeland, 28,290 feet of streambank stabilization, 25,830 acres of wind strip cropping, and 23,961 acres of stubble mulching.

A Conservation Needs Inventory was completed in 1959 for Carbon County as a part of a national inventory of needs. In Carbon County it was estimated that about 70 percent of dryland cropland, 80 percent of irrigated cropland, 78 percent of grasslands were in need of additional conservation treatment.

A considerable amount of the conservation work has been accomplished through efforts of organized groups and this is encouraged wherever possible.

Cooperative efforts of land owners and operators, local, state, and federal agencies, civic organizations, local businessmen, and news media have contributed to the overall success of the District.

FISH AND GAME

Streams:

Carbon County streams vary in their ability to produce trout. Some streams contain stretches which remain good trout producers. The rest fall somewhere below good.

Perhaps the best stream is Rock Creek. Many miles of it remain suitable for trout. There are many other miles, however, that for one reason or another produce few, if any, trout of catchable size.

To understand why this situation exists, it is first necessary to know what trout need in order to survive and grow. Obviously, clean, cool water must be present every day of the year. Other requirements may not be so obvious.

A trout stream channel provides a certain set of physical characteristics, which when present, furnish homes for wild trout. A combination of meanders, shallow riffle areas and deep pools are important. Vegetation along the streambank provides overhead cover. It also binds the soil, preventing accelerated erosion, and yet permits the water to undercut the bank, forming a pocket or hole. These cover areas provide homes for trout. The more cover areas, other things being equal, the more trout. Remove or change any of the physical features and the ability of a stream to furnish homes for trout decreases.

Severe flooding on Rock Creek has accounted for considerable damage to trout habitat. Extensive diking of the channel by landowners has further reduced trout habitat. Unfortunately, diking attempts with river rock and rubble, to prevent flood damage, merely aggravated the situation. The dikes were washed away in high water, and the construction of these dikes destroyed the stream channel necessary for trout production. The stream chan-

nel was reworked into straight sluice-like chutes. In many cases, the shortened channel increased the velocity of the water and, consequently, its load-carrying capacity. Actual raising of the stream bed occured with consequent flooding and rechanneling of adjacent banks and floodplain.

Almost without exception, damage to floodplains and streambanks was limited to areas which were not protected by vegetation. Over use by livesock or other destruction of floodplain vegetation allowed severe damage to river bottom areas during periods of high water.

Streambanks and floodplains with good vegetative cover stayed glued together during high water, and sustained only minimal damage. Controlling livestock use of floodplain vegetation can help stabilize banks and prevent serious damage to floodplains. The rubble dikes did not protect the floodplain.

On streambanks which are actively eroding, large boulder-type riprap can be used to help stabilize it. The use of small, round river-bottom boulders will not give satisfactory results.

Row-crop production coupled with wasteful irrigation practices has greatly increased the silt load in many Carbon County streams. This has resulted in severe decreases in trout populations; and at times, complete obliteration of trout and other game fish. Lower Bluewater Creek and the entire Montana part of the Clarks Fork of the Yellowstone are but two examples. Silt (which once was fertile topsoil) smothers trout eggs and aquatic insects.

More efficient use of irrigation water and lining ditches would do much to reduce this destructive situation, and keep the topsoil on the land where it belongs.

De-watering of some streams during periods of extended dry weather also takes its toll of trout. Here again, proper design of irrigation complexes and consolidation of irrigation ditch systems would do much to conserve water. The latter would also be more economical to maintain.

There is gross evidence that irrigation seep from ditches and the use of too much water for actual irrigation has transformed once productive land to sedge marshes and cattails. If proper amounts of water were used on fields, additional water could be saved for other beneficial uses.

Lakes and Ponds:

The Beartooth Plateau in Carbon County contains many lakes. Most of these are stocked with trout and provide an excellent source of quality recreation. More intensive management of these fine lakes is planned in the near future. Some contain many small, stunted trout. Others are contaminated with undesirable fish species. A program of rehabilitation and restocking is underway at present.

Lowland lakes are managed basically on a put-and-take basis. Small trout are planted and allowed to grow to catchable size. Additional plants and/or rehabilitation is carried out as necessary.

Game Animals and Birds:

The most abundant big game animal is the mule deer, and it is found throughout most of the county. Some elk are scattered throughout the west fork of Rock Creek to Line Creek

on the east edge of the Beartooth Plateau. Mountain goats are found in the upper west fork of Rock Creek drainage, and a few bighorn sheep find a place in the plateau area.

The Pryor Mountains offer some of the state's finest deer hunting as well as other forms of quality outdoor recreation.

The east edge of Carbon County is bounded by the Big Horn River and its canyon. Yellowtail Reservoir and the adjacent National Recreation Area will provide a scenic and unique asset to Carbon County.

Upland birds include the ring-necked pheasant and Hungarian partridge, found mostly in suitable cover areas along stream bottoms and cultivated fields. Blue and ruffed grouse are found in the timbered areas while sage grouse occur in the sagebrush-prairie lands. Chukar partridge may be found in the rough, rocky country of eastern Carbon County.

The recreation assets of Carbon County are many and varied. The demand for places to hunt, fish, camp, boat, hike and just plain relax are increasing rapidly.

As long as the basic resources, soil and water, are properly managed, this resource will increase in value, and produce extra dollars to the people who plan it that way.

CUSTER NATIONAL FOREST

The Beartooth Division of the Custer National Forest is situated in the southern part of Carbon, the southeastern part of Sweet Grass, and the eastern part of Park Counties, Montana. Until 1882 the entire division was included within the Crow Indian Reservation. In that year part of it was thrown open to permit the coal mines around Red Lodge and the gold fields around Cooke City to be operated. In 1892 the remaining portion was eliminated from the Reservation. The division now comprises all of what was formerly the Pryor Mountain National Forest and the eastern part of the Absaroka Division of the Yellowstone Forest Reserve. The area is approximately 686,000 acres. In 1903 the latter portion was annexed to the Yellowstone Forest Reserve but by the Proclamation of June 30, 1908 was withdrawn from it and merged with the Pryor Mountain Forest. The area, containing 78,200 acres and lying 35 miles east of the Beartooth Mountains, was added to the present Beartooth Division of the Custer National Forest. Some 359,000 acres of the Beartooth Division of the Custer National Forest are located in the southern part of Carbon County. This represents about 29 percent of Carbon County's 1,313,920 acres.

Captain Clark of the Lewis and Clark expedition was probably the first white man to visit the locality. This was during 1806, two years after the start of the exploration of the Louisiana Purchase. He came down the Yellowstone Valley and, at a point a little west of where Laurel is now situated, built dugout canoes with which to descend the river. Doubtless Captain Clark's party was greatly stirred by the beauty of this area. They were especially impressed with the abundance of wildlife. Clark's ledger states that there were so many furbearing and big game animals here that he did not wish to put estimates of their numbers in writing because he was sure he would not be believed.

During the period 1870 to 1904, a total of 138,000 acres of timberland burned in this general area. Most of this burned area occurred along the lower portion of the canyons and the

mountain front. Man was the chief cause. During the 1890's a large fire burned the mountain front near Red Lodge.

The year 1887 was the turning point for use of timber from the area in Carbon County. The coal mines at Red Lodge were opened that year. Coal mining became big business at Red Lodge in 1889 when the railroad arrived. By 1898 a railroad reached Bear Creek and by 1902 reached the Washoe mines. The mines demanded large amounts of timber for mine props. Material came largely from the old burns along the mountain front, the West Fork of Rock Creek and the main fork. Considerable timber was also used for fencing and fuel by ranchers and for cordwood in lime burners. As early as 1890 small sawmills were producing lumber for local use in the Red Lodge area.

The period between 1899-1916 saw timber drives on the main Rock Creek. The timber came from the steep slopes of the canyon, was skidded tree length by hand down steep "ground chutes," then skidded by horses to the edge of the stream. The logs were decked for the spring drive to Red Lodge. Decks of logs and remains of log jetties are still to be found. During portions of this period an interesting brush disposal method was required. The areas were practically clear cut and the brush was piled in continuous parallel piles stretching vertically up and down the mountain slopes. This brush was not burned except accidentally. These ribbons of brush are visible today, particularly in the Silver Run drainage. Large scale coal mining at Red Lodge ended in the early 1930's. The Washoe mines closed in 1935 and Bear Creek was through in 1943. This ended the relatively heavy timber cutting in this area.

From 1890 to the present time some lumber, house logs, fence posts, and poles were produced in addition to the mine timbers, but they represented a minor portion of the whole. These products were locally used. Little is known of the early timber cutting in the Pryor Mountains except for the fact that heavy tie cutting occurred during the early 1900's for the Pryor Gap Railroad. Local ranchers have used small amounts of timber products through the years. There is little commercial timber on private lands in Carbon County.

While timber was one of the first resources of the National Forest used in this County, water is recognized as the most valuable and basic resource. The entire Division is in the Yellowstone River drainage and many communities lying adjacent to the forest are dependent directly or indirectly upon a permanent and regulated supply of water for irrigation, power and domestic use. Filings, dating from the early 1880's attest to the early settlers' appreciation of the value and importance of water. National Forest land is managed under the multiple use concept and other renewable resources, timber, recreation, forage and wildlife, are managed to maintain water quality, produce maximum water yields, reduce floods and streamflow time to best meet the multiple water needs.

Agriculture, in the form of livestock ranching and diversified farms, is the principle industry in this area. Local ranchers graze 3,200 cattle and 1,000 sheep under paid permit from approximately June 1 to September 30 each year on twenty-four National Forest grazing allotments in Carbon County. Grazing these ranges is important to the ranch operations of the area and the economy of the surrounding communities. The grazing resource is managed on a sustained basis to insure perpetuation for future generations.

Most of the allotments are high plateau areas with granitic soils of recent geologic formation. The most important influence of grazing on these areas is on water runoff and soil

stability. Under multiple use management, only such grazing use is allowed which is consistent with maintaining soil and vegetative stability and improving the water production from these lands both in quality and sustained flow. Sportsmen find good hunting and fishing on the Carbon County portions of the Custer National Forest. These public lands are open to hunting and fishing under seasons, bag limits and licensing requirements set by the Montana Fish and Game Commission.

Approximately 57,000 fishermen annually use the 45 miles of fishing streams and 62 lakes covering 1,592 acres. Added local attractions to fishermen are the Grayling and Golden trout. Many miles of streams and more acres of fishing lakes can be developed to help meet the greater recreation pressures expected in the future.

Over 28,000 hunters annually range the woods looking for large and small game. Special attractions in this area are mountain sheep, mountain goats, bear and moose. Elk hunting is limited but deer are plentiful. Blue and ruffed grouse abound and sage hens may be found along the foothills.

Many other people visit the forest to see, study and photograph the wildlife, both game and non-game species. In conformance with multiple use management practices, the forest is administered in a manner to intergrate wildlife food, water and cover needs with other resource uses and values. Particular attention is given to maintaining the stream habitat and associated watershed conditions.

This outstanding area attracts many people for recreational purposes other than hunting and fishing. Such uses as camping, picnicking, wilderness travel and general sightseeing were enjoyed by over 343,000 individuals in 1964, while summer homes, resorts, organization camps and winter sports sites accounted for another 106,000 visits. New recreational sites are being developed and additional areas are being set aside to meet future needs.

SUMMARY OF IRRIGATED LAND BY RIVER BASINS IN THE FOLLOWING COUNTIES COMPLETED TO DATE

Big Horn, Broadwater, CARBON, Carter, Cascade, Chouteau, Custer, Deer Lodge, Fallon, Flathead, Gallatin, Golden Valley, Granite, Jefferson, Judith Basin, Lake, Lewis & Clark, Lincoln, Madison, Meagher, Missoula, Musselshell, Park, Pondera, Powder River, Powell, Ravalli, Rosebud, Silver Bow, Stillwater, Sweet Grass, Teton, Treasure, Wheatland, Wibaux and Yellowstone

RIVER BASIN	Present Irrigated Acres	Irrigable Acres Under Present Facilities	Maximum Irrigable Acres
Missouri River Drainage Basin			
*Missouri River	107,339.50	24,787.33	132,126.83
Jefferson River	61,291.00	9,713.00	71,004.00
Beaverhead River	40,771.00	6,076.00	46,847.00
Big Hole River	23,775.00	1,950.00	25,725.00
Madison River	39,445.00	7,660.00	47,105.00
Gallatin River	111,914.00	21,097.00	133,011.00
Smith River	32,934.00	19,679.00	52,613.00
Sun River	124,474.58	4,385.00	128,859.58
Marias River	114,685.42	13,415.88	128,101.30
Teton River	74,653.00	15,882.33	90,535.33
Musselshell River	64,789.00	57,870.00	122,659.00
Milk River	2,334.00	2,595.33	4,929.33
Yellowstone River**	303,657.00	96,016.00	399,673.00
Stillwater River**	30,423.50	8,028.53	38,452.03
Clarks Fork River**	88,160.97	1,530.83	89,691.80
Big Horn River**	65,005.00	23,858.00	88,863.00
Tongue River	28,170.00	7,762.00	35,932.00
Powder River	35,948.00	2,299.00	38,247.00
Little Missouri River	42,513.00	1,499.00	44,012.00
Grand Total Missouri River Basin	**1,392,282.97**	**326,104.23**	**1,718,387.20**
Columbia River Drainage Basin			
Columbia River	0	0	0
Kootenai (Kootenay) River	9,914.13	968.00	10,882.13
Clark Fork (Deer Lodge) (Hellgate) (Missoula) River	146,287.70	14,934.20	161,221.90
Bitterroot River	111,102.43	3,200.00	114,302.43
Flathead River	135,907.19	4,532.22	140,439.41
Grand Total Columbia River Basin	**403,211.45**	**23,634.42**	**426,845.87**
Grand Total in the Counties Completed to Date	**1,795,494.42**	**349,738.65**	**2,145,233.07**

*Name of streams indented on the left-hand margin indicate that they are tributaries of the first stream named above which is not indented.

**Figures in these River Basins revised by resurvey of Carbon County, 1965.

IRRIGATION SUMMARY OF CARBON COUNTY BY RIVER BASINS

RIVER BASIN	Present Irrigated Acres	Irrigable Acres Under Present Facilities	Maximum Irrigable Acres
MISSOURI RIVER BASIN			
*Missouri River	0	0	0
Yellowstone River	178.00	0	178.00
Stillwater River	0	0	0
Rosebud River	0	0	0
West Rosebud Creek	14.00	46.00	60.00
East Rosebud Creek	7,255.00	656.00	7,911.00
Moss Creek (Jones Creek)	51.00	0	51.00
Unnamed Coulee	11.00	0	11.00
Morris Creek	57.00	0	57.00
Chimney Creek	0	0	0
Waste water	16.00	0	16.00
Butcher Creek	91.00	19.00	110.00
East Fork Butcher Creek	27.00	0	27.00
Total Stillwater River & Tributaries	**7,522.00**	**721.00**	**8,243.00**
Cow Creek	0	0	0
Rye Grass Creek	15.00	0	15.00
Cole Creek	36.00	0	36.00
Clarks Fork River	30,006.59	285.00	30,291.59
Grove Creek	344.00	0	344.00
Bear Creek	3.00	32.00	35.00
Waste water	0	1.00	1.00
Bridger Creek	0	0	0
Spring Branch	105.00	0	105.00
South Fork Bridger Creek	0	0	0
Unnamed Draw	0	0	0
Bridger Oil Co. Well	280.00	0	280.00
Jack Creek	0	0	0
Brown Creek	92.00	0	92.00
Waste water	10.00	0	10.00
Waste water	5.00	0	5.00
3 Wells	7.00	0	7.00
Waste water	89.00	0	89.00
Waste water	45.00	0	45.00
Bluewater Creek	1,420.00	0	1,420.00
Unnamed Coulee	0	0	0
Rukavina Well	198.00	0	198.00
Elbow Creek	294.00	0	294.00
Waste water	10.00	0	10.00

*Name of streams indented on the left-hand margin indicate that they are tributaries of the first stream named above which is not indented.

IRRIGATION SUMMARY OF CARBON COUNTY BY RIVER BASINS

	Present Irrigated Acres	Irrigable Acres Under Present Facilities	Maximum Irrigable Acres
RIVER BASIN—(Continued)			
Five Mile Creek	39.00	0	39.00
North or East Fork Five Mile Creek	25.00	0	25.00
Rock Creek	35,677.02	522.00	36,199.02
Seeley Creek	29.00	0	29.00
West Fork Rock Creek	7,363.00	0	7,363.00
Close Creek	6.00	0	6.00
Waste water	10.00	0	10.00
Springs of Brewery Hill Coulee	8.00	0	8.00
Patterson Gulch	2.00	0	2.00
Woody Springs	10.00	0	10.00
Turner Springs	8.00	0	8.00
Kent Springs	26.00	0	26.00
Unnamed Coulee	15.00	0	15.00
Allen Creek	0	0	0
Waste water	20.00	0	20.00
Spring	12.00	0	12.00
Sonny Brook	0	0	0
Springs	13.00	0	13.00
Springs	19.00	0	19.00
Waste water	52.00	0	52.00
Ruiter Springs	9.00	0	9.00
Waste water	4.00	0	4.00
Springs	38.00	0	38.00
Springs & Slough	18.00	0	18.00
Seepage	27.00	0	27.00
Waste water	12.00	0	12.00
Blackbird Springs	60.00	0	60.00
Waste water	11.00	0	11.00
Tuck Gulch	7.00	0	7.00
Magpie Springs	30.00	0	30.00
Alkali Creek	1,178.00	0	1,178.00
Knowlton Creek	0	0	0
Waste water	77.00	0	77.00
Waste water	4.00	0	4.00
Springs & Sloughs	53.00	0	53.00
Springs	79.00	0	79.00
Dry Creek (Willow Creek)	456.00	20.00	476.00
Waste water	27.00	0	27.00
Waste water	18.00	0	18.00
Waste water	6.00	0	6.00
Waste water	3.00	0	3.00
Waste water	31.00	0	31.00
Waste water	91.00	0	91.00
Waste water	36.00	0	36.00
Waste water	9.00	0	9.00
Waste water	37.00	0	37.00
Waste water	32.00	0	32.00
Spring Creek	0	0	0
Waste water	8.00	0	8.00
Stanley Creek	5.00	0	5.00
Springs	27.00	0	27.00

IRRIGATION SUMMARY OF CARBON COUNTY BY RIVER BASINS

	Present Irrigated Acres	Irrigable Acres Under Present Facilities	Maximum Irrigable Acres
RIVER BASIN—(Continued)			
Red Lodge Creek	2,197.00	137.00	2,334.00
West Red Lodge Creek	0	0	0
Davis & Neavitt Spring	25.00	0	25.00
Barlow Creek	93.00	0	93.00
Hogan Creek	258.00	30.00	288.00
East Red Lodge Creek	273.00	0	273.00
Cole Creek	333.00	0	333.00
Waste water	17.00	0	17.00
Harney Creek	370.00	47.00	417.00
Barry (Dead Horse) Creek	50.00	0	50.00
Thiel Creek	1,607.00	0	1,607.00
Waste water	15.00	0	15.00
Volney Creek	2.00	0	2.00
Butte Creek	50.00	32.00	82.00
Willow Creek	1,874.00	113.00	1,987.00
Waste water	51.00	0	51.00
Waste water	20.00	0	20.00
Waste water	59.00	0	59.00
West Fork Willow Creek (Fee)	0	0	0
Chaffin Creek	127.00	0	127.00
Spring Creek	9.00	0	9.00
Waste water	6.00	0	6.00
Cottonwood Creek	326.00	3.00	329.00
Grove Creek	61.00	0	61.00
Spring	3.00	0	3.00
Red Lodge Creek & Tributaries	7,826.00	362.00	8,188.00
Waste water	11.00	0	11.00
Cow Creek	1.00	0	1.00
Waste water	11.00	0	11.00
Skanks Draw	14.00	0	14.00
Spring	31.00	0	31.00
Waste water	8.00	0	8.00
Stamm Spring	4.00	0	4.00
Waste water	75.00	0	75.00
Slough	45.00	0	45.00
Rock Creek & Tributaries	53,657.02	904.00	54,561.02
Spring	19.00	0	19.00
Unnamed stream	100.00	0	100.00
Total Clarks Fork & Tributaries	**86,780.61**	**1,222.00**	**88,002.61**
Big Horn River	0	0	0
Shoshone River	81.00	0	81.00
Sage Creek	881.00	47.00	928.00
Lost Creek	155.00	0	155.00
Piney Creek	248.00	355.00	603.00
Crooked Creek	332.00	14.00	346.00
Layout (Ewing) (Hough) Creek	134.00	33.00	167.00
Camp Creek	0	22.00	22.00
Total Big Horn River & Tributaries	**1,831.00**	**471.00**	**2,302.00**
Grand Total Carbon County	**96,362.61**	**2,414.00**	**98,776.61**

ANTELOPE BASIN DITCH

HISTORY

The first use of water for irrigation through the Antelope Basin Ditch was in the year 1904, by Arthur Janes, John & William Lutzenhiser, Sam Jenkins, Clarence Delmedge and A. J. & Inga Nelson.

On November 4, 1919, Oakley Parker, Clara Eike, John & William Lutzenhiser, John George, Nancy E. Morris, Elva and Victor George filed Articles of Incorporation for the ditch system. Capital stock for the incorporation amounted to $19,200 divided into 960 shares having a par value of $20.00 each. The terms of existence for the incorporation was 40 years. On March 11, 1960, Reincorporation Articles were filed extending the corporation for another 40 year period.

PRESENT STATISTICS

Location: The point of diversion for the Antelope Basin Ditch is from the left bank of East Rosebud Creek in NE¼SW¼, Section 9, T. 6S - R. 18E. Lands irrigated under the ditch are located in Sections 3, 4, 5, 8, and 9, T. 6S - R. 18E; and Sections 29, 32, and 33, T. 5S - R. 18E.

Length and Capacity of Ditch: From its point of diversion the Antelope Basin Ditch follows a northerly direction for a distance of 9.25 miles and has an initial capacity of 25 cfs.

Operation and Maintenance: Charges for operation and maintenance under this ditch vary from year to year with no record of charges available for the past several years.

Present Users: All of the stock shares in the corporation are now owned by two water users under the ditch system. The total of 960 shares are divided 440 and 520 respectively to each user. One share is equivalent to approximately .62 miner's inch of water.

Acreage Irrigated: In 1965, there were 295 acres irrigated and 12 acres potentially irrigable.

WATER RIGHT DATA

Only one water right filing was found on record that applies to the land under the Antelope Basin Ditch. This filing was made by Inga Nelson on July 15, 1903 for 100 miner's inches of water from the East Rosebud River. Mention was made in filing that the 100 miner's inches would be carried in a ditch having a capacity of 600 miner's inches. No record was found of the additional 500 miner's inches of water to be carried in the ditch. (Ref. to the water right filing by Inga Nelson in Book 2, Water Rights, Page 186, Clerk & Recorder's Office, Red Lodge.)

(See Maps in Part II, pages 10 and 15.)

BAILEY DITCH COMPANY

HISTORY

This irrigation project first became organized as a corporation on November 12, 1948, although the ditch was used many years before as a private irrigation system. Capital stock of the corporation was set at $56,800, and this was divided into 1,136 shares having a par

value of $50.00 each. The corporation articles were filed for a period of continual existence. Generally the water supply for the individual water rights carried in this ditch system are considered adequate during a normal water year. However, three of the water users in this ditch company have late priority water rights and are purchasing additional water from the Rock Creek Water Users Association.

PRESENT STATISTICS

Location: The Bailey Ditch has its point of diversion from the right bank of Rock Creek, two miles north of the town of Red Lodge, in SW¼SW¼, Section 11, T. 7S - R. 20E. Lands irrigated by the ditch system are located in Section 32, T. 5S - R. 21E; Sections 5, 8, 17, and 30, T. 6S - R. 21E; and Sections 2 and 11, T. 7S - R. 20E.

Length and Capacity of Canal: The main ditch has a length of 9.5 miles with a capacity in excess of 50 cfs.

Operation & Maintenance: No records are available for the cost of operating and maintaining this irrigation project. Each user contributes an equal amount of time and labor toward keeping the system in good repair and functioning properly.

Present Users: As of the date of our survey in 1965, there were eight water users listed in the Bailey Ditch. All of the 1,136 stock shares issued by the company are subscribed to by members of the corporation. One member of the Pleasant Valley Canal Company carries his water in the Bailey Ditch and is not a stockholder in the ditch.

Acreage Irrigated: In 1965 there were 561 acres irrigated with no potential irrigable land under the system.

WATER RIGHT DATA

The water rights that are appurtenant to the Bailey Ditch belong to each individual water user and are as follows: From ROCK CREEK: Decreed to Presley Hicox, dated 6-30-94, 120 miner's inches; Decreed to M. J. Carrigan, dated 6-30-94, 145 miner's inches; Decreed to James Bailey, dated 7-10-95, 145 miner's inches; Decreed to W. R. Crockett, dated 7-10-95, 146 miner's inches; Decreed to Matthew Bailey, dated 7-10-95, 150 miner's inches; Decreed to Nicholas Misera, dated 7-10-95, 150 miner's inches; Decreed to John Newell, dated 7-15-95, 140 miner's inches; and Decreed to C. J. Fuller, dated 6-20-96, 135 miner's inches. (Ref: Rock Creek Decree Case #275, Clerk of Court's Office, Red Lodge).

There are three members of this ditch company with late priority water rights that purchase 275 acre feet of water each year from the Rock Creek Water Users Association.

(See Maps in Part II, pages 13, 18, and 21).

BARTLETT CANAL COMPANY

HISTORY

The Bartlett Canal was organized on March 16, 1920 to succeed the Bartlett Ditch Company which was incorporated on October 7, 1899. On May 11, 1961 the canal company extended their Articles of Incorporation for a period of continual existence. Although the company was not organized until 1899, the ditch had been constructed and used since the year 1897.

Capital stock of the company is listed at $100,000 divided into 5,000 shares having a par value of $20.00 each. In 1965 there were 2,277 shares of stock issued and subscribed to in the ditch company.

Water is diverted by a gravity canal from the Clarks Fork River to the users under the project, and 53 of the water users are located in the town of Fromberg.

PRESENT STATISTICS

Location: The point of diversion of the canal is from the left bank of the Clarks Fork River in SW¼NW¼, Section 3, T. 6S - R. 23E. Lands irrigated under the canal system are located in Sections 2, 3, 4, 8, 9, 10, 16, 17, 19, 20, 21, and 29, T. 5S - R. 23E, and Sections 33, 34, and 35, T. 4S - R. 23E.

Length and Capacity of Canal: From its point of diversion the Bartlett Canal follows a generally northerly direction for a distance of 8.5 miles and has a capaciey of 75 cfs.

Operation and Maintenance: For the last 20 years charges for operation and maintenance have averaged about 70¢ per acre.

Present Users: During the year of 1965 there were 77 water users owning a total of 2,277 shares of stock in the canal company. Included in this total of 2,277 shares are 53 stockholders living in the town of Fromberg, and holding 159 stock shares in the company. Each share of stock in the company represents the equivalent of one miner's inch of water.

Acreage Irrigated: There were 1,823.20 acres irrigated by the Bartlett Canal in 1965, with no potential acres under the canal system.

WATER RIGHT DATA

Water right filings appurtenant to the Bartlett Canal Company are as follows: An appropriation by the Bartlett Ditch Company from the Clarks Fork River, dated July 11, 1919 for 5,000 miner's inches. (Ref: Book 3, Water Rights, page 357, Clerk & Recorder's Office, Red Lodge).

(See Maps in Part II, pages 8 and 14).

BRIDGER DITCH COMPANY

HISTORY

This irrigation project originated on January 26, 1909 under the name of the Clarks Fork and Bridger Ditch Company. Prior to filing Articles of Incorporation in 1909, the ditch was in operation as early as the year 1894.

On December 29, 1913, the Bridger Ditch filed Articles of Incorporation listing the capital stock as $30,000 divided into 3,000 shares at a par value of $10.00 per share. All the water rights of the Clarks Fork and Bridger Ditch Company were transferred to the Bridger Ditch Company. Reincorporation Articles were filed again on December 17, 1953 to extend the corporation for a period of continual existence. This company also supplies water to the

Bridger Extension ditch. There has never been a serious shortage of water under this ditch system and the water supply is considered adequate.

PRESENT STATISTICS

Location: The project is located on the east side of the Clarks Fork River in the vicinity of Bridger, Montana. The point of diversion of the main canal is on the right bank of the Clarks Fork River in the SE¼SW¼SE¼ of Section 19, T. 7S - R. 23E. Lands that are irrigated under the ditch system are located in Section 33, T. 5S - R. 23E; Sections 3, 10, 14, 15, 22, 23, 26, 27, 33, and 34, T. 6S - R. 23E; and Sections 3, 4, 5, 8, 9, 17, and 18, T. 7S - R. 23E.

Length and Capacity of Canal: The main ditch has an initial capacity of 75 cfs. and an overall length of 13.5 miles.

Operation and Maintenance: Operation and maintenance under this ditch company varies from 65¢ to 75¢ per acre per year.

Present Users: As of the date of our survey in 1965, 34 water users subscribed to 3,000 shares of capital stock in the company. One share of stock is equivalent to one miner's inch of water.

Acreage Irrigated: In 1965 there were 2,737 acres irrigated and 139 acres potentially irrigable under present facilities.

WATER RIGHT DATA

Water rights appurtenant to the Bridger Ditch Company are: An appropriation filed by the Clarks Fork and Bridger Ditch Company from the Clarks Fork River, dated June 18, 1894 for 2,500 miner's inches and an appropriation by the Bridger Ditch Company from the Clarks Fork River, dated March 28, 1964 for 1,000 miner's inches. (Ref: to above water rights filings are Book 1, Water Right Locations, page 634, and Book 4, Water Rights, page 281 respectively, Clerk & Recorder's Office, Carbon County).

(See Maps in Part II, pages 14, 19, and 24).

CLARKS FORK AND SILVER TIP DITCH COMPANY

HISTORY

This project lies northeast of the town of Belfry, Montana, on the east side of the Clarks Fork River. The system is composed of a gravity ditch diversion from the Clarks Fork River. Work was first started on the ditch system in the year of 1896, and some work was done each year until the ditch was completed in 1902. All the construction was done by hand labor and horse drawn equipment by the farmers in the ditch company. Each farmer was paid in stock shares for the work he did in construction of the ditch. The headgate, built in 1916 of concrete and steel, is still in good repair and in operation today. One large structure, a corregated metal pipe flume, 54 inches in diameter and 870 feet long was replaced last year (1965).

The ditch company was first incorporated on April 9, 1898 and the last incorporation was on February 21, 1938 for a period of continual existence. Capital stock in the corporation

was increased on April 13, 1904 and on September 30, 1953. The last increase listed the capital stock in the corporation at $75,000 divided into 750 shares at a par value of $100.00 each.

PRESENT STATISTICS

Location: The Clarks Fork and Silver Tip Ditch headgate is located in NE¼NE¼NE¼, Section 33, T. 8S - R. 22E. The ditch follows a general northerly direction and irrigates land in Sections 30 and 31, T. 7S - R. 23E; Sections 1, 2, 11, 12, 13, and 14, T. 8S - R. 22E; and in Section 6, T. 8S - R. 23E.

Length and Capacity of Canal: From its point of diversion the ditch extends a distance of 8.75 miles and has a capacity of 75 cfs.

Operation and Maintenance: Water charges including operation and maintenance have averaged about $2.00 per acre for the last several years.

Present Users: As of the date of our survey in 1965 there were 12 water users under this ditch system and a total of 553 stock shares subscribed to in the company. One share of stock is equal to 3.3 miner's inches of water in the ditch company.

Acreage Irrigated: In 1965, there were 995 acres irrigated with no potential irrigable acreage under the ditch.

WATER RIGHT DATA

All the water rights for Clarks Fork and Silver Tip Ditch are from the CLARKS FORK RIVER and are as follows: An appropriation by John Asherbrand, et al, dated 7-30-96 for 2,500 miner's inches. (Ref: Book 3, Water Rights, page 15).

An appropriation by John Asherbrand, et al, dated 2-26-97 for 1,500 miner's inches. (Ref: Book, Water Right Locations Record, page 71).

An appropriation by Frank Bergman, et al, dated 3-16-98 for 2,500 miner's inches. (Ref: Book 1, Water Rights, page 135).

An appropriation by Byron St. Clair, dated 3-3-95 for 2,500 miner's inches. (Ref: Book 2, Water Rights, page 96).

All the above water rights filings are located in the Clerk & Recorder's Office, Red Lodge.

(See Maps in Part II, pages 24 and 28).

CLEAR CREEK DITCH COMPANY

HISTORY

The Clear Creek Ditch Company was first organized on February 28, 1906 for a period of 40 years. Capital stock of the incorporation was set at $32,000 with 320 shares issued, having a par value of $100.00 each. Re-incorporation Articles were filed again on October 17, 1946 extending the company charter for another 40 years. Originally this ditch was known as the "Beal Ditch," and it was later enlarged and extended to include other water users.

PRESENT STATISTICS

Location: This irrigation project is located just east of the community of Fox and irrigates some bench land in Sections 35 and 36, T. 6S - R. 20E; and Sections 7, 8, 18, and 19, T. 6S - R. 21E. The main ditch diverts from Rock Creek at a point on the right bank described as SE¼SE¼NW¼, Section 11, T. 7S - R. 20E.

Length and Capacity of Canal: Length of the main ditch is 7.25 miles with a capacity of 40 cfs.

Operation and Maintenance: No definite amount of costs were determined for the operation and maintenance of this ditch system. Repairs of the ditch are divided among five water users in the ditch company and vary from year to year. Each shareholder in the corporation pays in proportion to the number of shares he owns in the company.

Present Users: All of the 320 shares in the corporation are held by five present water users of the Clear Creek Ditch.

Acreage Irrigated: According to the Water Resources Survey in 1965, there are 774 acres irrigated under the ditch system with no potentially irrigable land under present facilities.

WATER RIGHT DATA

Under this ditch system each individual owns his own water right that is carried in the ditch. These individual water rights filings are as follows:

Decreed to Mrs. L. J. Barlow from Rock Creek, 140 miner's inches, dated 6-11-95.

Decreed to Nels Rogeness from Rock Creek, 100 miner's inches, dated 6-1-96 and 45 miner's inches, dated 4-15-02.

Decreed to B. G. Beal from Rock Creek, 150 miner's inches, dated 6-1-96; and 50 miner's inches, dated 8-5-02.

Decreed to James A. Dix from Rock Creek, 70 miner's inches, dated 6-30-96.

Decreed to Walter J. Hay from Rock Creek, 140 miner's inches, dated 4-15-96.

Decreed to John Hay from Rock Creek, 140 miner's inches, dated 4-15-96.

Decreed to J. R. Barlow from Rock Creek, 71 miner's inches, dated 6-15-97.

Decreed to Mark Wayman from Rock Creek, 100 miner's inches, dated 6-1-98.

(Ref: to above decreed water rights, Case #275, Rock Creek Decree, Clerk of Court's Office, Red Lodge, Montana).

(See Maps in Part II, pages 17 and 18).

CONSOLIDATED DITCH COMPANY

HISTORY

The Consolidated Ditch Company was organized November 12, 1947, which included the combining of the Prinkki, Hunter-Northy, Kero, and Taylor ditches under one system.

Consolidation of these four ditches saved the water users a considerable amount of water and expense by the operation and maintenance of one system.

Capital stock of the corporation was listed as $70,000 divided into 3,500 shares at a par value of $20.00 each. Shares of stock subscribed to in the company total 2,908 with each share equivalent to one miner's inch of water.

PRESENT STATISTICS

Location: This project is located on the west side of Rock Creek, about 4.5 miles north of Red Lodge. Point of diversion of the main ditch is from the left bank of Rock Creek in the NW¼NE¼, Section 2, T. 7S - R. 20E. Lands irrigated are located in Sections 1, 2, 11, 12, 13, 14, 15, 22, 23, 24, 26, and 27, T. 6S - R. 20E; Sections 26 and 27, T. 5S - R. 20E.

Length and Capacity of Canal: The initial capacity of the main canal is 75 cfs. and a length of 11.5 miles.

Operation and Maintenance: Each water user pays a $1.00 per acre charge for his land irrigated under the Consolidated Ditch Company.

Present Users: There are 25 water users carrying 2,908 miner's inches of water in the Consolidated Ditch system.

Acreage Irrigated: In 1965 there were 2,171 acres irrigated and 59 acres potentially irrigable under the existing ditch system.

WATER RIGHT DATA

Water rights appurtenant to the Consolidated Ditch Company are owned by the individual water users in the Ditch system. All of the rights are decreed from Rock Creek and are as follows:

Decreed to: D. Doty, 145 miner's inches, dated 7-7-96; John Hill, 100 miner's inches, dated 7-1-01; G. W. Dulen, 155 miner's inches, dated 7-7-96; Luke Chapman, 150 miner's inches, dated 7-7-96; R. D. Doty, 154 miner's inches, dated 7-7-96; D. T. Taylor, 155 miner's inches, dated 7-7-96; M. S. Wenworth, 145 miner's inches, dated 7-7-96; Peter Boyer, Peter F. Hetzer, Thos. Caldwell, C. L. & J. A. Henry, 80 miner's inches of 400, dated 7-1-89; Peter F. Hetzer, 70 miner's inches, dated 6-15-98; Katheryn Fleming, 156 miner's inches, dated 7-10-98; Charles Ingles, 87 miner's inches, dated 6-23-98; Luke Feeley, 140 miner's inches, dated 7-10-98; Thomas Feeley, Sr., 154 miner's inches, dated 7-10-98; Annie Saysell, 150 miner's inches, dated 7-15-94; Patrick Manahan, 150 miner's inches, dated 7-15-94; Thomas Northy, 150 miner's inches, dated 7-15-94; Duncan McGregor, 85 miner's inches, dated 7-1-95; Thomas Harney, 146 miner's inches, dated 7-15-94; Thomas Gorman, 80 miner's inches, dated 6-1-95; T. A. Hunter, 75 miner's inches, dated 6-1-95; E. E. Carrier, 94 miner's inches, dated 6-23-98; Archie Raspperry, 87 miner's inches, dated 6-23-98; G. W. Dawson, 100 miner's inches, dated 6-23-98; Thomas Feeley, Jr., 100 miner's inches, dated 7-10-98. (Ref. to above filings, Case #275, Rock Creek Decree, Clerk of Court's Office, Carbon County).

(See Maps in Part II, pages 12 and 17).

DANFORD IRRIGATION COMPANY

HISTORY

The origin of this irrigation project began in the year 1900 when W. I. Danford constructed a private ditch which he named "Mason Canal." The ditch was so named because of its location near the railroad siding of "Mason," on the branch of the Northern Pacific Railroad from Laurel to Red Lodge.

On February 26, 1902 the Mason Ditch Company filed Articles of Incorporation and enlarged and extended the ditch to include other farm lands under the system.

The Danford Ditch Company was formed on March 8, 1913 after the purchasing of all property, title and interest of the Mason Ditch Company.

On September 3, 1920 the Danford Irrigation District was created by a decree of the District Court. (Ref: File No. 270, Carbon County). The district was named after W. I. Danford who had constructed the original ditch from the Clarks Fork River. Today, as in the year 1900, the main ditch of the district is known as the Mason Canal.

PRESENT STATISTICS

Location: The Danford Irrigation District is located between the Yellowstone and Clarks Fork Rivers in Yellowstone and Carbon Counties, about 8 miles southwest of Laurel. The Mason Canal diverts from the left bank of the Clarks Fork River in the SE¼NW¼, Section 24, T. 3S - R. 23E and irrigates land in Sections 31 and 32, T. 2S - R. 24E; and Sections 5, 6, 7, 8, and 18, T. 3S - R. 24E.

Length and Capacity of Canal: From its point of diversion the Mason Canal has a length of 7 miles, of which 5.5 miles are in Carbon County and 1.5 miles in Yellowstone County. Its capacity at the headgate is approximately 40 cfs.

Operation and Maintenance: Water charges under the district including operation and maintenance are $1.50 for each acre of land irrigated. Water allotted to land under the district is limited to approximately one miner's inch per acre.

Present Users: During the year of 1965 there were 17 individuals furnished a water supply for their land under the District in Carbon County.

Acreage Irrigated: In Carbon County during the irrigation season of 1965, there were 850.16 acres irrigated with no potential irrigable acres listed for the district.

WATER RIGHT DATA

A search of the records in Carbon and Yellowstone Counties failed to disclose any water rights filed for the Danford Irrigation District. However, one record (Deed Book 37, page 233, Clerk and Recorder's Office, Carbon County from the Danford Ditch Company to the Danford Irrigation District) did mention 1,500 miner's inches of water from the Clarks Fork River appropriated by predecessors in interest on or about 6-1-00. It is the intention of the Danford Irrigation District to make a recorded filing of this water from the Clarks Fork

River which will be witnessed by persons who can verify its use in the Mason Canal as of the year 1900.

(See Maps in Part II, pages 1 and 4).

DRY CREEK CANAL AND IRRIGATION COMPANY

HISTORY

The project of the Dry Creek Canal and Irrigation Company is situated on the west side of the Clarks Fork River with the northern boundary of the project land about 2.5 miles south of Bridger.

The first use of what is now known as the Dry Creek Canal was in 1893. Articles of Incorporation were filed April 16, 1896 for a period of 20 years under the name of the Dry Creek Irrigating Ditch Company. Re-incorporation Articles were filed June 27, 1917 for a 40 year period under the name of the Dry Creek Canal and Irrigation Company. The capital stock was listed as $16,050 divided into 321 shares at a par value of $50.00 each. On December 30, 1946 the company re-incorporated for a period of continual existence. On January 1, 1948 the Dry Creek Canal and Irrigation Company increased the par value of the 321 original stock shares to a par value of $120.00 each and increased the amount of capital stock to $38,-520. All 321 shares of stock have been subscribed to in the corporation.

PRESENT STATISTICS

Location: Point of diversion of the main canal is on the left bank of the Clarks Fork River in the SW¼SE¼, Section 26, T. 7S - R. 22E. Irrigation of land under the canal system is in Sections 13 and 24, T. 7S - R. 22E; and Sections 5, 6, 7, 8, 18, 19, and 30, T. 7S - R. 23E.

Length and Capacity of Canal: The Dry Creek Canal has a capacity to carry 2,000 miner's inches of water and a length of 7 miles.

Present Users: There are 16 water users under this irrigation project that own all 321 stock shares of the company. Approximately six miner's inches of water is the equivalent to one share of stock in the corporation.

Acreage Irrigated: During the irrigation season of 1965 there were 1,560 acres irrigated and 20 acres potentially irrigable under the Dry Creek Canal system.

WATER RIGHT DATA

The water right filing that applies to the Dry Creek Canal and Irrigation Company was an appropriation from the Clarks Fork River by James Barclay, et al, dated 5-27-93 for 2,000 miner's inches. (Ref: Book 1, Water Rights, page 13, Clerk and Recorder's Office, Red Lodge, Montana.)

(See Maps in Part II, pages 23 and 24).

ELBOW—NEW GRANITE—NEW PROSPERITY AND GRANITE—PROSPERITY DITCH EXTENSION

HISTORY

These ditch companies have been more or less consolidated into one ditch system for the

purpose of more efficient and economical distribution of water to the land owners under the irrigation systems.

Each of the ditch companies are separate corporations and have their own water rights, with the exception of the Elbow Ditch Company, where six of the stockholders carry their individual water rights in the ditch.

The Elbow Ditch Company was incorporated on February 7, 1898 for a period of 99 years. Capital stock of the corporation was listed as $15,000 divided into 1,000 shares of a par value of $1.50 each. There are two private ditch systems, the Nutting and Surprise ditches, that were consolidated in the Elbow Ditch Company. Both of these private ditches have the individual water rights that are carried in the Elbow Ditch. In 1931, the New Prosperity Ditch Company combined 1.75 miles of its ditch and headgate with the Elbow Ditch. Both ditch companies benefited by the consolidation with a saving of approximately one-half of the cost of operation and maintenance for that part of their ditch systems.

The New Granite Ditch is a separate diversion from Rock Creek and joins the Granite-Prosperity Ditch Extension in the NE¼NE¼, Section 20, T. 4S - R. 23E. Water carried in the New Granite Ditch was decreed to the ditch company. In this ditch company there are four water users diverting water from the main New Granite ditch and five stockholders receiving their water supply from the Granite-Prosperity Ditch Extension. Articles of Incorporation were first filed by the Granite Ditch Company on January 11, 1898 and by the New Granite Ditch Company on November 29, 1960. The capital stock of the corporation was $18,000 divided into 900 shares having a par value of $20.00 each. One share of stock in the company is equal to one miner's inch of water.

The New Prosperity Ditch Company first filed Articles of Incorporation on September 21, 1897 for a 20-year period and again on February 26, 1920 for a 40-year term. On March 4, 1961 Re-incorporation Articles were filed by the company for a period of continual existence. The amount of capital stock was listed as $33,500 with 1,625 shares issued at a par value of $20.00 per share. In 1931 the New Prosperity Ditch combined its headgate and 1.75 miles of ditch with the Elbow Ditch Company. All of the New Prosperity water is diverted from Rock Creek through this part of the Elbow Ditch system. Water owned by the New Prosperity Ditch Company was decreed in the Rock Creek Decree and is allotted to the stockholders on the basis of one share of stock being equal to one miner's inch of water. The water for the New Prosperity Ditch is routed through the Elbow Ditch into the Granite-Prosperity Ditch Extension, except for five New Prosperity stockholders who divert their water directly from the Elbow Ditch.

The Granite-Prosperity Ditch Extension was incorporated on June 18, 1928 and is used only as a conveyor of water for the New Granite and New Prosperity Ditch Companies. However, there are four stockholders in the New Granite Ditch and five stockholders in the New Prosperity Ditch that do not carry their water in the Granite-Prosperity Ditch Extension.

Due to the late priority date of the water rights for all of the ditch systems, a supplemental water supply is purchased by the members of the ditch companies from the Rock Creek Water Users Association, a storage project on Red Lodge Creek.

PRESENT STATISTICS

Location: The Elbow Ditch diverts from the right bank of Rock Creek in SW¼NW¼,

Section 18, T. 4S - R. 23E. Land irrigated under the ditch system is located in Sections 8, 17, 20, 21, 22, 27, 28, 29, 33, and 34, T. 4S - R. 23E. and Section 4, T. 5S - R. 23E.

Point of diversion of the New Granite Ditch is on the right bank of Rock Creek in the NE¼NW¼, Section 18, T. 4S - R. 23E. Irrigated land under the ditch is located in Sections 11, 14, 15, 22, and 23, T. 4S - R. 23E.

The New Prosperity Ditch begins from the Elbow Ditch at a point known as Young's Corner in NW¼NW¼, Section 20, T. 4S - R. 23E. Land under irrigation from this ditch is located in Sections 14, 20, 23, 26, and 28, T. 4S - R. 23E.

The Granite-Prosperity Ditch Extension begins from the New Granite Ditch in NE¼ NE¼, Section 20, T. 4S - R. 23E. This ditch is used only as a carrier of New Granite and New Prosperity water. The location of land irrigated is listed under those ditch companies.

Length and Capacities of Canals: Length of the Elbow Ditch is about 6 miles and it has an initial capacity of 100 cfs.

The New Granite Ditch has a length of 4 miles and a capacity of 23 cfs.

The length of the New Prosperity Ditch is included in the Granite-Prosperity Ditch Extension and will have a capacity of approximately 40 cfs.

From its point of beginning the Granite-Prosperity Ditch Extension is 3.5 miles long and has a capacity of 45 cfs.

Operation and Maintenance: Charges for operation and maintenance of the ditch systems are: Elbow—80¢ per acre; New Granite—$1.30 for each share of stock owned; and the New Prosperity—50¢ per share of stock. The operation and maintenance charges for the Granite-Prosperity Ditch Extension are not definitely defined and vary from year to year with the labor and repairs of the ditch system divided among the stockholders in the company.

Present Users: The total number of stockholders and water users in these ditch companies are as follows: Elbow Ditch Company, 24 stockholders; New Granite Ditch Company, nine stockholders subscribed to all 900 shares of stock; New Prosperity Ditch Company, 25 stockholders; and the Granite-Prosperity Ditch Extension, five stockholders from the New Granite Ditch Company and 21 stockholders of the New Prosperity Ditch Company.

Acreage Irrigated: In 1965, the acreages irrigated under the ditch companies were: Elbow Ditch, 2,362 acres; New Granite Ditch, 1,083 acres; and the New Prosperity Ditch, 863.65 acres. Under existing ditch facilities the survey found no potential irrigable lands.

WATER RIGHT DATA

Water rights appurtenant to these irrigation companies are from Rock Creek and are as follows:

Elbow Ditch Company—Decreed to the Elbow Ditch Company, 967.20 of 1,040 miner's inches, dated 6-1-93; 260.40 of 280 miner's inches, dated 5-30-94; and 193.40 miner's inches of 208, dated 6-1-97. Decreed to the Surprise Ditch Company, 315 of 585 miner's inches, dated 6-5-98; and 50 miner's inches, dated 6-5-00. Decreed to C. C. Hoagland, 153 miner's inches, dated 6-10-93; Decreed to Frank E. Stearns, 153 miner's inches, dated 6-1-93; Decreed to

Barto Vincent, 130 miner's inches, dated 6-10-93; and Decreed to Alice J. Webber, 137 miner's inches, dated 6-10-93.

New Granite Ditch Company—Decreed to the Granite Ditch Company, 900 miner's inches, dated 5-29-94.

New Prosperity Ditch Company—Decreed to the Prosperity Ditch Company, 1,451 miner's inches of 1,520, dated 6-10-98; and Decreed to William Bromfield, 155 miner's inches, dated 7-1-98.

(Ref: Case #275, Rock Creek Decree, dated August 21, 1903, Clerk of Court Office, Carbon County).

(See Maps in Part II, pages 8 and 14).

FINN DITCH COMPANY

HISTORY

This irrigation ditch was first used as a private system in 1895. During the years of 1895-1900 the ditch was enlarged and extended to include other users of water from the ditch system.

On July 24, 1901 the Finn Ditch incorporated for a 40-year period and on July 24, 1941 Reincorporation Articles were filed extending the corporation for another 40 years. Capital stock of the company is $5,000 divided into 250 shares having a par value of $20.00 each.

Some shortage of water occurs under this project due to the late priority of the water rights. Supplemental water is purchased by the individual water users from the Rock Creek Water Users Association.

PRESENT STATISTICS

Location: The area served by the Finn Ditch Company lies west and south of the town of Roberts. Lands irrigated are located in Sections 13, 14, 22, 23, and 24, T. 5S - R. 20E; Sections 18, 19, and 30, T. 5S - R. 21E; and Section 1, T. 6S - R. 20E. Point of diversion of the ditch is on the left bank of Rock Creek in the NW¼SW¼, Section 18, T. 6S - R. 21E.

Length and Capacity of Canal: The main ditch has a total length of 9 miles and a capacity of 50 cfs.

Operation and Maintenance: Charges for operation and maintenance under this project are 55¢ per acre.

Present Users: There were 13 water users under the Finn Ditch during the irrigation season of 1965. Two of the water users carry their private water in the systm but are not stockholders. Two other members are stockholders in the company and have their own water rights. The balance of the water carried in the Finn Ditch belongs to the company except that water already mentioned that is purchased from the Rock Creek Water Users Association.

Acreage Irrigated: In 1965, according to the Water Resources Survey, 1,450 acres were irrigated and 32 acres potentially irrigable under the Finn Ditch.

WATER RIGHT DATA

The following water rights from Rock Creek are the source of water supply for the Finn Ditch Company.

Decreed to the Finn Ditch Company, 150 miner's inches, dated 7-1-95; 150 miner's inches, dated 7-1-96; 596 miner's inches, dated 8-1-01; and 1,626 miner's inches, dated 6-10-02. Decreed to H. C. Handley, 40 of 150 miner's inches, dated 7-7-96. Decreed to F. B. Thompson, 100 of 145 miner's inches, dated 7-7-96.

(Ref: Case #275, Rock Creek Decree, Clerk of Court's Office, Red Lodge, Montana).

(See Maps in Part II, pages 12, 13, and 17).

GLENNWOOD DITCH COMPANY

HISTORY

The area served by the Glennwood Ditch Company is located about one mile east of Silesia and consists of a narrow strip of river bottom land between the Clarks Fork River and adjoining bench land.

First use of the ditch system was by R. K. Terrell, Randolph Molt, W. L. Terrell, J. O. Terrell, and C. A. Heatherington in 1895.

Articles of Incorporation were filed on March 4, 1913 for a period of 40 years, and the capital stock of the corporation was listed as $30,000 for 300 shares at a par value of $100.00 each. The corporation articles were extended for a period of continual existence on February 26, 1953.

PRESENT STATISTICS

Location: Point of diversion of the ditch is on the right bank of the Clarks Fork River in the NW¼NW¼, Section 31, T. 3S - R. 24E. Lands irrigated under this project are located in Sections 24 and 25, T. 3S - R. 23E; and Sections 7, 18, 19, and 30, T. 3S - R. 24E.

Length and Capacity of Canal: From its point of diversion out of the Clarks Fork River, the Glennwood Ditch follows a northeasterly direction for approximately 5 miles. Its initial capacity is 75 cfs.

Operation and Maintenance: Work on the repairs and operation of the Glennwood Ditch is done by the farmers themselves. No fixed amount of charges are assessed the stockholders of the company as these costs vary from year to year.

Present Users: There were six water users in the Glennwood Ditch Company in 1965. A total of 260 shares of stock are subscribed to in the company.

Acreage Irrigated: For the 1965 irrigation season, there were 317 acres irrigated under the irrigation system. There are no potential irrigable acres under present ditch facilities of the Glennwood Ditch.

WATER RIGHT DATA

The water right appurtenant to the Glennwood Ditch Company is from the Clarks Fork River. An appropriation by C. A. Heatherington, et al, was made on August 23, 1895 for 3,000 miner's inches. (Ref: Book 2 of Water Rights, page 118, Clerk and Recorder's Office, Red Lodge, Montana).

(See Maps in Part II, pages 3 and 4).

GOLDEN DITCH COMPANY

HISTORY

This irrigation project is located 5 miles north of Belfry on the west side of the Clarks Fork River. The company has always operated under its present name and does not supply water to any other ditches.

The Golden Ditch Company was first organized on November 15, 1901. Re-incorporation Articles were filed on March 28, 1922 and on May 31, 1949. The last filing was for perpetual existence of the corporation. Capital stock listed for the company is $50,000 with 2,000 shares issued at a par value of $25.00 each.

PRESENT STATISTICS

Location: The main canal is a gravity diversion from the right bank of the Clarks Fork River with its point of diversion in SE¼ of Section 3, T. 8S - R. 22E. Land irrigated under this project is located in Sections 12, 13, 24, 25, 26, 34, and 35, T. 7S - R. 22E; and Sections 5, 6, and 18, T. 7S - R. 23E.

Length and Capacity of Canal: The main canal has an initial capacity of 70 cfs. and a length of 9 miles.

Operation and Maintenance: The repairs and operation of the ditch system are $2.00 for each acre of land irrigated.

Present Users: Stockholders supplied water for the irrigation of their land under the Golden Ditch totaled 13 in 1965. Shares of stock subscribed by members of the company were 1,453 shares with each share representing one miner's inch of water.

Acreage Irrigated: In 1965 there were 1,194 acres irrigated under the Golden Ditch.

WATER RIGHT DATA

The water right that applies to the Golden Ditch Company was an appropriation by the ditch company from the Clarks Fork River dated March 31, 1903 for 2,000 miner's inches of water. (Ref: Book 1 of Water Rights, page 378, Clerk and Recorder's Office, Red Lodge, Montana).

(See Maps in Part II, pages 23 and 24).

GROVE CREEK CANAL COMPANY

HISTORY

The Grove Creek Canal Company project begins 3 miles south of Belfry and extends to a point in NW¼SW¼, Section 8, T. 9S - R. 22E where the main canal sophons under the Clarks Fork River. This is the only structure of any consequence under the system. All of the land irrigated by this ditch system lies immediately west of the river.

The Grove Creek Canal Company was first organized on April 10, 1902, although the ditch was used as early as 1897. Re-incorporation Articles were filed on March 2, 1942 to extend the corporation for an indefinite period of existence. Capital stock of the corporation was set at $25,000 divided into 1,000 shares at a par value of $25.00 per share.

PRESENT STATISTICS

Location: From its point of diversion on the right bank of the Clarks Fork River in NE¼ NW¼ of Section 29, T. 9S - R. 22E, the Grove Creek Canal irrigates land in Sections 27, 28, and 33, T. 8S - R. 22E; and Sections 4, 5, and 8, T. 9S - R. 22E.

Length and Capacity of Canal: The Grove Creek Canal has a total length of 7.75 miles and an initial capacity of 75 cfs.

Operation and Maintenance: In 1965 the cost of operation and maintenance under this canal project was $1.00 per acre of land irrigated.

Present Users: There are six stockholders in the company with a total of 288 shares subscribed to the members.

Acreage Irrigated: During the irrigation season of 1965 there were 1,126 acres irrigated under the Grove Creek Canal project.

WATER RIGHT DATA

The water right owned and used by Grove Creek Canal Company was filed by the Grove Creek Ditch Company from the Clarks Fork River on November 1, 1897 for 3,000 miner's inches of water. (Ref: Book 1 of Water Rights, page 121, Clerk and Recorder's Office, Red Lodge, Montana).

(See Maps in Part II, pages 28 and 31).

HAARA DITCH COMPANY

HISTORY

This irrigation project is located on the bench land west of the town of Red Lodge. Water for the Haara Ditch project is diverted by gravity from the West Fork of Rock Creek.

The Haara Ditch Company was first incorporated on June 10, 1902 and was re-incorporated on June 10, 1942 for another 40-year period. The company was capitalized for $4,000

and issued 200 shares of stock at a par value of $20.00 each. Water supply for the project is adequate in years of heavy snowfall in the mountains. As an insurance against the years of water shortage, all of the stockholders of this ditch company purchase additional water from the Rock Creek Water Users Association.

PRESENT STATISTICS

Location: Water for the Haara Ditch project is diverted from the West Fork of Rock Creek by a gravity system in SW¼NE¼, Section 5, T. 8S - R. 20E. Lands irrigated are located in Sections 26, 27, 28, 33, 34, and 35, T. 6S - R. 20E; and Sections 3 and 4, T. 7S - R. 20E.

Length and Capacity of Canal: The Haara Ditch is about 7 miles long and has a capacity of 50 cfs.

Operation and Maintenance: Assessments for operation and maintenance under this ditch system will average about 40¢ per acre of land irrigated. All of the water users help with ditch repairs and share equally the expenses.

Present Users: Shares of stock in the company (200 shares) have all been subscribed to by the ten stockholders in the corporation. The Water equivalent for the number of shares owned is 20 shares equal to 150 miner's inches.

Acreage Irrigated: In 1965 a total of 1,539 acres were irrigated under the Haara Ditch.

WATER RIGHT DATA

Water rights in the Haara Ditch are owned by the ditch company and five individual water users. These water filings are all from the West Fork of Rock Creek.

Decreed to: the Haara Ditch Company, 610 miner's inches, dated 6-15-00, and 615 miner's inches, dated 6-28-01; John Luoma, 140 miner's inches, dated 6-23-94; Rigley Lumley, 120 miner's inches, dated 6-1-95; John Luoma, 150 miner's inches, dated 7-31-02; W. H. Raspbery, 75 of 130 miner's inches, dated 6-1-95; John Hides, 91 miner's inches, dated 7-15-00.

(Ref: All the above water rights may be found in Case #275, Rock Creek Decree, dated August 21, 1903, Clerk of Court's Office, Red Lodge, Montana).

(See Maps in Part II, pages 17 and 21).

HIGHLINE DITCH COMPANY

HISTORY

The first use of this ditch system from Rock Creek was in the year 1900 by John Ray, E. McVey, A. Blanchard, Mary Ross, R. Sauerwine, R. L. Banta, and Andrew Black.

Location of the project lands are about 15 miles north of Red Lodge on the east side of Rock Creek.

The Highline Ditch Company was first incorporated January 6, 1902 and re-incorporated November 20, 1944 for a term of 40 years. Capital stock of the corporation was $16,800 di-

vided into 16,800 shares valued at $1.00 each. Water rights appurtenant to this irrigation project are owned by the Highline Ditch Company and are of a late priority date. In order to have water during the latter part of the irrigation season, a supplemental water supply is purchased by two members of the company from the Rock Creek Water Users Association. In 1965, due to a wash-out and siltation in the main ditch, only a small acreage was irrigated on the project.

PRESENT STATISTICS

Location: Point of diversion of the Highline Ditch is from the right bank of Rock Creek in SE¼NW¼, Section 21, T. 5S - R. 21E. Irrigated land under the ditch system is located in Sections 1, 2, and 11, T. 5S - R. 21E.

Length and Capacity of Canal: Following a northeasterly direction, the Highline Ditch has a length of 9 miles and an initial capacity of 25 cfs.

Operation and Maintenance: Some of the labor in keeping the ditch system in good repair is done by the members of the ditch company. The usual annual assessment for operation and maintenance will average about 50¢ per acre.

Present Users: Shares of stock in this company are sold in blocks with each block of stock representing 2,400 shares. At the present time there are four stockholders in the company owning 4½ blocks of stock or 10,800 shares of 16,800 issued. Each block of stock (2,400 shares) represents 150 miner's inches of water. One share of stock is the equivalent of 1/16 miner's inch of water.

Acreage Irrigated: In 1965 there were only 47 acres irrigated under the Highline Ditch project and 370 acres potentially irrigable. The decline in the acreage irrigated in 1965 was due to a wash-out in the ditch that limited the supply of water to be delivered to the project's lands.

WATER RIGHT DATA

The water rights that apply to the Highline Ditch Company were acquired by the company from individuals that were given decreed water in the Rock Creek Decree.

These decreed rights from Rock Creek are as follows: Decreed to: Andrew Black, 150 miner's inches, dated 7-3-00; A. and Geneva Blanchard, 140 miner's inches, dated 6-3-00; E. McVey, 140 miner's inches, dated 6-3-00; John Ray, 150 miner's inches, dated 6-3-00; R. L. Banta, 150 miner's inches, dated 6-3-00; Mary Ross, 100 miner's inches, dated 6-3-00; F. Sauerwine, 125 miner's inches, dated 6-1-01. (Ref. for above water rights, see Rock Creek Decree Case #275, dated August 21, 1903, Clerk of Court's Office, Red Lodge, Montana).

(See Maps in Part II, page 13).

HOLLAND DITCH COMPANY

HISTORY

On February 13, 1897 John, William, and Josiah Holland filed and appropriated 1,500 miner's inches of water from the Clarks Fork River. The system was described as a ditch

72 inches by 24 inches in size to carry 1,500 miner's inches of water. John Holland, son of one of the original appropriators, stated a filing was made to increase the capacity of the ditch to 2,500 miner's inches. We were unable to find any record of this appropriation in the county courthouse in Red Lodge. The intended place of use was described as on Silver Tip Flat and more particularly on the ranches of the claimants.

The Holland Ditch was first organized as a corporation on February 16, 1911 for a period of 40 years. On January 20, 1951 Re-incorporation Articles were filed to extend the corporation for a period of continual existence. Capitalization of the company was listed as $24,000 with 240 shares of stock valued at $100.00 per share.

PRESENT STATISTICS

Location: Point of diversion of the main ditch is from the right bank of the Clarks Fork River in NE¼NE¼, Section 14, T. 8S - R. 22E. Land irrigated under the ditch system is located in Sections 25, 35, and 36, T. 7S - R. 22E; Sections 30 and 31, T. 7S - R. 23E; and Sections 2, 3, 10, and 11, T. 8S - R. 22E.

Length and Capacity of Canal: From its point of diversion the Holland Ditch follows a course northeasterly for a distance of 5.5 miles and has an initial capacity of 50 cfs.

Operation and Maintenance: Water charges under this ditch system are $2.25 per acre of land irrigated which includes operation and maintenance.

Present Users: A total of 141 shares of stock were issued to 13 stockholders in the ditch company. Each share is equivalent to ten miner's inches of water.

Acreage Irrigated: There were 963 acres irrigated under the Holland Ditch in 1965.

WATER RIGHT DATA

The water right for the Holland Ditch Company was filed by Josiah, John, and William Holland from the Clarks Fork River in the amount of 1,500 miner's inches, dated February 13, 1897. (Ref: Book I of Water Rights, page 351, Clerk and Recorder's Office, Red Lodge, Montana).

(See Maps in Part II, pages 23, 24, and 28).

INTER-STATE IRRIGATING AND MINING DITCH COMPANY

HISTORY

Irrigation from the Inter-State Irrigating and Mining Company ditch in Carbon County is located on the west side of the Clarks Fork River, immediately north of the Montana- Wyoming state line, near the Chance bridge. On the north side of a road bridge one mile below the state line in Wyoming, water is flumed across the Clarks Fork River to irrigate land formerly owned by Q. E. Chance on the east side of the river in Section 31, T. 9S - R. 22E.

On December 27, 1901 Charles B. Orr, Charles Richards, Louis B. Sickler, J. H. Hall, Oscar Denay, Nathan Chance, and George A. Smith associated together and formed the Inter-State

Irrigating and Mining Company. The Company was incorporated for 40 years with 2,000 shares of stock of a par value of $1.00 each. Re-incorporation Articles were filed on April 19, 1913 increasing the capital stock from 2,000 to 3,000 shares, each share having a par value of $1.00. The company filed articles again on February 24, 1941 extending the corporation for another 40 years.

PRESENT STATISTICS

Location: The source of water for this irrigation project is from the Clarks Fork River in Wyoming with the ditch diversion described as NE¼NW¼, Section 30, T. 58N - R. 101W. Lands irrigated from the ditch system in Carbon County, Montana are located in Sections 19, 20, 29, 30, 31, and 32, T. 9S - R. 22E.

Length and Capacity of Canal: From its point of diversion in Wyoming the Inter-State ditch follows a northerly direction into Montana for a distance of about 6 miles terminating in Section 13, T. 9S - R. 21E. Approximately one-half of its total length is in Montana. Capacity of the ditch is 2,000 miner's inches or 50 cfs.

Operation and Maintenance: Charges for operation and maintenance have averaged about 50¢ per acre per year.

Present Users: There are nine stockholders of the corporation using water from the ditch system in Carbon County. A total of 2,900 stock shares are subscribed to by Montana members with each share equivalent to one miner's inch of water.

Acreage Irrigated: In 1965 there were 918 acres irrigated from the ditch in Montana with no potential irrigable acres listed for the irrigation system. A small acreage is irrigated from the ditch system in Wyoming. This acreage figure was not determined.

WATER RIGHT DATA

Water rights for the Inter-State Irrigating and Mining Company project would have to originate in Wyoming since the water used by the company is diverted from within the state. No records appear in the office of the State Engineer in Wyoming for this company. However, one application for a water permit #9782 was obtained from the State Engineer's office in Wyoming that would apply to the land formerly owned by Q. E. Chance on the east side of the Clarks Fork River, Section 31, T. 9S - R. 22E. Although this permit #9782 was assigned, it was never approved by the Wyoming State Engineer; and, therefore, no appropriation attaches it to Montana lands insofar as the State of Wyoming is concerned.

(See Maps in Part II, page 31).

JOLIET IRRIGATION COMPANY

HISTORY

The area irrigated by this project lies northeast of the town of Joliet.

This ditch company was first incorporated as the Joliet Ditch Company on March 30, 1898 for a period of 20 years. On January 22, 1920 Re-incorporation Articles were filed under the

name of the Joliet Irrigation Company for a term of 40 years. The last renewal of the corporation articles of the company was made on December 13, 1961 for another 40-year period.

The capital stock of the company was set at $20,000 divided into 1,000 shares of stock at a par value of $20.00 per share. Water furnished to the stockholders for irrigation of their lands is owned by the ditch company with each share of stock being equal to one miner's inch.

PRESENT STATISTICS

Location: The Joliet ditch diverts from the left bank of Rock Creek in SW¼NE¼ of Section 22, T. 4S - R. 22E. Project lands are located in Sections 12 and 13, T. 4S - R. 22E; and Sections 5, 7, and 8, T. 4S - R. 23E.

Length and Capacity of Canal: Following a northeast direction, the Joliet ditch is about 5.5 miles in length and has a capacity of 30 cfs.

Operation and Maintenance: Charges for operation and maintenance have averaged 50¢ per acre per year for users of water under this ditch project.

Present Users: There were eight water users owning a total of 915 shares of stock in the company in 1965. Two of the stockholders purchased 250 acre feet (50 and 200 respectively) from the Rock Creek Water Users Association as a supplemental water supply for irrigation of their land.

Acreage Irrigated: In 1965 there were 570 acres irrigated under the Joliet Irrigation Company project.

WATER RIGHT DATA

The water for this irrigation project is diverted from Rock Creek and the rights owned by the company. These water rights are as follows: Decreed to: the Joliet Ditch Company, 393 miner's inches, dated 6-20-94; the Joliet Ditch Company, 390 miner's inches, dated 7-15-95; Edward Corle, 50 miner's inches, dated 7-1-98; Edward Cammock, 20 of 40 miner's inches, dated 5-15-99; C. F. Oliver, 44 of 64 miner's inches, dated 5-1-96. (Ref: to above water rights, Case #275, Rock Creek Decree, Clerk of Court's Office, Red Lodge, Montana).

(See Maps in Part II, pages 7 and 8).

LAST CHANCE DITCH COMPANY
(Including the Carbon Canal Extension)

HISTORY

This project is located between the towns of Joliet and Fromberg, with the greater part of the lands irrigated in an area known as Prosperity Flat.

The Last Chance Ditch Company was first incorporated on October 7, 1895. Since that date three subsequent Re-incorporation Articles have been filed by the ditch company; on October 5, 1915; September 20, 1935; and May 21, 1962, when articles were filed for a period of con-

tinual existence. The Last Chance Ditch Company incorporated for $50,000 and issued 1,000 shares of stock at a par value of $50.00 per share.

The Carbon Canal Company was incorporated on May 27, 1927 for a period of 40 years. Capital stock in the company totaled 11,000 shares, and is divided into 625 shares of "A" stock at a par value of $10.00 each and 475 shares of "B" stock valued at $20.00 per share. Stockholders in the Carbon Canal must olso own shares of stock in the Last Chance Ditch Company. The water supply in both of these ditch companies is not considered adequate, especially during dry years. Supplemental water is purchased for individuals from the Rock Creek Water Users Association which is supplied by the Cooney and Glacier Lake Reservoirs, a State Water Conservation Board Project. The Last Chance Ditch Company also purchases approximately 300 miner's inches of water from the Weast Ditch Company for $300.00 per year.

PRESENT STATISTICS

Location: The Last Chance Ditch diverts its water from the right bank of Rock Creek in SE¼SE¼, Section 14, T. 4S - R. 22E. Irrigation of land under this ditch is in Sections 13 and 24, T. 4S - R. 22E; Sections 18, 19, 20, 29, 30, 31, 32, and 33, T. 4S - R. 23E; and Sections 4, 5, and 6, T. 5S - R. 23E.

The Carbon Canal Extension begins at a point from the end of Last Chance Ditch in NW¼SE¼, Section 5, T. 5S - R. 23E and irrigates land in Sections 5, 8, and 17, T. 5S - R. 23E.

Length and Capacity of Canals: The initial capacity of the Last Chance Ditch is approximately 50 cfs. and has an over-all length of 7 miles. From the end of the Last Chance Ditch, the Carbon Canal Extension follows a southern direction for a distance of 3½ miles and has a capacity of 25 cfs. The water equivalent for stock shares in both ditches is one miner's inch per share of stock.

Operation and Maintenance: Charges for operation and maintenance under these ditch systems may vary from year to year. Average charges are about 50¢ per acre for the Last Chance water users and 75¢ per acre for members of the Carbon Canal.

Present Users: There is a total of 30 stockholders in the Last Chance Ditch, which includes seven water users owning shares of stock in the Carbon Canal.

Acreage Irrigated: In 1965 there were 1,217.02 acres irrigated under the Last Chance Ditch and 459 acres irrigated by the Carbon Canal. Total acreage irrigated under both ditch systems is 1,676.02 acres with no potential irrigable acres listed under present facilities.

WATER RIGHT DATA

Water rights that apply to the Last Chance Ditch Company are also applicable to the Carbon Canal whose members are stockholders in both companies. These water rights are as follows:

Decreed to the Last Chance Ditch Company from Rock Creek, 760 miner's inches, dated 10-4-95; 360 miner's inches, dated 6-1-97; 466 miner's inches, dated 6-1-98; 80 miner's inches, dated 6-1-99; 100 miner's inches, dated 6-1-00; 125 miner's inches, dated 5-30-01. (Ref: Rock Creek Decree Case #275, Clerk of Court's Office, Red Lodge, Montana).

There is one stockholder in the Carbon Canal that carries two private rights in this ditch system. Their rights are: Decreed to the Prosperity Ditch from Rock Creek, 69 miner's inches of 1,520, dated 6-10-98; and decreed to I. N. Heddington, 40 miner's inches of 120, dated 6-12-95. (Ref: Rock Creek Decree Case #275, Clerk of Court's Office, Red Lodge, Montana). The Last Chance Ditch Company also purchases 300 miner's inches of water each year from the Weast Ditch Company.

A supplemental water supply is purchased by 15 members of the Last Chance Ditch Company from the Rock Creek Water Users Association (State Water Conservation Board Project) in the amount of 695 acre feet each year. In addition, all of the stockholders in the Carbon Canal buy a total of 390 acre feet of supplemental water from the Rock Creek Water Users Association.

(See Maps in Part II, pages 7, 8, and 14).

MUTUAL DITCH COMPANY

HISTORY

The Mutual Ditch Company was first started by O. B. Hart, James Carson, and J. H. Hart and called the Hart Ditch. The system was described as a headgate and ditch 18 inches by 48 inches in size, which carries 1,500 inches of water from the Clarks Fork River to the ranchers of the claimants.

On October 16, 1908 the Hart Ditch incorporated under the name of the Jack Creek Ditch Company and on December 30, 1909, Articles of Incorporation were filed changing the name to the Jack Creek Extension Ditch Company. Articles of Incorporation were filed again on April 12, 1910 changing the name to the Clarks Fork Valley Irrigation Company.

The Mutual Ditch Company was formed to acquire all rights, title, and interest of the Clarks Fork Valley Irrigation Company on January 10, 1920. The Mutual Ditch Company re-incorporated on July 17, 1964 for another term of 40 years.

Stock in the company was set at $81,600 and divided into 2,070 shares of "B" and 650 shares of "A" stock. Both the "A" and "B" stocks have a par value of $30.00 per share.

PRESENT STATISTICS

Location: The Mutual Ditch has its point of diversion from the right bank of the Clarks Fork River in NW¼SW¼, Section 13, T. 8S - R. 22E. Land irrigated under the ditch system is located in Sections 26, 27, 34, and 35, T. 6S - R. 23E; Sections 2, 3, 9, 10, 11, 15, 16, 17, 18, 19, 20, 30, and 31, T. 7S - R. 23E; Sections 26, 35, and 36, T. 7S - R. 22E; and Sections 1 and 2, T. 8S - R. 22E.

Length and Capacity of Canal: From its point of diversion the Mutual Ditch follows a northeasterly course for a distance of 17 miles. The initial carrying capacity of the ditch is about 90 cfs.

Operation and Maintenance: The common or "B" stock members pay three-fourths of the expense above the Hunt Creek flume and all the expense for repair and operation below the flume. Preferred stockholders paid on assessment of 31¢ and common stockholders paid $2.75 a share, or an average assessment of about $1.85 an acre. Of this amount 80% was for operation and maintenance and 20% for debt and service charges.

Present Users: Water users in the company in 1965 totaled five "A" or preferred members and 29 "B" or common stockholders.

Acreage Irrigated: In 1965 there were 2,994 acres irrigated under the project and ten acres potentially irrigable from present ditch facilities.

WATER RIGHT DATA

The following water rights from the Clarks Fork River are appurtenant to the Mutual Ditch Company irrigation project.

An appropriation by the Jack Creek Ditch, dated 7-30-09 for 3,000 miner's inches. (Ref: Book 2 of Water Rights, page 210).

An appropriation by the Jack Creek Extension Ditch Company, dated 12-30-09 for 5,000 miner's inches. (Ref: Book 2 of Water Rights, page 214).

An appropriation by O. B. Hart, James Carson, and J. H. Hart, dated 9-12-99 for 1,500 miner's inches. (Ref: Book 1 of Water Rights, page 215).

All the above water rights filings may be found in the Clerk and Recorder's Office, Red Lodge, Montana.

(See Maps in Part II, pages 19, 23, 24, and 28).

NEW FIRST CHANCE DITCH COMPANY

HISTORY

This irrigation project is located about 2.5 miles northwest of the town of Edgar and receives its water supply by a ditch diversion out of Rock Creek.

The New First Chance Ditch Company was also known as First Chance Ditch Company, which was incorporated on July 6, 1898. Incorporation Articles for the New First Chance Ditch Company were filed on February 26, 1919 and renewed again on June 14, 1952. Capitalization of the Company was increased from $10,000 to $25,000 and the shares of stock issued from 10,000 to 25,000 shares. Par value of the stock remained the same at $1.00 per share.

In a normal year the water supply is considered adequate, but in dry years there is a water shortage for some of the acreage under the ditch system. To alleviate this condition, a supplemental water supply is purchased by the Company from the Rock Creek Water Users Association.

PRESENT STATISTICS

Location: The point of diversion for the New First Chance Ditch is located on the right bank of Rock Creek in NW¼SW¼, Section 13, T. 4S - R. 22E. Land irrigated from the ditch system is in Sections 10, 16, 17, 18, 19, and 20, T. 4S - R. 23E.

Length and Capacity of Canal: The main canal of this project is approximately 5 miles in length and has a capacity of 50 cfs.

Operation and Maintenance: Charges for operation and maintenance will average about 30¢ for each acre of land irrigated.

Present Users: As of the date of our survey in 1965, there were 13 stockholders in the ditch company receiving water for their land.

Acreage Irrigated: In 1965 a total of 1,671 acres were classified as irrigated land for this irrigation project.

WATER RIGHT DATA

Water rights that apply to this irrigation project were decreed to the New First Chance Ditch Company in the Rock Creek Decree Case #275 and are as follows: Decreed to the First Chance Ditch Company, 1,335 miner's inches, dated 11-18-92; 120 miner's inches, dated 6-1-93; 100 miner's inches, dated 5-15-99; and 150 miner's inches, dated 6-1-99. (Ref: to Case #275 in Clerk of Court's Office, Red Lodge, Montana).

(See Maps in Part II, page 8).

ORCHARD CANAL COMPANY
(Edgar Canal—Extension of Orchard)

HISTORY

The Orchard Canal irrigation project is located on the east side of the Clarks Fork River near the towns of Bridger, Fromberg and Edgar.

According to S. T. McCall of Fromberg, Silbern W. Sybarger made the first appropriation of water for what is now the Orchard Canal. The water filing was then transferred to the Wrangler Ditch Company on May 24, 1902. At this time the Wrangler Ditch Company filed on 5,000 miner's inches of water. All water rights of the Wrangler Ditch Compnay were transferred to the Orchard Canal on April 18, 1910 when the ditch company filed its Articles of Incorporation. Articles of Incorporation have been filed by the Orchard Canal Company on March 12, 1930 and on February 2, 1948. The last filing extended the period of time of the corporation for a continual existence.

The Edgar Canal, an extension of the Orchard, first became organized on May 22, 1918. Reincorporation Articles were filed again on February 10, 1945 to continue the company charter for an indefinite period.

The capital stock of the Orchard Canal Company is 8,000 shares totaling $160,000 at a par

value of $20.00 per share. The capital stock of the Edgar Canal was listed at $6,000 divided into 1,200 shares having a par value of $5.00 each. Stockholders in the Edgar Canal Company must have an equal number of stock shares in the Orchard Canal Company to secure their water supply.

PRESENT STATISTICS

Location: The point of diversion of the Orchard Canal is from the right bank of the Clarks Fork River in SW¼SW¼, Section 27, T. 6S - R. 23E. Irrigation of land under the Orchard and Edgar Canal systems is in Sections 1, 12, 13, 14, 23, 24, 25, 26, and 35, T. 4S - R. 23E; Sections 2, 3, 9, 10, 14, 15, 16, 20, 21, 22, 27, 28, 29, 32, and 33, T. 5S - R. 23E; and Sections 3, 4, 9, 10, and 15, T. 6S - R. 23E. The Edgar Canal's point of beginning is the center of the township line between Section 2, T. 5S - R. 23E and Section 35, T. 4S - R. 23E.

Length and Capacities of Canals: Length of the Orchard Canal is 13.5 miles with a capacity of 150 cfs. The Edgar Canal has a capacity of 50 cfs. and a length of 6 miles.

Operation and Maintenance: Charges assessed the stockholders in the Orchard and Edgar Canal systems for operation and maintenance are: Orchard Canal, $1.00 per share of stock owned and the Edgar Canal, 25¢ to 50¢ per acre of land irrigated, depending upon repairs required for that particular year.

Present Users: The number of water users in the Orchard Canal Company total 49, which includes 11 stockholders in the Edgar Canal. One share of stock in the Orchard Canal is equivalent to approximately ¾ of a miner's inch of water. In the Edgar Canal one share of stock entitles the stockholder to one miner's inch of water.

Acreage Irrigated: Land irrigated under the Orchard Canal in 1965 totaled 4,237 acres. Irrigated acres under the Edgar Canal were 1,248.

WATER RIGHT DATA

The water right that is appurtenant to the Orchard and Edgar Canal project was filed and appropriated by the Wrangler Ditch Company from the Clarks Fork River on May 24, 1902 for the amount of 5,000 miner's inches. (Ref: Book 3, Notice of Water Rights, page 68, Clerk and Recorder's Office, Red Lodge, Montana).

(See Maps in Part II, pages 8, 14, and 19).

ORCHARD DITCH COMPANY

HISTORY

The Orchard Ditch Company irrigation project is located southeast of Fromberg in what is known as the Bluewater Creek Valley.

The Orchard Ditch Company was first organized under the name of the Clarks Fork Orchard and Irrigation Company on April 10, 1910. On April 10, 1930 the Orchard Ditch Company became the name for this irrigation project. The company re-incorporated on April 16, 1948 and again on July 29, 1960, the last date for a period of perpetual existence.

Water for this project is taken from Bluewater Creek, which was decreed on February 26, 1904. All of the water rights for this project are owned by individuals, and the company ditch is used as means of conveying the water to the users incorporated in the system.

Capital stock in the company was listed as 6,000 units divided into 20 shares of a par value of $300.00 each or $6,000.

PRESENT STATISTICS

Location: The Orchard Ditch has its point of diversion on the right bank of Bluewater Creek in NE¼SE¼SW¼, Section 5, T. 6S - R. 24E. The location of land irrigated from the ditch system is in Section 34 and 35, T. 5S - R. 23E; Sections 1, 2, and 11, T. 6S - R. 23E; and Sections 5, 6, and 7, T. 6S - R. 24E.

Length and Capacity of Canal: Following a westerly direction from its point of diversion on Bluewater Creek, the main canal has an overall length of 6 miles and an initial capacity of 40 cfs.

Operation and Maintenance: Charges for operation and maintenance vary from year to year but have averaged about 60¢ per acre for the last several years.

Present Users: There were six water users under the ditch system in 1965.

Acreage Irrigated: In 1965 there were 871 acres irrigated from the Orchard Ditch with no potential irrigable acres under existing ditch facilities.

WATER RIGHT DATA

The water rights carried in this ditch company are owned by the individual members of the corporation. All of the rights are from Bluewater Creek (Case #357) and are as follows: Decreed to: John and William McCullough, 50 miner's inches of 125, dated 6-15-93; R. D. Chase, 150 miner's inches, dated 7-17-94; Sam and Bertha Gebo, 147 miner's inches of 225, dated 7-17-94; I. A. Brown, 150 miner's inches, dated 6-1-95; Frank Medhurst, 50 miner's inches, dated 6-1-95; Ed. V. Moran, 128 miner's inches, dated 7-14-95; Frederick Bachelder, 24 miner's inches of 100, dated 6-1-96; Stanley S. Story, 70 miner's inches, dated 5-10-96, and 30 miner's inches, dated 5-28-98; Frank Winnemar, 30 miner's inches, dated 5-10-96, and 70 miner's inches, dated 5-28-00; Ed Brown, 80 miner's inches, dated 5-20-99; Charles Miller, 30 miner's inches, dated 6-10-01; and F. W. Hine, 200 miner's inches, dated 6-19-03. (Ref. to above Water Rights, Bluewater Creek Decree Case #357, Clerk of Court's Office, Red Lodge, Montana).

(See Maps in Part II, pages 14, 19, and 20).

PLEASANT VALLEY CANAL COMPANY

HISTORY

The irrigation project of the Pleasant Valley Canal Company is located on the east side of Rock Creek, just north of Red Lodge. Water is taken by gravity canal from the right bank of Rock Creek and follows course northeasterly for about 3 miles, where it joins a lateral of

the system in E½SE¼, Section 12, T. 7S - R. 20E known as the Jeffery Canal. The Jeffery Canal spills water into Clear and Elbow Creeks for users who maintain their own irrigation systems but own stock in the Pleasant Valley Canal Company.

Articles of Incorporation for the Pleasant Valley Canal Company were first filed on June 8, 1898 and again on June 16, 1917. The last filing, on May 7, 1938, was for a period of continual existence for the corporation. Capitalization of the corporation was set at $20,000 divided into 10,000 shares of a par value of $2.00 per share. All of the stock shares in the corporation are subscribed to by water users of the Pleasant Valley Canal.

PRESENT STATISTICS

Location: The canal diverts from the right bank of Rock Creek in SW¼SW¼, Section 23, T. 7S - R. 20E and irrigates land in Sections 1, 11, 12, and 14, T. 7S - R. 20E; Sections 6 and 7, T. 7S - R. 21E; and Sections 14, 19, 20, 23, 29, 30, 31, and 32, T. 6S - R. 21E.

Length and Capacity of Canal: The main canal, including the Jeffery lateral, is about 5 miles in length, and its initial capacity is 50 cfs.

Operation and Maintenance: Charges for operation and maintenance have averaged 50¢ an acre under this irrigation project.

Present Users: Water was supplied to 16 users in the canal company during the year 1965. The water equivalent for each share of stock issued by the corporation is approximately .2 of a miner's inch per share.

Acreage Irrigated: In 1965 there were 2,318 acres irrigated by the Pleasant Valley Canal Company.

WATER RIGHT DATA

The water rights for the Pleasant Valley Canal Company were adjudicated in the Rock Creek Decree Case #275 and are as follows: Decreed to the Pleasant Valley Canal Company, 440 miner's inches, dated 7-4-93; 560 miner's inches, dated 6-21-94; and 770 miner's inches, dated 6-21-95. Decreed to Maria C. Johnson, 125 miner's inches, dated 8-10-96. (Ref: to all above water rights are in Case #275, Rock Creek Decree, Clerk of Court's Office, Red Lodge, Montana).

(See Maps in Part II, pages 18, 21, and 22).

PRYDE DITCH COMPANY

HISTORY

The Pryde Ditch was first started on May 18, 1893 by Edward Burns, George Pryde, and William McMilliam when they appropriated 2,000 miner's inches of water from the West Fork of Rocky Creek (now called Rock Creek) for the irrigation of their land.

The company was incorporated January 25, 1911 for a period of 40 years. There were 2,075 shares issued in the company having a par value of $2.50 each. Articles of Incorpora-

tion for this ditch campany expired on January 25, 1951 and have not been renewed. Water rights carried in the Pryde Ditch are owned by the stockholders carrying water in the ditch system.

PRESENT STATISTICS

Location: The Pryde Ditch headgate is located on the left bank of the West Fork of Rock Creek NE¼SE¼, Section 5, T. 8S - R. 20E. Land irrigated under the ditch system is located in Sections 4, 9, 10, 15, 21, and 22, T. 7S - R. 20E.

Length and Capacity of Canal: Following a northerly direction from its point of diversion the Pryde Ditch has an overall length of 8 miles and a capacity of 40 cfs.

Operation and Maintenance: Charges under this ditch system for operation and maintenance are almost negligible averaging only about 10¢ per acre for the last 20 years.

Present Users: A total of 1,544 shares of stock were subscribed to by seven stockholders in the company. One share of stock represents one miner's inch of water carried in the Pryde Ditch.

Acreage Irrigated: In 1965 there were 1,703 acres irrigated under this ditch system.

WATER RIGHT DATA

Each individual water user carries his own water right in the Pryde Ditch. These water rights are all from the West Fork of Rock Creek and are as follows: Decreed to: Joseph Bogetta, 140 miner's inches, dated 6-23-94; Edward Burns, 140 miner's inches, dated 6-23-94; Ada Draper, 310 miner's inches, dated 7-1-94, and 100 miner's inches, dated 6-1-02; Ada Draper, Adm. Estate of F. W. Draper, 220 miner's inches, dated 7-1-94, and 82 miner's inches, dated 6-1-95; George Pryde, 125 miner's inches, dated 6-23-94, and 140 miner's inches, dated 6-6-96; William Pryde, 140 miner's inches, dated 6-23-94; John T. Webber, 40 miner's inches, dated 6-1-94, 32 miner's inches, dated 6-15-95, and 75 miner's inches, dated 6-10-01. (Ref: to all above water rights decreed in Case #275, Rock Creek Decree, Clerk of Court's Office, Red Lodge, Montana).

(See Maps in Part II, page 21).

RED LODGE—ROCK CREEK PROJECT
(State Water Conservation Board)

HISTORY

This project consists of the construction of two reservoirs and some small canals. The largest reservoir, known as Cooney Reservoir, is located 8 miles west of Boyd on Red Lodge Creek. The other reservoir, Glacier Lake, is located near the headwaters of Rock Creek at an elevation of 10,000 feet, about 25 miles southwest of Red Lodge. To improve the water supply to Cooney Reservoir, the Point of Rocks canal was constructed which diverts water from Rock Creek to the West Fork of Rock Creek. From the West Fork of Rock Creek the water is carried in the Pryde Ditch to Willow Creek, which flows into Cooney Reservoir. To furnish additional water to the water users and to the Cooney Reservoir, an enlargement was made in the carrying capacity of the Finn and Cottonwood Canals.

Plans for this project were first submitted to the State Water Conservation Board on February 7, 1934, only a few days after the Board was created. This was the first Water Board project approved and financed by a loan and grant from the Public Works Administration. All the pioneering work of setting up a plan for an entirely new form of financing irrigation projects had to be worked out with the construction of this project. Among some of the legal documents to be drafted were such major forms as Articles of Incorporation of the Water Users Association, formation of bonds, bond transcripts, water purchase contracts, and water marketing contracts. This took a great deal of time and study, but it paved the way for other water board projects which were to be constructed later.

The Rock Creek Water Users Association was incorporated under the laws of Montana on June 27, 1935 with authority to issue 50,000 shares of stock at $1.00 par value. The Association is managed by a board of five directors and employs a dam tender who cooperates with the local water commissioner in the distribution of project water. Originally there were 432 water purchase contracts, agreeing to purchase 31,584 acre feet of water which were approved by the association, the Water Board, and the finance division of the P.W.A. The project was first operated during the irrigating season of 1937 and has been in continual operation since that date.

PRESENT STATISTICS

Location: At the present time this project furnishes a supplemental water supply to 17,050 acres of land in the Rock Creek valley and Clark Fork area.

Size and Capacities of Reservoirs and Canals: Cooney Reservoir has a storage capacity of 27,515 acre feet and inundates an area of 1,025 acres.

Glacier Lake contains 4,200 acre feet of storage and covers a flooded area of 166 acres.

The Finn Ditch was enlarged to carry approximately 50 cfs. of water and has an overall length of 9 miles. The Cottonwood Canal, an extension of the Finn Ditch, has a capacity of 25 cfs. and a length of about 2 miles. The Point of Rocks Canal is 2.3 miles long and has a capacity of 50 cfs.

Operation and Maintenance: Operation and maintenance charges as of 1965 were 15¢ an acre foot in addition to the water charge of $1.00 per acre foot per year.

Present Users: As of December, 1965, there were 213 water users under this irrigation project with a total of 17,050 acre feet of water sold.

Acreage Irrigated: Most of the water sold under this project is used as a supplemental water supply to the landowners holding decreed water rights from Rock Creek. However, there are four water users purchasing water from the Association for the irrigation of 314 acres that have no other water supply. The total irrigated acreage furnished a supplemental water supply under this irrigation project is approximately 17,050 acres, based on normal use of one acre foot per acre of land irrigated.

WATER RIGHT DATA

Water rights listed for the Red Lodge-Rock Creek Project are as follows:

Decreed to Henry and Bertha Dahlem from Willow Creek, dated 5-1-96 for 150 miner's

inches. (Ref: Willow Creek Decree Case #2484, Clerk of Court's Office, Red Lodge; and Deed Book 53, page 145, Clerk and Recorder's Office, Red Lodge, Montana).

Decreed to G. W. Robertson from Willow Creek, dated 5-1-96 for 100 miner's inches. (Ref: Willow Creek Decree Case #2484, Clerk of Court's Office, Red Lodge; and Deed Book 51, page 24, Clerk and Recorder's Office, Red Lodge, Montana).

An appropriation by the State Water Conservation Board from Rock Creek, dated 5-10-34 for all unappropriated water (Glacier Lake Reservoir). (Ref: Book 15, Misc. page 352, Clerk and Recorder's Office, Red Lodge, Montana).

An appropriation by the State Water Conservation Board from Red Lodge Creek, dated 5-10-34 for all unappropriated water (Cooney Reservoir). (Ref: Book 15, Misc. Record, page 352, Clerk and Recorder's Office, Red Lodge, Montana).

RIVERVIEW DITCH COMPANY

HISTORY

The Riverview project is located 1½ miles south of Belfry on the east side of the Clarks Fork River.

What is now known as the Riverview Ditch Company was first organized by C. H. Williams, John Kinnick, William Smith, and G. B. Whittington. On March 11, 1896 they filed an appropriation for 800 miner's inches of water to be diverted by a gravity ditch from the Clarks Fork River.

The ditch company filed Articles of Incorporation on February 7, 1903 under the name of the Riverview Canal Company for a period of 40 years. The purpose of the incorporation was for irrigation, domestic, and agricultural uses. Corporate Articles were renewed again on August 21, 1943 for another 40 year term. Capital stock of the company was listed as $10,000 divided into 1,000 shares of a par value of $10.00 each.

PRESENT STATISTICS

Location: The canal diverts water from the right bank of the Clarks Fork River in the NE¼ SE¼NE¼, Section 4, T. 9S - R. 22E for the irrigation of land in Sections 22, 23, 24, 26, and 27, T. 8S - R. 22E.

Length and Capacity of Canal: The Riverview Ditch follows a northerly direction from its point of diversion for a distance of 4.5 miles and has a capacity in excess of 800 miner's inches or approximately 25 cfs.

Operation and Maintenance: Costs for operation and maintenance under this ditch system vary from year to year, and no fixed amount is assessed to the members.

Present Users: All of the 1,000 shares issued by the ditch company were subscribed to by six stockholders as of our survey in 1965. Each share of stock owned in the company entitles the stockholder to one miner's inch of water for irrigation purposes.

Acreage Irrigated: Irrigation of land under the Riverview Ditch in 1965 totaled 749 acres with no potential irrigable acres under the ditch system.

WATER RIGHT DATA

The water right appurtenant to the Riverview Ditch Company was made by John Kinnick, et al, from the Clarks Fork River in the amount of 800 miner's inches, dated March 11, 1896. (Ref: Book 3 of Water Rights, pages 3 and 4, Clerk and Recorder's Office, Red Lodge, Montana).

(See Maps in Part II, page 28).

ROCK CREEK—CLEAR CREEK DITCH COMPANY

HISTORY

The Rock Creek-Clear Creek Ditch is one of the first ditch systems of any importance to divert water from Rock Creek. It was first organized on August 15, 1893 as the Rocky Fork and Alkali Ditch Company. This company appropriated 5,000 miner's inches of water from Rocky Fork Creek (now called Rock Creek) on October 3, 1892.

The Rock Fork and Alkali Ditch was developed by farmers who constructed a part of the ditch each year and were issued stock in the company as payment for their work. This plan of operation did not prove successful and was changed by placing the ditch company on a cash basis.

On May 5, 1916 the company incorporated for 40 years as the Rock Creek-Clear Creek Ditch Company and was incorporated for $50,000 divided into 50 shares of stock at a par value of $1,000 each. An extention of the company's corporate articles were filed on March 31, 1959 for a period of continual existence.

Water is taken by gravity from the right bank of Rock Creek in the NW¼SW¼, Section 9, T. 8S - R. 20E and carried in the main canal system about 3 miles to the top of the bench east of Red Lodge. From this point the first lateral syphons under the Bear Creek road and spills water into Alkali Creek (Clear Creek) from which water is picked up in various private ditches. Water is also spilled into a coulee at the head of Bear Creek and diverted from this stream by private ditches. The main canal continues on a course northeasterly where in NE¼NW¼, Section 25, T. 7S - R. 20E the company maintains a concrete diversion box and the water is divided into four ditches. Ditches from this point spill water into Nolton, Dry, and Elbow Creeks. This water is picked up by various users from these creeks which are used as carriers.

PRESENT STATISTICS

Location: Lands irrigated by the Rock Creek-Clear Creek Ditch Company are in Sections 12, 13, 14, 23, 24, 25, 26, and 27, T. 7S - R. 20E; Sections 3, 4, 5, 6, 7, 8, 9, 10, 13, 14, 15, 18, 19, 23, 24, 30, 33, 34, and 35, T. 7S - R. 21E; Sections 1, 2, 3, 4, and 10, T. 8S - R. 21E; and Sections 10, 14, and 15, T. 8S - R. 22E.

Length and Capacity of Canal: From its point of diversion the main canal is about 9 miles long and has an initial capacity of 5,000 miner's inches or 125 cfs.

Operation and Maintenance: The cost of water per irrigated acre averages about 50¢; of this amount 82% is for operation and maintenance and 18% for debt and service charges.

Present Users: All of the 50 shares of stock issued by the company are subscribed to by 26 members. One share of stock is equal to 100 miner's inches of water in this ditch company.

Acreage Irrigated: In 1965 there were 5,260 acres irrigated under the Rock Creek-Clear Creek Ditch system, with no potential acreage under existing works.

WATER RIGHT DATA

Water rights that apply to the Rock Creek-Clear Creek Ditch Company were decreed in the Rock Creek Decree Case #275 and are as follows: Decreed to the Rocky Fork and Alkali Ditch Company, 2,364 miner's inches, dated 10-3-92; 750 miner's inches, dated 6-1-95; 750 miner's inches, dated 6-1-96; and 1,136 miner's inches, dated 6-1-97. (Ref: Case #275, Clerk of Court's Office, Red Lodge, Montana).

(See Maps in Part II, pages 21, 22, 27, and 28).

ROCKY POINT DITCH COMPANY

HISTORY

The land area which is irrigated by the Rocky Point Ditch Company is located 2½ miles south of Belfry on the east side of the Clarks Fork River.

On November 3, 1903 James Ingram, A. H. Woods, Joseph Fisher, A. M. Chase, and N. D. Hall appropriated 1,500 miner's inches of water from the Clarks Fork River and formed what is known as the Rocky Point Ditch Company. The system was described as a ditch 96 inches wide and 18 inches deep to carry 1,500 inches of water.

The Rocky Point Ditch Company was incorporated on February 19, 1919 for a period of 40 years. The amount of capital stock was $22,400 divided into 896 shares of a par value of $25.00 each. The corporate existence of this company has expired by limitation of its charter and operation of law.

PRESENT STATISTICS

Location: Point of diversion of the Rocky Point Ditch is from the right bank of the Clarks Fork River in SW¼SW¼ of Section 8, T. 9S - R. 22E. Location of land irrigated under the ditch system is in Sections 26, 27, 33, and 34, T. 8S - R. 22E; and Section 3, T. 9S - R. 22E.

Length and Capacity of Canal: Following a course northeasterly from its point of diversion, the Rocky Point Ditch is approximately 6 miles in length and has a carrying capacity of 37.5 cfs.

Operation and Maintenance: No regular assessment is made for operation and maintenance of this ditch system. The water users help with the ditch repairs and share equally in all expenses.

Present Users: A total of 544 shares of 846 issued were subscribed to by six stockholders in the company. One share is the equivalent of approximately 1.7 miner's inches of water.

Acreage Irrigated: There were 503 acres irrigated under this ditch system in 1965.

WATER RIGHT DATA

The water right that applies to the Rocky Point Ditch Company was filed on by A. M. Chase, et al, from the Clarks Fork River in the amount of 1,500 miner's inches with a priority date of November 3, 1903. (Ref: Book 1 of Water Right Location, page 396, Clerk and Recorder's Office, Red Lodge, Montana).

(See Maps in Part II, pages 28 and 31).

SAND CREEK CANAL COMPANY
(Including Fromberg, Lincoln, and Lynne Ditches)

HISTORY

This irrigation project is located about 2 miles south of Bridger, and extends to a point about 6 miles north of Bridger on the west side of the Clarks Fork River.

The irrigation project is served by one main canal but is composed of four ditch companies each having their own separate corporation. These companies are the Sand Creek Canal, Fromberg, Lincoln, and Lynne ditches.

The original Sand Creek Canal was extended to include the Fromberg Ditch and the Lincoln and Lynne Ditches as laterals of the main canal. Stockholders in the Fromberg, Lincoln, and Lynne Ditch companies are required to own an equivalent number of stock shares in the Sand Creek Canal Company.

The Sand Creek Canal Company was first incorporated as the Sand Creek Ditch Company on June 4, 1895. Re-incorporation Articles were filed on July 29, 1919 and on April 15, 1941, the last date for a period of perpetual existence. Capital stock issued amounted to $80,000 divided into 1,000 shares at a par value of $80.00 each.

The Fromberg Ditch was first known as the Sand Creek Extension Ditch Company. On January 24, 1921 the company filed Articles of Incorporation and changed its name to the Fromberg Ditch Company. Capital stock of the corporation is $15,000 divided into 250 shares at a par value of $60.00 each.

The Lincoln Ditch was first incorporated on March 3, 1951 with a capital stock of $9,125 divided into 365 shares valued at $25.00 each. The company's incorporation was for a period of continual existence.

The Lynne Ditch Company, before its incorporation on May 24, 1926, was known as the Gebo lateral of the Sand Creek Canal. Capital stock for the corporation was listed as $3,000 with 300 shares issued at a par value of $10.00 per share.

PRESENT STATISTICS

Location: The Sand Creek Canal has its point of diversion from the left bank of the Clarks Fork River in NE¼SE¼NW¼, Section 8, T. 7S - R. 23E. Lands irrigated under the Sand Creek Canal system, including the Fromberg, Lincoln and Lynne ditches, are located in Sections 29, 30, 31, and 32, T. 5S - R. 23E; Sections 3, 4, 5, 8, 9, 15, 16, 17, 20, 21, 22, 27, 28, 29, and 33, T. 6S - R. 23E; Sections 4 and 5, T. 7S - R. 23E.

Length and Capacities of Canals: The Sand Creek Canal is 7.5 miles long and has a capacity of 225 cfs.; Fromberg Ditch is 5.5 miles long and has a capacity of 62.5 cfs.; Lincoln Ditch is 1.5 miles long and has a capacity of 20 cfs.; and the Lynne Ditch is 1.25 miles long and has a capacity of 15 cfs.

Operation and Maintenance: Charges for operation and maintenance under these irrigation canals are: Sand Creek—in 1965 a total of $1,547.72 on 820.4 shares of stock of $1.88 per share; Fromberg—about 60¢ for each acre irrigated. The Lincoln and Lynne Ditch systems do not assess their stockholders for operation and maintenance charges as the labor and repairs of the ditches are divided among the water users.

Present Users: Water is delivered to 45 stockholders in the Sand Creek Canal, 12 stockholders in the Fromberg Ditch, six stockholders in the Lincoln Ditch, and 42 stockholders in the Lynne Ditch.

Acreage Irrigated: In 1965 there were 2,372.24 acres irrigated under the Sand Creek Canal; 1,305 acres under the Fromberg Ditch; 292 acres under the Lincoln Ditch; and 256 acres irrigated with two acres potential irrigable under the Lynne Ditch. The combined total for all ditch systems is 4,227.24 acres.

WATER RIGHT DATA

Water rights that apply to the ditch systems of this irrigation project are from the Clarks Fork River. These water right filings are as follows: (1) **Sand Creek Canal Company**—an appropriation by the Sand Creek Ditch Company dated 6-6-95 for 5,000 miner's inches. (Ref: Book 2, Water Rights, page 101). An appropriation by James Prewett, et al, dated 11-3-89 for 800 miner's inches. (Ref: Book 1, Water Rights, page 222). An appropriation by Thomas Primo, et al, dated 3-7-95 for 640 miner's inches. (Ref: Book 1, page 31). (2) **Fromberg Ditch Company**—an appropriation by the Sand Creek Extension Ditch Company dated 1-29-06 for 2,500 miner's inches. (Ref: Book 1, page 430). (3) The **Lincoln and Lynne Ditches** do not have a recorded water right filing for their irrigation system. Water is supplied to members of these ditches by owning stock in the Sand Creek Canal Company.

Note: All of the above water right filings may be found in the Clerk and Recorder's Office, Red Lodge, Montana.

(See Maps in Part II, pages 14, 19, and 24).

SHOSHONE PROJECT
(Frannie Division)

HISTORY

The Frannie Canal, one of four divisions of the Shoshone Project, is for the most part located all in the State of Wyoming. This project is one of the oldest Reclamation Projects, having been initiated for construction in 1904.

The Frannie Canal extends into Carbon County, Montana and irrigates a small acreage in the southern part of the county. Water supply is obtained from the Shoshone River and storage is provided by the Buffalo Bill Reservoir, the capacity of which is 439,800 acre feet.

PRESENT STATISTICS

Location: From Wyoming the Frannie Canal enters Montana for a distance of 1.25 miles before returning to Wyoming. Lands irrigated in Carbon County from the small segment of the canal are located in Sections 35 and 36, T. 9S - R. 25E.

Length and Capacity of Canal: No records are available for the capacity and length of the Frannie Canal with almost all of the project located in northwestern Wyoming.

Operation and Maintenance: Charges for operation and maintenance are assessed on each acre of land irrigated and are included in the total water charge. The exact amount of operation and maintenance cost per acre for this project was not defined.

Present Users: There are only two water users receiving a water supply for their irrigated acreage in Carbon County.

Acreage Irrigated: There were only 81 acres irrigated in 1965 by this Wyoming irrigation project in Carbon County, Montana.

WATER RIGHT DATA

Water rights that apply to this project are located in the State Engineer's Office, Cheyenne, Wyoming. This water right is described as an adjudicated appropriation from the Shoshone River, Permit No. 10138, with a priority of January 8, 1910.

(See Maps in Part II, page 32).

WEAST IRRIGATION DITCH, INC.

HISTORY

On June 7, 1902 Jacob P. Weast, Frank Weast, and William Weast formed the Rosebud Irrigation Company and filed a notice of appriation for 10,000 miner's inches of water to be taken from the East Rosebud River. These men went broke in their endeavor with only a part of the ditch system being constructed. Financial aid was received from Mr. Pillsbury of the Pillsbury Flour Company of Minneapolis, Minnesota; however, the ditch lay idle from 1902 to 1919 and was never used for irrigation. Some water was turned into the ditch as they thought this would help hold their water rights. Pillsbury later acquired the rights of the company which were sold to William Larkin, President of the United States National Bank of Red Lodge.

On July 8, 1919 William Larkin, J. R. Hutton, Millard May, R. P. March, Hugh Scilley, Harry Edwards, and John J. Hash incorporated to form the Red-Lodge Rosebud Ditch Company. The company filed on 15,000 miner's inches of water to be taken from the East Rosebud River and used for irrigation purposes. This irrigation project was in the initial stages of construction and operation for a little more than one year before the rights of the ditch system were transferred to the newly formed Red Lodge-Rosebud Irrigation District.

The Red Lodge-Rosebud Irrigation District was created by a decree of the District Court on August 10, 1920. The financial history of the district was not too successful. A total of

$418,000 worth of bonds were sold, none of which were paid. Interest on the bonds became delinquent, and the indebtedness of the district became greater with each year of operation. Based on the original 9,758 acres classified as irrigable in the District, the indebtedness rose to approximately $45.00 an acre. Finally, the greater part of the District lands (7,302 acres) was turned over to the county for tax title. On March 15, 1944 Carbon County offered the land for sale; however, none of the land was sold, and as a result, the county leased the land back to the farmers in the area.

On May 3, 1948 the Weast Irrigation Ditch, Inc. was formed; and on June 23, 1948 the ditches, right-of-way, and water rights of the Red Lodge-Rosebud Irrigation District were transferred to the new corporation.

The amount of capital stock of the corporation is $15,000 divided into 15,000 shares with a par value of $1.00 each.

Under this irrigation project water is carried by the Weast Ditch and spilled into Red Lodge, Butcher, and Volney Creeks where it is diverted into individual ditch systems from these streams.

Another corporation in the Weast system is the Rosebud Water, Inc. which was formed to insure maintenance and delivery of water to members of the Weast Irrigation Ditch located in the lower end of the project. Most of these members are located along Red Lodge Creek.

The Weast Irrigation Ditch, Inc. also sells approximately 300 miner's inches ($300) of water to the Last Chance Ditch Company each year and 190 miner's inches to two water users who are not stockholders in the Weast Ditch.

PRESENT STATISTICS

Location: The Weast Ditch diverts from the right bank of the East Rosebud River in the NW¼NW¼, Section 16, T. 6S - R. 18E. Lands irrigated are located in Townships 5 and 6 South—Ranges 18, 19, and 20 East.

Length and Capacity of Canal: The Weast Ditch System is composed of three ditches: the main ditch which is 5 miles in length; the upper ditch, 4 miles; and the lower ditch, 6 miles. The initial capacity of the main ditch is 250 cfs.

Operation and Maintenance: Assessments for operation and maintenance are $1.00 per acre for water users in the upper ditch and $5.00 per acre for members in the lower ditch system.

Present Users: A total of 8,650 shares of stock (8,100 shares of "A" stock and 550 shares of "B") were subscribed to by 44 stockholders in the corporation. One share of stock is equal to one miner's inch of water. There are 40 members that own shares of "A" stock and 7 members owning shares of "B" stock. Three of these members own combined shares. Whenever a water shortage occurs in the ditch system, the holders of "B" stock are shut off first in their supply of water.

Acreage Irrigated: In 1965 there were 3,954 acres irrigated with 433 acres potentially irrigable under present ditch facilities making a maximum of 4,387 acres.

WATER RIGHT DATA

The water right that is claimed and used by the Weast Irrigation Ditch, Inc. was appropriated by J. P. William, and Frank Weast from the East Rosebud River in the amount of 10,000 miner's inches dated June 7, 1902. (Ref: Book 1 of Water Right Locations, page 359, Clerk and Recorder's Office, Red Lodge, Montana).

(See Maps in Part II, pages 10, 11, 12, 15, 16, and 17).

WEST FORK IRRIGATION COMPANY

HISTORY

This project was first organized as the West Fork Ditch Company on January 13, 1893. On June 1, 1917 the company re-incorporated under the name of the West Fork Irrigation Company for a term of 40 years. Renewal of the corporate articles were filed on May 17, 1957 for another period of 40 years. Capital stock of the company was listed as $15,200 with 1,520 shares issued at a par value of $10.00 per share.

William N. Hunter, Anthony Chaffin, and Prestey C. Hicok, as Trustees for the Company, made the first water right filing. The appropriation was for 2,000 miner's inches of water to be taken by gravity from the West Fork of Rock Creek. A notation in the filing stated that "the water was first appropriated and used as early as October 7, 1890."

PRESENT STATISTICS

Location: Point of diversion of the West Fork Ditch is from the left bank of the West Fork of Rock Creek in SE¼SE¼, Section 6, T. 8S - R. 20E. The project lands are located about 2 miles northwest of Red Lodge in Sections 7, 8, 16, 17, 18, 19, 20, 21, 28, 29, and 32, T. 7S - R. 20E.

Length and Capacity of Canal: From its point of diversion on the left bank of the West Fork of Rock Creek the ditch follows a northwesterly direction for a distance of 8.5 miles. The ditch system was described as having a carrying capacity of 1,520 miner's inches or 38 cfs.

Operation and Maintenance: Water assessments are 20¢ per acre of land irrigated, which is used only for operation and maintenance of the ditch.

Present Users: There were a total of 12 water users under this ditch system in 1965. One miner's inch of water is the equivalent to one share of stock in the company.

Acreage Irrigated: In 1965 there were 1,698 acres irrigated under the West Fork Ditch.

WATER RIGHT DATA

Although an early appropriation stated that the company used the ditch as early as 1890, the Rock Creek Decree of August 21, 1903 gave the following decreed water to the West Fork Irrigation Company: Decreed to the West Fork Ditch Company, 600 miner's inches,

dated 6-25-93; 470 miner's inches dated 6-30-94; and 450 miner's inches, dated 7-15-02. (Ref: Rock Creek Decree Case #275, Clerk of Court's Office, Red Lodge, Montana).

(See Maps in Part II, page 21).

WHITE HORSE CANAL COMPANY

HISTORY

This project is located on bench land between the Clarks Fork and Yellowstone Rivers about 5 miles south of Laurel.

What is now known as the White Horse Canal Company was first organized as the White Horse Ditch Company on February 18, 1907. The original ditch system was constructed by a group of farmers who went broke in their endeavor. Water was first taken from Rock Creek, but because of a water shortage in that stream, the company changed its headgate to the Clarks Fork River and diverted water from it.

On July 10, 1931 the White Horse Canal Company was organized and took over all the water rights, property, and interest of the White Horse Ditch Company. Capitalization of the company was $100,000 divided into 1,000 shares of a par value of $100.00 each. The incorporation was for 40 years.

PRESENT STATISTICS

Location: The White Horse Canal diverts from the left bank of the Clarks Fork River in the SE¼SW¼, Section 1, T. 4S - R. 23E. Lands irrigated under the ditch system are located in Sections 29, 30, 31, and 32, T. 2S - R. 24E; Section 1, T. 3S - R. 23E; and Section 6, T. 3S - R. 24E.

Length and Capacity of Canal: The White Horse Canal is approximately 11 miles in length and has a capacity to carry 2,500 miner's inches of water or 62.5 cfs.

Operation and Maintenance: Water charges including operation and maintenance under this canal system are $2.00 per acre.

Present Users: There were four water users under the canal system in 1965. All of the 1,000 shares of stock issued by the company are subscribed to by the stockholders. Each share of stock in the company represents 2.5 miner's inches of water.

Acreage Irrigated: In 1965 there were 1,130 acres irrigated and 114 acres potentially irrigable under this canal system.

WATER RIGHT DATA

The water right for the White Horse Canal Company was made by the White Horse Ditch Company and is as follows: An appropriation from the Clarks Fork River dated June 9, 1906 for 2,500 miner's inches. (Ref: Book 1, Water Rights, page 434, Clerk and Recorder's Office, Red Lodge, Montana).

(See Maps in Part II, pages 1, 3, and 4).

WILLS CANAL COMPANY

HISTORY

The land under the Wills Canal Company is located about 7 miles south of Belfry on the east side of the Clarks Fork River.

On November 8, 1900 Irvin H. Will, Roscoe Daugherty, John F. Allen, Charles B. Moore, Arthur Barnes, P. W. Livingston, Dave Lindsey, W. P. Lowe, G. P. Miles, and S. D. Wilkinson associated together and formed the Wills Canal Company. It was incorporated for $3,000 with 120 shares issued at a par value of $25.00 each. Re-incorporation Articles were filed on December 28, 1911 to increase the capital stock to $25,000 divided into 25,000 shares at a par value of $1.00 per share. The last renewal of the corporation's articles was on October 27, 1944 for a period of 40 years.

PRESENT STATISTICS

Location: The point of diversion of the Wills Canal is from the left bank of the Clarks Fork River in the NE¼NE¼ of Section 31, T. 9S - R. 22E. Land under irrigation from this canal system is located in Sections 8, 9, 17, 18, 19, 20, 29, and 32, T. 9S - R. 22E

Length and Capacity of Canal: From its headgate the main canal follows a northerly direction for about 5 miles. One mile from the headgate the canal syphons under the Clarks River in the NE¼SW¼ of Section 29, T. 9S - R. 22E to irrigate land on the east side of the River. The initial capacity of the canal will carry in excess of 2,000 miner's inches or 50 cfs.

Operation and Maintenance: The cost for operation and maintenance of the canal will everage $1.00 per irrigated acre.

Present Users: There were nine stockholders in the Wills Canal Company in 1965. All of the stock shares issued (25,000) were subscribed to by the members of the company. The water equivalent of each share is approximately .08 miner's inch.

Acreage Irrigated: In 1965 there was a total of 1,010 acres irrigated from the Wills Canal. No potential irrigation was found by the survey under the present existing canal facilities.

WATER RIGHT DATA

According to J. R. Daugherty, Secretary for the Wills Canal Company, Irvin H. Will in the year 1891 appropriated 2,000 miner's inches of water from the Clarks Fork River. We were unable to find in our survey any record of this filing in the Water Right Records of Carbon County in Red Lodge. In 1899 the Carbon County Court House was destroyed by fire, and there is a possibility that this record may have been destroyed.

(See Maps in Part II, page 31).

YOUST DITCH COMPANY

HISTORY

The Youst Ditch Company irrigation project is located immediately east of Belfry on the west side of the Clarks Fork River.

Robert Ray and Gilford E. Youst were the first water users of the Youst Ditch. These men filed an appropriation for 1,000 miner's inches of water to be taken by a gravity ditch diversion from the Clarks Fork River. The system was described as a ditch 60 inches wide on the bottom, 75 to 150 inches across the top, and 16 inches deep.

On December 10, 1912 the Youst Ditch filed Articles of Incorporation for $20,000 divided into 1,000 shares of a par value of $20.00 each. The corporate existence of this company has expired (40-year period) by limitation of its charter and operation of law.

PRESENT STATISTICS

Location: Point of diversion of the Youst Ditch is from the left bank of the Clarks Fork River in NE¼SE¼ of Section 22, T. 8S - R. 22E. Land irrigated by the ditch system is located in Sections 10, 11, 14, and 23, T. 8S - R. 22E.

Length and Capacity of Canal: Following a northerly direction from its headgate, the Youst Ditch extends for a distance of 3 miles. Its carrying capacity is 1,000 miner's inches or 25 cfs.

Operation and Maintenance: Charges for operation and maintenance under this ditch company have been 25¢ per acre of irrigated land.

Present Users: There were nine stockholders in this ditch company in 1965. One share of stock in the company is equivalent to one miner's inch of water. All of the stock shares issued have been subscribed to by the water users in the ditch company.

Acreage Irrigated: In 1965 there were 606 acres irrigated by the Youst Ditch.

WATER RIGHT DATA

The water right that applies to the Youst Ditch Company is as follows: An appropriation by Robert Ray and Gilford E. Youst from the Clarks Fork River in the amount of 1,000 miner's inches dated February 3, 1894. (Ref: Book 1 of Water Rights, page 561, Clerk and Recorder's Office, Red Lodge, Montana).

(See Maps in Part II, page 28).

WATER RIGHT DATA -- CARBON COUNTY

APPROPRIATIONS AND DECREES BY STREAMS

APPROPRIATIONS

(Filings of Records)

STREAM	No. of Filings	Miner's Inches	Cu. Ft. Per Sec.	Case No.	No. of Decrees	Miner's Inches	Cu. Ft. Per Sec.
MISSOURI RIVER BASIN							
Missouri River	0	0	0				
Yellowstone River	2	3,400.00	85.00				
Stillwater River	0	0	0				
Rosebud River	0	0	0				
West Rosebud River	3	32,300.00	807.50				
Black Canyon	1	480.00	12.00				
Ingersoll Creek	2	310.00	7.75				
Spring	1	10.00	.25				
East Rosebud Creek	28	194,900.00	4,872.50				
East Rosebud Lake	0	0	0				
Saunders Creek	1	30.00	.75				
Spread Creek	3	65.00	1.63				
Hell Roaring Creek	2	1,480.00	37.00				
Moss Creek (Jones Cr.)	3	1,064.00	26.60				
Armstrong Spring	1	50.00	1.25				
Spring Creek	1	150.00	3.75				
Springs	1	All	—				
Morris Creek	5	1,460.00	36.50				
Skelton Creek	1	50.00	1.25				
Antelope Creek	4	850.00	21.25				
Chimney Creek	2	1,100.00	27.50				
Waste water	2	50.00	1.25				
Butcher Creek	2	194.00	4.85				
West Fork Butcher Cr.	4	520.00	13.00				
Springs	1	130.00	3.25				
East Fork Butcher Cr.	2	275.00	6.88				
Dry Butcher Creek	2	200.00	5.00				
Springs	1	100.00	2.50				
Seepage & waste	1	100.00	2.50				
Waste water	1	400.00	10.00				
Beaver Creek	0	0	0				
Spring	1	10.00	.25				
Total Stillwater River & Tributaries	**76**	**236,278.00**	**5,906.95**				
Cow Creek	4	410.00	10.25				
Rye Grass Creek	2	360.00	9.00				
Northwest Fork Rye Grass Creek	1	60.00	1.50				
Cole Creek	9	2,700.00	67.50				
Springs	1	25.00	.63				
Poison Springs	1	160.00	4.00				
Unnamed Gulch & Springs	1	100.00	2.50				
Bellion Creek	1	All	—				
Unnamed Gulch	0	0	0				
Spring	1	50.00	1.25				
Artesian Well	1	100.00	2.50				
Spring	1	20.00	.50				
Waste water	1	100.00	2.50				
Clarks Fork River	59	1,256,985.00	31,424.63				
Line Creek	1	2,000.00	50.00				
North Prong Line Creek	8	1,840.00	46.00				
Robison Draw	1	All	—				
Orr Springs	2	22.00	.55				
Unnamed Draw	0	0	0				
Springs	3	200.00	5.00				

*Names of streams indented on the left-hand margin indicate that they are tributaries of the first stream named above which is not indented.

WATER RIGHT DATA -- CARBON COUNTY

APPROPRIATIONS AND DECREES BY STREAMS

APPROPRIATIONS

(Filings of Records)

STREAM	No. of Filings	Miner's Inches	Cu. Ft. Per Sec.	Case No.	No. of Decrees	Miner's Inches	Cu. Ft. Per Sec.
Mill Draw	0	0	0				
Spring Gulch	1	All	—				
Springs	1	All	—				
Unnamed Coulee	0	0	0				
Springs	1	All	—				
Ruby Creek	7	2,160.00	54.00				
Spring	1	All	—				
Spring	1	25.00	.63				
Spring Creek	1	50.00	1.25				
Bull Springs	2	300.00	7.50				
Waste water	2	200.00	5.00				
Grove Creek	18	5,905.00	147.63				
North Fork Grove Creek	4	1,220.00	30.50				
Gold Creek	4	1,010.00	25.25				
North Fork Gold Creek	1	300.00	7.50				
Spring	1	200.00	5.00				
Willow Grove Creek	1	175.00	4.38				
Grove Springs	2	575.00	14.38				
Unnamed Draw	0	0	0				
V. O. Reservoir	1	7.7 A.F.	0				
Waste water	2	270.00	6.75				
Waste water	1	120.00	3.00				
Wolf Creek	2	All	—				
Waste water	1	100.00	2.50				
Waste water	1	50.00	1.25				
Bear Creek	10	3,066.00	76.65	4730	5	410.00	10.25
North Fork Bear Creek	2	300.00	7.50				
South Fork Bear Creek	3	400.00	10.00				
Knecking Creek	5	250.00	6.25	4543	2	20.00	.50
Spring	3	20.00	.50				
Unnamed Gulch	0	0	0				
Springs	8	11.00	.28				
Waste of Washoe #2 Mine	1	100.00	2.50				
Spring	1	All	0				
Waste of Mont. C & I Mine	2	25.00	.63				
Foster Gulch	1	All	—				
Unnamed Gulch	0	0	0				
Spring	1	All	—				
Waste Water	1	200.00	5.00				
Spring	1	40.00	1.00				
Waste water	1	400.00	10.00				
Well	1	200.00	5.00				
Silver Tip Creek	2	5.20	.13				
Upper Spring	1	50.00	1.25				
Candee Creek	1	All	—				
Candee Spring	2	30.00	.75				
Waste water	1	1.38 A.F.	—				
Mud Springs	1	15.00	.38				
Gobler Draw Well	1	1.30	.04				
Williams Draw	0	0	0				
Double H. Reservoir	1	5 A.F.	—				
Williams Basin Well	1	1.18	.03				
Long Draw	0	0	0				
Higham Well	1	1.30	.03				
Cub Creek	1	10.00	.25				
Silver Tip Well	1	.32	.01				
Hunt Creek	1	All	—				
Reverse PL Well	1	1.30	.03				
Metcalf Well	1	1.30	.03				
Waste water	1	All	—				
Dry Creek	5	1,060.00	26.50				
North Fork Dry Creek	7	960.00	24.00				

WATER RIGHT DATA -- CARBON COUNTY

APPROPRIATIONS AND DECREES BY STREAMS

APPROPRIATIONS

(Filings of Records)

STREAM	No. of Filings	Miner's Inches	Cu. Ft. Per Sec.	Case No.	No. of Decrees	Miner's Inches	Cu. Ft. Per Sec.
So. Fk. No. Fk. Dry Creek (Rosetta Prong)	2	360.00	9.00				
Spring	2	All	—				
South Fork Dry Creek	0	0	0				
No. Fk. So. Fk. Dry Cr.	1	300.00	7.50				
Waste water	1	250.00	6.25				
Waste water	1	30.00	.75				
Waste water	1	200.00	5.00				
Waste water	1	300.00	7.50				
Cottonwood Creek	1	300.00	7.50				
Big Reservoir	1	25 A.F.	—				
Reverse F F Bar Well	1	1.30	.03				
West Fork Cottonwood Cr.	0	0	0				
Spring	1	All	—				
Unnamed Draw	0	0	0				
Miners Pit Reservoir	1	2.2 A.F.	—				
North 28 Pit Reservoir	1	1.2 A.F.	—				
Iron Post Reservoir	1	.9 A.F.	—				
Burp Well	1	1.20	.03				
Waste water	1	100.00	2.50				
Bridger Creek	7	1,550.00	38.75				
Spring Branch	1	50.00	1.25				
No. Fk. Bridger Creek	3	260.00	6.50				
Cherry Creek	1	50.00	1.25				
South Fork Bridger Creek	0	0	0				
Unnamed Draw	0	0	0				
Bridger Oil Co. Well	4	990.00	24.75	6214	2	420.00	10.50
Unnamed Draw	0	0	0				
Springs	1	100.00	2.50				
Waste water	1	100.00	2.50				
Jack Creek	0	0	0				
Waste water	1	All	—				
Brown Creek	1	160.00	4.00				
Moat Pit Reservoir	1	2.6 A.F.	—				
Rushwater Creek	1	500.00	12.50				
Waste water	1	All	—				
Ravine	1	300.00	7.50				
Spring Creek	1	200.00	5.00				
Waste water	1	25.00	.63				
Waste water	2	350.00	8.75				
Waste water	1	100.00	2.50				
Waste water	1	200.00	5.00				
Waste water	1	40.00	1.00				
Sand Creek	3	89,920.00	2,248.00				
Spring	1	25.00	.63				
Timber Ridge Gulch	1	320.00	8.00				
Dry Gulch (Hallowell Cr.)	2	6,300.00	157.50				
Springs	2	8,000.00	200.00				
Unnamed Coulee	0	0	0				
Spring	1	200.00	5.00				
Heffner Coulee	1	4,000.00	100.00				
No. Fk. Sand Creek (Cedar Brook)	3	280.00	7.00				
Sand Creek Springs	1	40.00	1.00				
Bennington Gulch	1	80.00	2.00				
Spring	1	100.00	2.50				
Hines Gulch (Skunk Creek)	2	210.00	5.25				
Waste water	1	60.00	1.50				
Waste water	2	135.00	3.38				
Bluewater Creek	33	13,690.00	342.25	357	22	2,466.00	61.65
Spring	1	25.00	.63				
Unnamed Coulee	0	0	0				
Spring	2	115.00	2.88				
Spring	1	15.00	.38				

WATER RIGHT DATA -- CARBON COUNTY

APPROPRIATIONS AND DECREES BY STREAMS

APPROPRIATIONS

(Filings of Records)

STREAM	No. of Filings	Miner's Inches	Cu. Ft. Per Sec.	Case No.	No. of Decrees	Miner's Inches	Cu. Ft. Per Sec.
Rukavina Well	2	450.00	11.25				
Seepage	1	All	—				
Bluewater Spring	1	140.00	8.50		(See #357)		
So. Fk. Bluewater Creek	0	0	0				
Spring	1	—	—				
Gulch	2	160.00	4.00				
Spring	1	50.00	1.25				
Bachelder Spring	2	200.00	5.00				
Hasbrook Gulch (O'Conner Coulee)	2	150.00	3.75				
Waste water	1	All	—				
Kelly Gulch	0	0	0				
Springs	1	All	—				
Cowan Sloughs	2	70.00	1.75				
Slough	1	150.00	3.75				
Unnamed Coulee	2	280.00	7.00				
Unnamed Coulee	1	200.00	5.00				
Elbow Creek	29	5,133.00	128.36	323	1	150.00	3.75
				2494	3	240.00	6.00
Waste water	1	150.00	3.75				
Waste water	1	100.00	2.50				
Waste water	1	All	—				
Parker Creek	1	All	—				
Cherry Springs Creek	1	160.00	4.00				
Cherry Springs	1	100.00	2.50				
Springs	1	40.00	1.00				
Springs	3	210.00	5.25				
Waste water	1	100.00	2.25				
Waste water	1	150.00	3.75				
Coulee	1	120.00	3.00				
Waste water	1	150.00	3.75				
Waste water	1	100.00	2.50				
Waste water	1	All	—				
Waste water	1	100.00	2.50				
Two Bear Creek	3	470.00	11.75				
Spring	1	20.00	.50				
Coulee	1	50.00	1.25				
Waste water	5	400.00	10.00				
Five Mile Creek	5	3,020.00	75.50				
Waste water	1	All	—				
Unnamed Coulee	0	0	0				
Springs	1	40.00	1.00				
North or East Fork Five Mile Creek	1	200.00	5.00				
Springs	1	320.00	8.00				
Unnamed Gulch	1	5,000.00	125.00				
Unnamed Gulch	1	5,000.00	125.00				
Springs	1	20.00	.50				
Crystal Spring	1	3,000.00	75.00				
Unnamed Gulch	0	0	0				
Spring	1	200.00	5.00				
Slough	1	90.00	2.25				
Slough	3	500.00	12.50				
Waste water	1	200.00	5.00				
Spring	1	70.00	1.75				
Rock Creek	135	186,199.00	4,654.98	275	220	52,047.00	1,301.18
Lake Creek	2	All	—				
Black Canyon Creek	0	0	0				
Black Canyon Lake	1	20,000.00 A.F.	—				
Lost Lake	1	4,800.00 A.F.	—				
Corral Creek	1	80.00	2.00				
Seeley Creek	3	1,500.00	37.50				
Cyclone Creek	1	100.00	2.50				
Haywood Creek	1	100.00	2.50				

WATER RIGHT DATA -- CARBON COUNTY

APPROPRIATIONS AND DECREES BY STREAMS

APPROPRIATIONS

(Filings of Records)

STREAM	No. of Filings	Miner's Inches	Cu. Ft. Per Sec.	Case No.	No. of Decrees	Miner's Inches	Cu. Ft. Per Sec.
Maurice Creek	2	500.00	12.50				
Hoor (Howell) Creek	3	900.00	22.50				
Waste water	1	All	—				
Spring Gulch Creek	3	165.00	4.13				
West Fork Rock Creek	23	27,112.00	677.80		(See #275)		
Basin Creek	1	—	—				
Upper Basin Lake	1	800.00	20.00				
Silver Run Creek	2	300.00	7.50				
Nichols Creek	5	740.00	18.50				
Spring Creek	1	500.00	12.50				
Spring	1	200.00	5.00				
Waste water	1	100.00	2.50				
Patterson Gulch	2	300.00	7.50				
Waste & Seepage	1	10.00	.25				
Spring	1	100.00	2.50				
Close Creek	2	300.00	7.50				
Weber & Donovan Springs	1	100.00	2.50				
Springs	1	10.00	.25				
Edick Spring	2	40.00	1.00				
Waste water	2	All	—				
Old Mill Dam	1	50.00	1.25				
Seepage	1	All	—				
Springs	15	541.00	13.53				
Mine waste East & West Side Mines	1	160.00	4.00				
Waste water	4	300.00	7.50				
Spring	1	30.00	.75				
Armstrong Spring	1	2.00	.05				
Hall Spring	1	25.00	.63				
Spring	2	All	—				
Kagy Spring	1	50.00	1.25				
Spring	1	All	—				
Waste water— Red Lodge Sewer	1	All	—				
Springs of Brewery Hill Coulee	4	110.00	2.75	64	2	10.00	.25
Springs	1	100.00	2.50				
Spring	1	25.00	.63				
Spring Creek	1	10.00	.25				
Kent Springs	3	350.00	8.75				
Springs	1	150.00	3.75				
Springs	1	75.00	1.88				
Allen Creek	3	700.00	17.50				
Waste water	1	200.00	5.00				
Waste water	1	150.00	3.75				
Waste water	1	All	—				
Spring	1	100.00	2.50				
Spring	1	100.00	2.50				
Sonnybrook	0	0	0				
Springs	1	275.00	6.88				
Well	1	50.00	1.25				
Spring	4	400.00	10.00				
Waste water	1	160.00	4.00				
Waste water	1	100.00	2.50				
Springs	1	100.00	2.50				
Springs	1	20.00	.50				
Spring	1	50.00	1.25				
Waste water	1	100.00	2.50				
Waste water	1	100.00	2.50				
Springs	3	80.00	2.00				
Spring	2	20.00	.50				
Spring	1	60.00	1.50				
Ruiter Springs	3	345.00	8.63				
Waste water	1	100.00	2.50				

WATER RIGHT DATA -- CARBON COUNTY

APPROPRIATIONS AND DECREES BY STREAMS

APPROPRIATIONS

(Filings of Records)

STREAM	No. of Filings	Miner's Inches	Cu. Ft. Per Sec.	Case No.	No. of Decrees	Miner's Inches	Cu. Ft. Per Sec.
Springs	1	50.00	1.25				
Waste water	1	—	—				
Donalson Spring	1	100.00	2.50				
Springs & Slough	1	160.00	4.00				
Seepage	2	All	—				
Well	1	150.00	3.75				
Meadow Lark Springs	1	All	—				
Blackbird Springs	2	460.00	11.50	5531	2	190.00	4.75
Waste water	2	100.00	2.50				
Tuck Gulch	1	100.00	2.50				
Magpie Springs	1	100.00	2.50				
Alkali (Clear) Creek	23	7,790.00	194.75	646	22	2,673.00	66.83
Spring	1	20.00	.50				
Knowlton Creek	3	700.00	17.50				
Rosetta Creek	1	All	—				
Waste water	1	50.00	1.25				
Tommy Creek	1	160.00	4.00				
Springs	1	All	—				
Waste water	1	150.00	3.75				
Waste water	1	100.00	2.50				
Waste water	1	All	—				
Alkali Spring	1	25.00	.63				
Waste water	1	150.00	3.75				
Spring	1	All	—				
Spring	1	25.00	.63				
Waste water	1	100.00	2.50				
Spring	1	80.00	2.00				
Waste water	1	300.00	7.50				
Springs & Sloughs	2	200.00	5.00				
Springs	1	50.00	1.25				
Dry Creek (Willow)	14	2,830.00	70.75	2330	1	280.00	7.00
				126	1	160.00	4.00
Feeley Creek	1	200.00	5.00				
Springs	1	75.00	1.88				
Waste water	1	All	—				
Waste water	1	All	—				
Spring	1	75.00	1.88				
Waste water	1	50.00	1.25				
Waste water	1	280.00	7.00				
Waste water	1	100.00	2.50				
Waste water	1	100.00	2.50				
Waste water	1	150.00	3.75				
Waste water	1	150.00	3.75				
Spring Creek	1	100.00	2.50				
Waste water	1	250.00	6.25				
Waste water	1	160.00	4.00				
Springs—waste—seepage	1	150.00	3.75				
Springs	2	160.00	4.00				
Stanley Creek	7	770.00	19.25				
Spring	1	100.00	2.50				
Waste water	1	80.00	2.00				
East Fork Stanley Creek	1	50.00	1.25				
Chappel Spring	1	5.00	.13				
Trail Creek	1	100.00	2.50				
Springs	1	80.00	2.00				
Springs	1	—	—				
Red Lodge Creek	38	17,199.00	429.98	247	57	6,583.00	164.58
West Red Lodge Creek	20	8,050.00	201.25		(See #247)		
East Fork West Red Lodge Creek	5	1,600.00	40.00		(See #247)		
Springs	1	50.00	1.25				
Burnt Fork Creek	1	200.00	5.00				
Moore Spring	1	50.00	1.25				
Waste water	1	150.00	3.75				

WATER RIGHT DATA -- CARBON COUNTY

APPROPRIATIONS AND DECREES BY STREAMS

APPROPRIATIONS

(Filings of Records)

STREAM	No. of Filings	Miner's Inches	Cu. Ft. Per Sec.	Case No.	No. of Decrees	Miner's Inches	Cu. Ft. Per Sec.
Davis & Neavit Spring	1	100.00	2.50		(See #247)		
Barlow Creek	5	760.00	19.00		(See #247)		
Russell Lakes	1	160.00	4.00				
Spring	1	50.00	1.25				
Spring (Lake Grove) Creek	1	100.00	2.50		(See #247)		
Hogan Creek	7	1,440.00	36.00		(See #247)		
East Fk. Hogan Cr.	2	235.00	5.88				
Underwood Creek	2	560.00	14.00				
East Red Lodge Creek	19	7,410.00	185.25		(See #247)		
Cole Creek	2	350.00	8.75	248	6	720.00	18.00
Mountain Spring	1	200.00	5.00				
Waste water	1	All	—				
Powers Creek	3	400.00	10.00				
Matt Gillens Spring	1	25.00	.63				
Waste water	1	160.00	4.00				
Waste water	2	75.00	1.88				
Lake & Springs	1	40.00	1.00				
Harney Creek	3	450.00	11.25	1055	4	620.00	15.50
Barry (Dead Horse) Creek	3	570.00	14.25				
Thiel Creek	10	2,860.00	71.50	2479	9	1,690.00	42.25
East Fk. Thiel Creek	1	200.00	5.00		(See #2479)		
Volney Creek	5	750.00	18.75				
Unnamed Stream	1	150.00	3.75				
West Fk. Volney Creek	0	0	0				
Spring Creek	2	160.00	4.00				
Unnamed Coulee	1	320.00	8.00				
Butte Creek	1	150.00	3.75				
Willow Creek	13	4,020.00	100.50	2484	24	3,011.00	75.28
Spring	2	All	—				
Waste water	1	All	—				
Waste water	1	300.00	7.50				
Unnamed stream	1	50.00	1.25				
West Fork Willow Creek (Fee)	1	600.00	15.00		(See #2484)		
Springs	1	40.00	1.00				
Springs	1	50.00	1.25				
Chaffin Creek	1	500.00	12.50				
Bull Creek	3	590.00	14.75				
Waste water	1	100.00	2.50				
Waste water	1	50.00	1.25				
Spring Creek	7	3,660.00	91.50				
Waste water	3	80.00	2.00				
Pryde Gulch	1	200.00	5.00				
Waste water	1	100.00	2.50				
Waste water	1	All	—				
Waste water	1	400.00	10.00				
Slough	1	30.00	.75				
Waste water	1	50.00	1.25				
Cottonwood Creek	9	1,210.00	30.25				
Waste water	1	160.00	4.00				
Waste water	1	All	—				
Unnamed Coulee	0	0	0				
Spring	1	All	—				
Spring	1	All	—				
Waste water	1	All	—				
Unnamed Gulch	0	0	0				
Spring	1	10.00	.25				
Grove Creek	4	700.00	17.50				
Spring	1	All	—				
Unnamed Stream	1	100.00	2.50				
Spring	1	All	—				

WATER RIGHT DATA -- CARBON COUNTY

APPROPRIATIONS AND DECREES BY STREAMS

APPROPRIATIONS

(Filings of Records)

STREAM	No. of Filings	Miner's Inches	Cu. Ft. Per Sec.	Case No.	No. of Decrees	Miner's Inches	Cu. Ft. Per Sec.
Total Red Lodge Creek and Tributaries	**219**	**57,974.00**	**1,449.35**				
Waste water	1	100.00	2.50				
Lone Tree Creek	1	150.00	3.75				
Cow Creek	9	1,380.00	34.50				
Spring	1	160.00	4.00				
Betz Spring	1	100.00	2.50				
Spring	2	20.00	.50				
Spring Coulee	2	All	—				
Waste water	1	35.00	.88				
Swamp water	1	100.00	2.50				
Springs	1	35.00	.88				
Springs	1	50.00	1.25				
Squaw Creek	2	100.00	2.50				
Skanks Draw	0	0	0				
Spring	1	150.00	3.75				
Waste water	1	100.00	2.50				
Spring	2	110.00	2.75				
Spring	1	60.00	1.50				
Waste water	3	300.00	7.50				
Waste water	1	100.00	2.50				
Waste water	1	15.00	.38				
Spring	1	24.00	.60				
Stamm Spring	1	50.00	1.25				
Slough	1	80.00	2.00				
Unnamed Gulch	1	25,000.00	625.00				
Waste water	1	100.00	2.50				
Waste water	2	600.00	15.00				
Waste of Montaqua Well	1	15.00	.38				
Waste water	1	100.00	2.50				
Spring Creek	1	50.00	1.25				
Spring	1	50.00	1.25				
Waste water	1	All	—				
Well	1	1,000 gpm	—				
Waste water	1	100.00	2.50				
Waste water	2	130.00	3.25				
Waste water	1	250.00	6.25				
Pond	2	150.00	3.75				
Waste water	1	200.00	5.00				
Slough	1	200.00	5.00				
Spring	1	100.00	2.50				
Slough	1	100.00	2.50				
Springs	1	All	—				
Springs	1	200.00	5.00				
Total Rock Creek and Tributaries	**651**	**331,017.00**	**8,275.43**				
Spring	1	All	—				
Waste water	1	100.00	2.50				
Waste water	1	200.00	5.00				
Cottonwood Creek	10	1,400.00	35.00				
Spring	1	All	—				
Unnamed Draw	0	0	0				
Spring	1	All	—				
Spring	1	100.00	2.50				
Waste water	1	All	—				
Lehrkind (Smith) Spring	2	All	—	275	—	—	—
Farewell Creek	2	170.00	4.25				
Artesian well	1	5.00	.13				
Unnamed Coulee	0	0	0				
Waste water	1	80.00	2.00				
Davis Slough	1	All	—				
Spring	1	50.00	1.25				
Total Clarks Fork River and Tributaries	**2,101**	**1,771,373.39**	**44,284.33**				

WATER RIGHT DATA -- CARBON COUNTY

APPROPRIATIONS AND DECREES BY STREAMS

APPROPRIATIONS

(Filings of Records)

STREAM	No. of Filings	Miner's Inches	Cu. Ft. Per Sec.	Case No.	No. of Decrees	Miner's Inches	Cu. Ft. Per Sec.
Big Horn River	1	6,000.00	150.00				
Shoshone River	0	0	0				
Sage Creek	24	16,428.00	410.70	176	7	665.00	16.63
				4701	2	130.00	3.25
Base Creek	0	0	0				
Spring	1	150.00	3.75				
Ranger Creek	1	20.00	.50				
Unnamed Creek	0	0	0				
Elk Spring	1	.10	.02				
Lost Creek	1	640.00	16.00				
Waste water	1	All	—				
Waste water	1	All	—				
Reservoir Creek	1	120.00	3.00				
Hiccup Well	1	1.20	.03				
Lost Water Canyon	1	200.00	5.00				
Timber Canyon	0	0	0				
Bent & L H 7 Sp'gs	1	100.00	2.50				
Sp'g Coulee (Coyote Cr.)	3	350.00	8.75				
Ingram Spring	1	.48	.01				
Coyote Spring	1	All	—				
Sheep Spring	1	.20	.05				
King Canyon	0	0	0				
Bainbridge Spring	3	100.58	2.51				
Duffield Saw Mill Sp'g	2	120.00	3.00				
Homestead Spring	1	25.00	.63				
Piney Creek	15	2,330.00	58.25	564	4	580.00	14.50
Bainbridge Spring	3	All	—				
Unnamed Draw	0	0	0				
Waste water (Burlington Res.)	4	All	—				
Cottonwood Creek	3	620.00	15.50				
Bear Canyon	6	1,780.00	44.50				
Bear Spring	1	All	—				
Unnamed Gulch	0	0	—				
Bear Canyon Well	1	1.60	.04				
Unnamed Gulch	0	0	0				
Wheel Scraper Well	1	.89	.02				
Big Springs	1	.48	.01				
Pervis Springs	1	500.00	12.50				
Crooked Creek	11	1,570.00	39.25	4622	5	460.00	11.50
Gypsum Creek	0	0	0				
CEE-RUS-ELL Pit Res.	1	6.00 A.F.	—				
EE-SHOK-EE Res.	1	7.40 A.F.	—				
Layout (Ewing) (Hough) Cr.	3	650.00	16.25				
Mystery Cave	1	All	—				
Trail Creek	2	550.00	13.75				
Spring	1	500.00	12.50				
North Trail Creek	1	160.00	4.00				
Springs	1	500.00	12.50				
Camp Creek	6	465.00	11.63				
Spring	1	1.00	.03				
Sheep Spring	1	All	—				
Unnamed Coulee	0	0	0				
Spring	1	500.00	12.50				
Deadman Creek	5	380.00	9.50	657	2	All	—
Dry Head Creek	0	0	0				
No. Prong Dry Head Cr.	2	250.00	6.25				
So. Prong Dry Head Cr.	3	760.00	19.00				
Spring Creek	1	20.00	.50				
Total Big Horn River and Tributaries	**125**	**35,794.51**	**895.86**				
Grand Total Carbon County	**1,302**	**2,050,930.90**	**51,273.27**	**—**	**403**	**73,550.00**	**1,838.75**

DRAINAGES IN CARBON COUNTY NOT LOCATED

STREAM	No. of Filings	Miner's Inches	Cu. Ft. Per Sec.
Baby Creek	1	100.00	2.50
Duncan Creek	1	40.00	1.00
Hill Creek	1	50.00	1.25
Hungery Creek	1	500.00	12.50
Ingalls Creek	1	All	—
Petes Canyon	1	50.00	1.25
Plumb Creek	1	40.00	1.00
Sheep Creek	1	500.00	12.50
Shultz Creek	2	450.00	11.25
Stoltz & Ballinger Creek	1	100.00	2.50
Willow Creek Tributary to Wall Creek	1	100.00	2.50
Spring Creek	1	—	—
Unnamed Creek	1	—	—
Lake Outlet	2	3,000.00	75.00
Stony & Butte Springs	1	100.00	2.50
Spring	2	25.00	.62
Total	**19**	**5,055.00**	**126.37**

WATER RESOURCES SURVEY

Carbon County, Montana

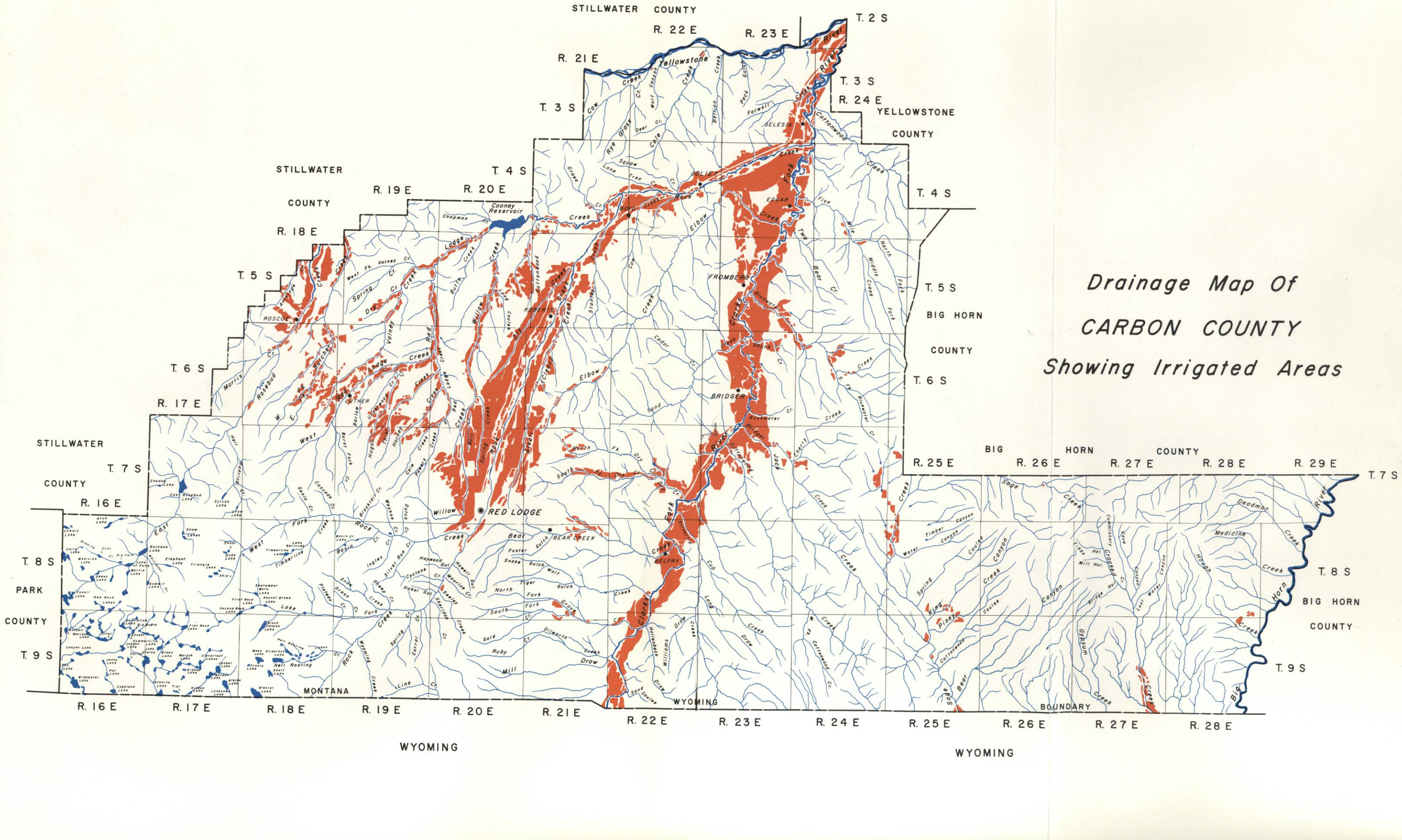
Part II

Maps Showing Irrigated Areas

Published by
STATE WATER CONSERVATION BOARD

Helena, Montana
June, 1966

Drainage Map Of CARBON COUNTY Showing Irrigated Areas



MAP SYMBOL INDEX

BOUNDARIES

- COUNTY LINE
- NATIONAL FOREST LINE

DITCHES

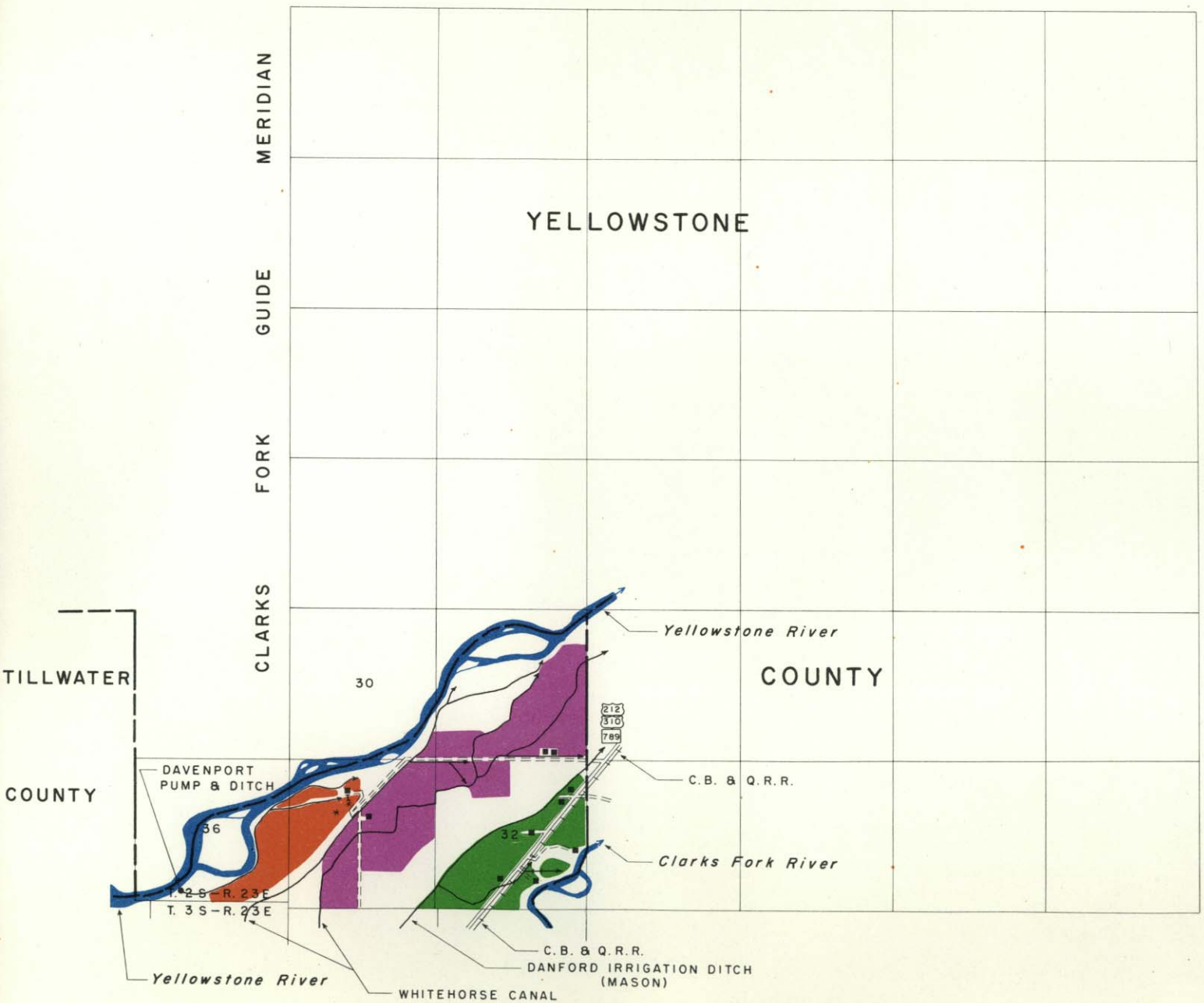
- CANALS OR DITCHES
- DRAIN DITCHES
- PROPOSED DITCHES

TRANSPORTATION

- PAVED ROADS
- UNPAVED ROADS
- RAILROADS
- STATE HIGHWAY
- U.S. HIGHWAY
- AIRPORT

STRUCTURES & UNITS

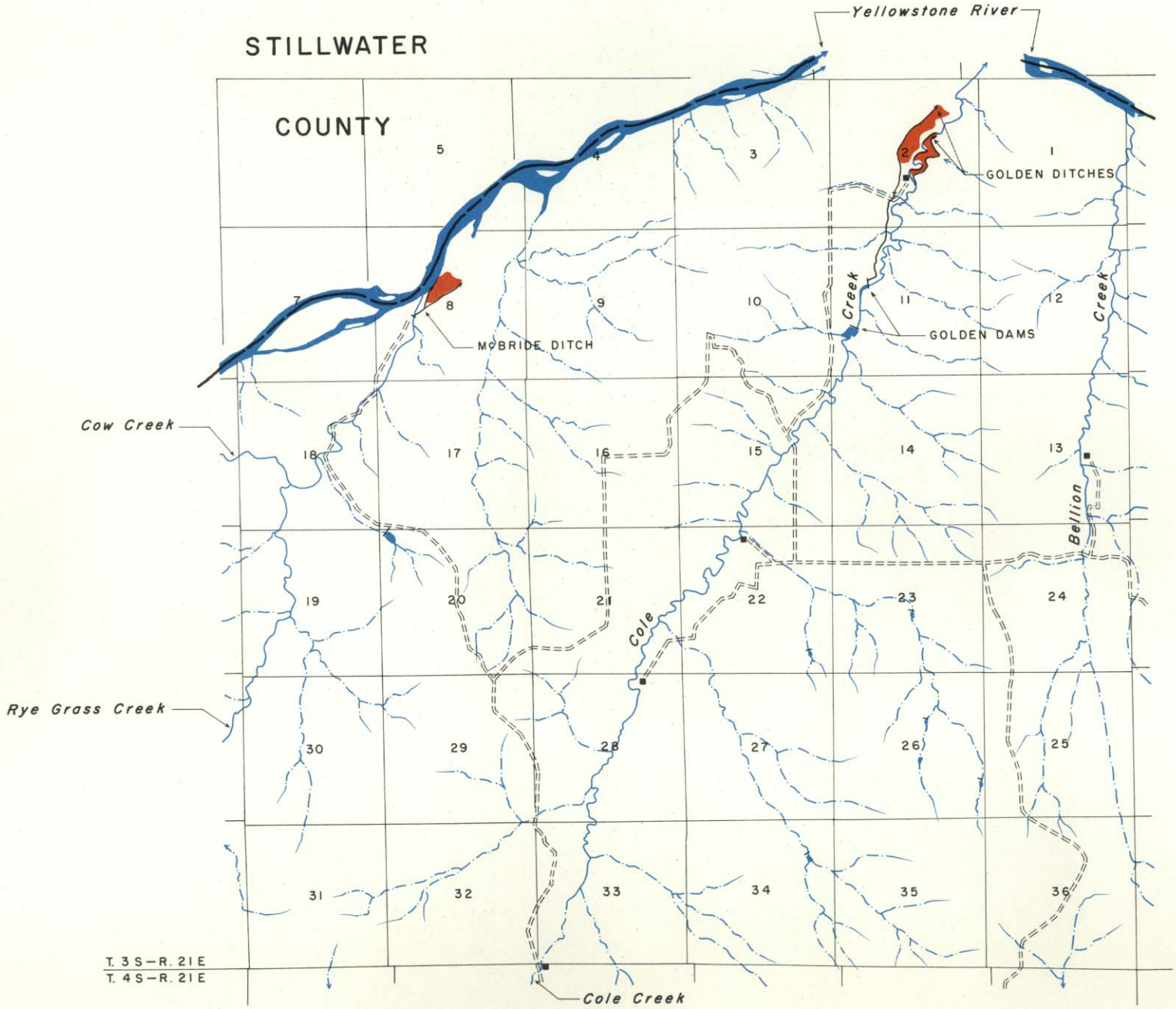
- DAM
- DIKE
- FLUME
- SIPHON
- SPILL
- SPRINKLER SYSTEM
- WEIR
- PIPE LINE
- PUMP
- PUMP SITE
- RESERVOIR
- WELL
- NATURAL CARRIER USED AS DITCH
- SPRING
- SWAMP
- GAUGING STATION
- POWER PLANT
- STORAGE TANK
- CEMETERY
- FAIRGROUND
- FARM OR RANCH UNIT
- LOOKOUT STATION
- RANGER STATION
- RAILROAD TUNNEL
- SCHOOL
- SHAFT, MINE, OR DRIFT



LEGEND

- Danford Irrigation District (Mason Canal)
- Whitehorse Canal
- Private Irrigation

Twp. 2 South
Rge. 23 & 24 East

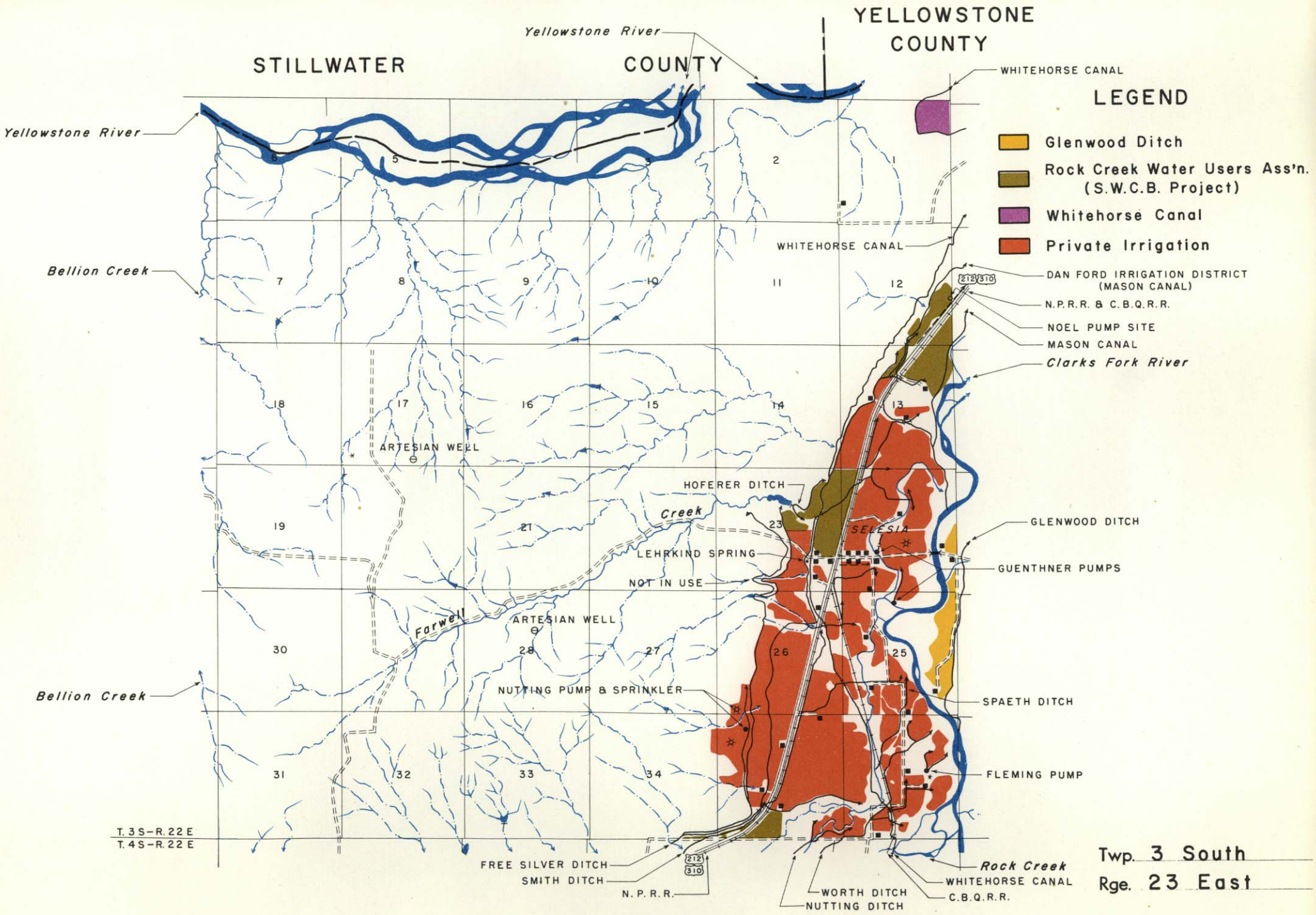


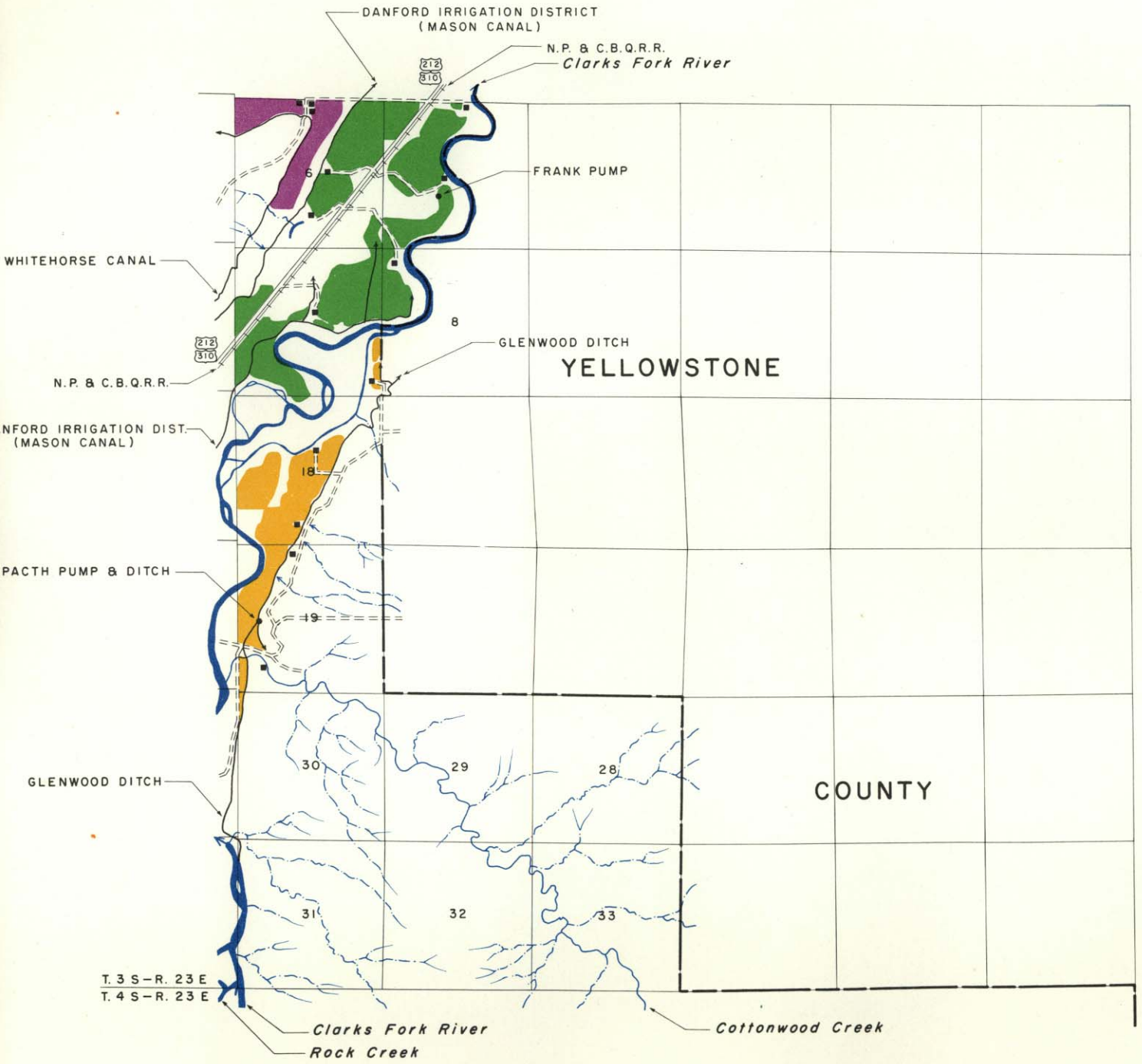
LEGEND

Private Irrigation

Twp. 3 South

Rge. 22 East

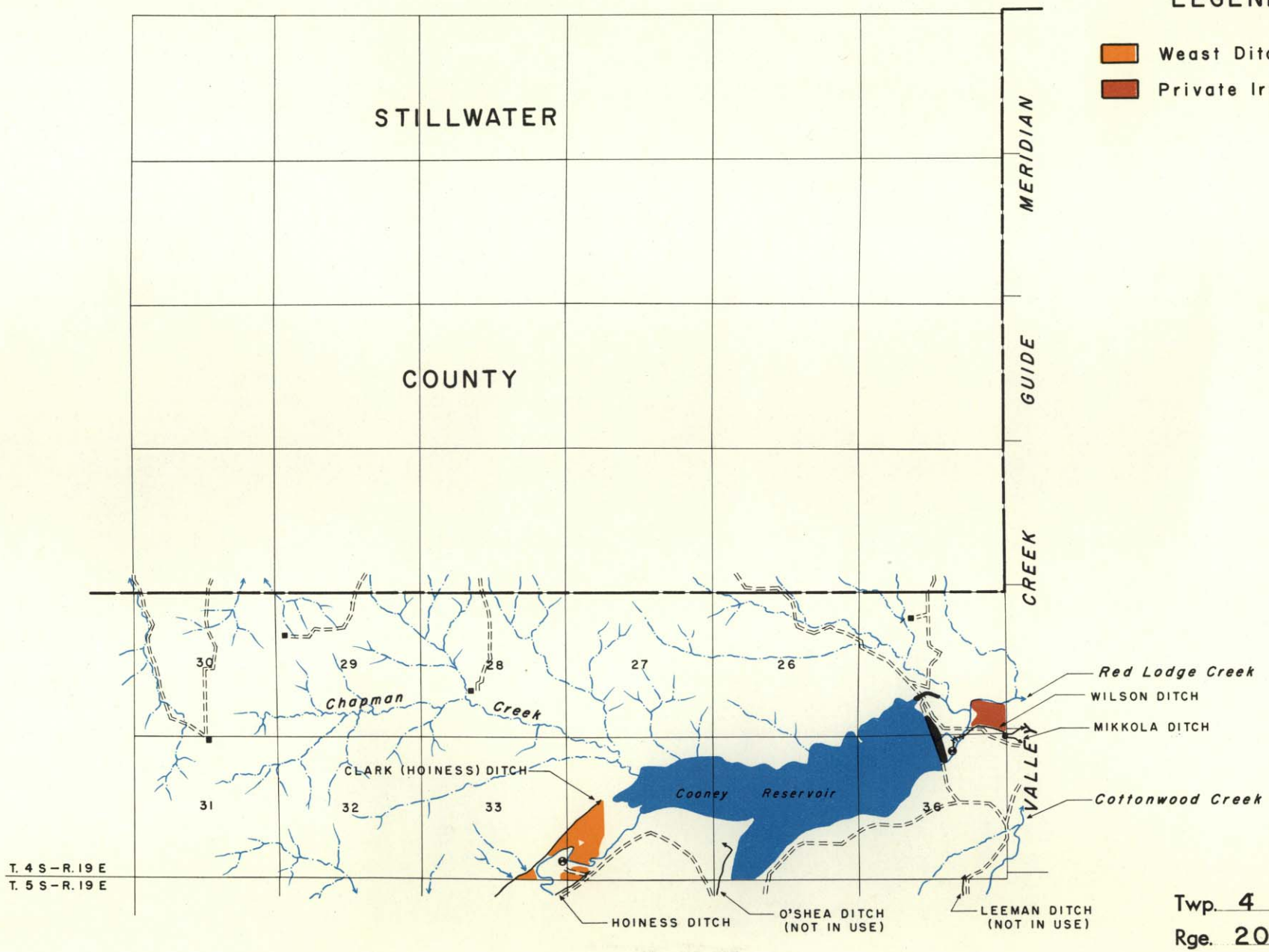

STILLWATER COUNTY
YELLOWSTONE COUNTY
Yellowstone River
Yellowstone River
Bellion Creek
Bellion Creek
WHITEHORSE CANAL
WHITEHORSE CANAL
LEGEND
Glenwood Ditch
Rock Creek Water Users Ass'n. (S.W.C.B. Project)
Whitehorse Canal
Private Irrigation
DAN FORD IRRIGATION DISTRICT (MASON CANAL)
N.P.R.R. & C.B.Q.R.R.
NOEL PUMP SITE
MASON CANAL
Clarks Fork River
ARTESIAN WELL
HOFERER DITCH
Creek
LEHRKIND SPRING
NOT IN USE
Farwell
ARTESIAN WELL
SELESIA
GLENWOOD DITCH
GUENTHNER PUMPS
NUTTING PUMP & SPRINKLER
SPAETH DITCH
FLEMING PUMP
T. 3 S-R. 22 E
T. 4 S-R. 22 E
FREE SILVER DITCH
SMITH DITCH
N. P. R. R.
WORTH DITCH
NUTTING DITCH
Rock Creek
WHITEHORSE CANAL
C.B.Q.R.R.
Twp. 3 South
Rge. 23 East



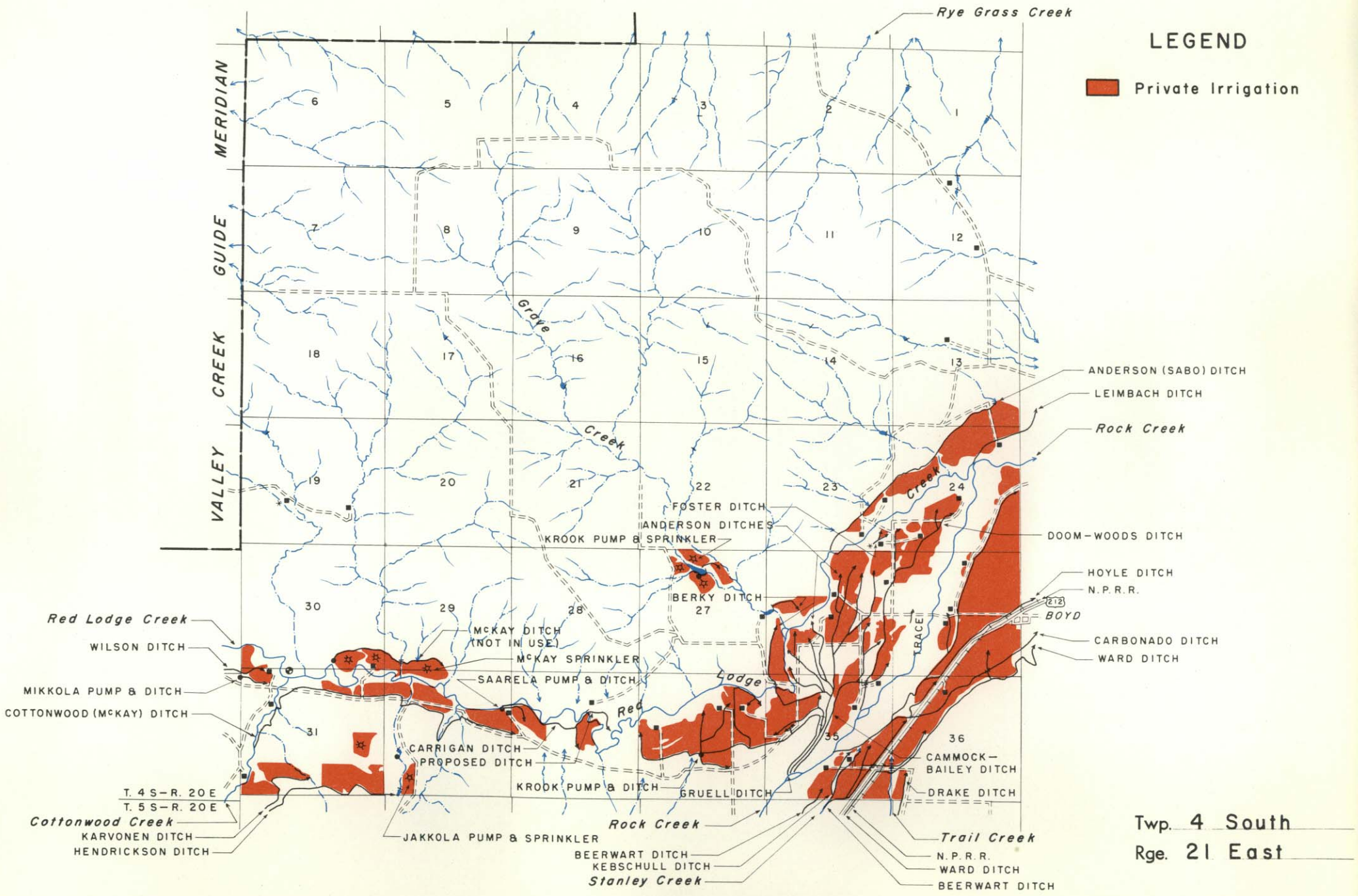
LEGEND

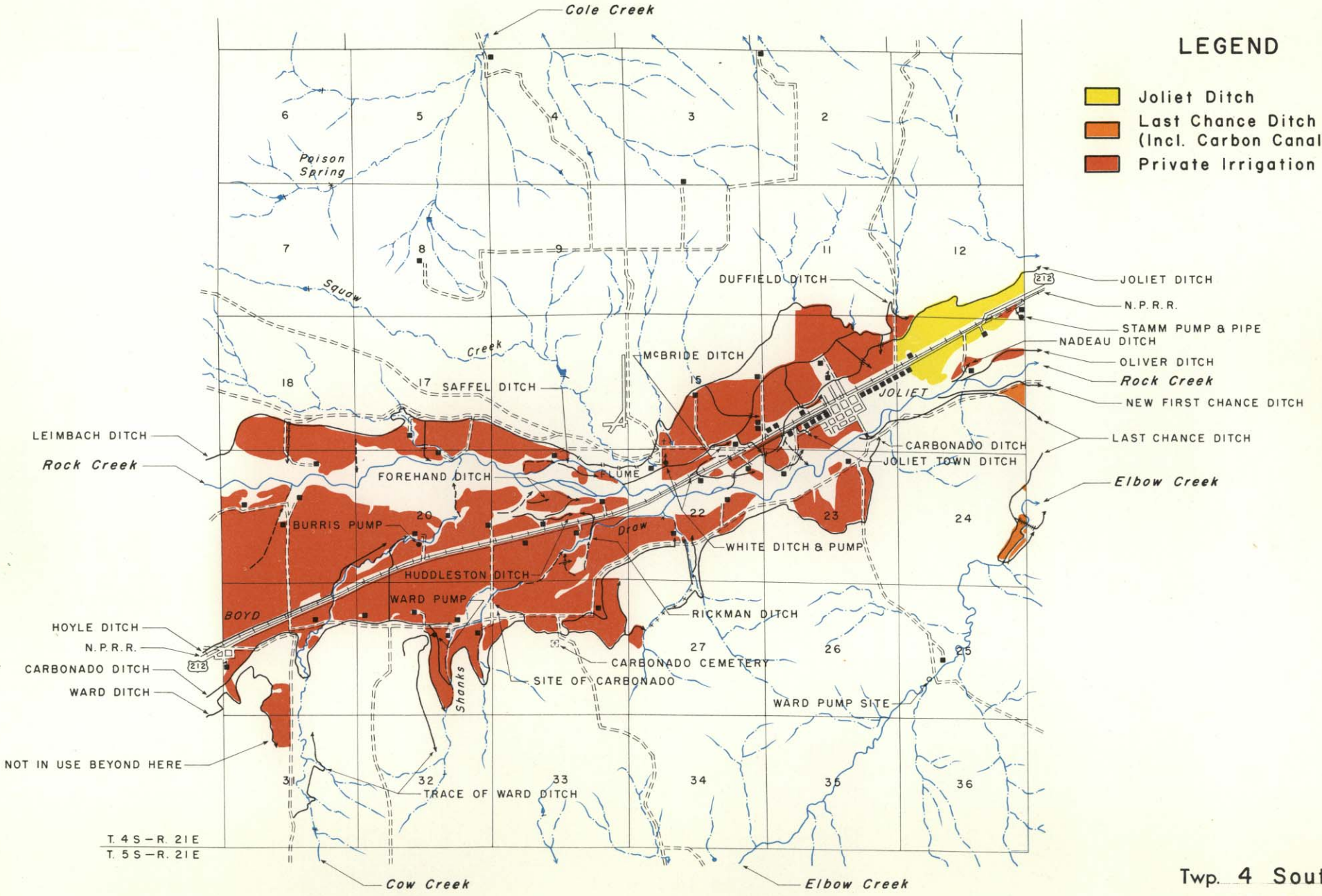
- Danford Irrigation District (Mason Canal)
- Glenwood Ditch
- Whitehorse Canal

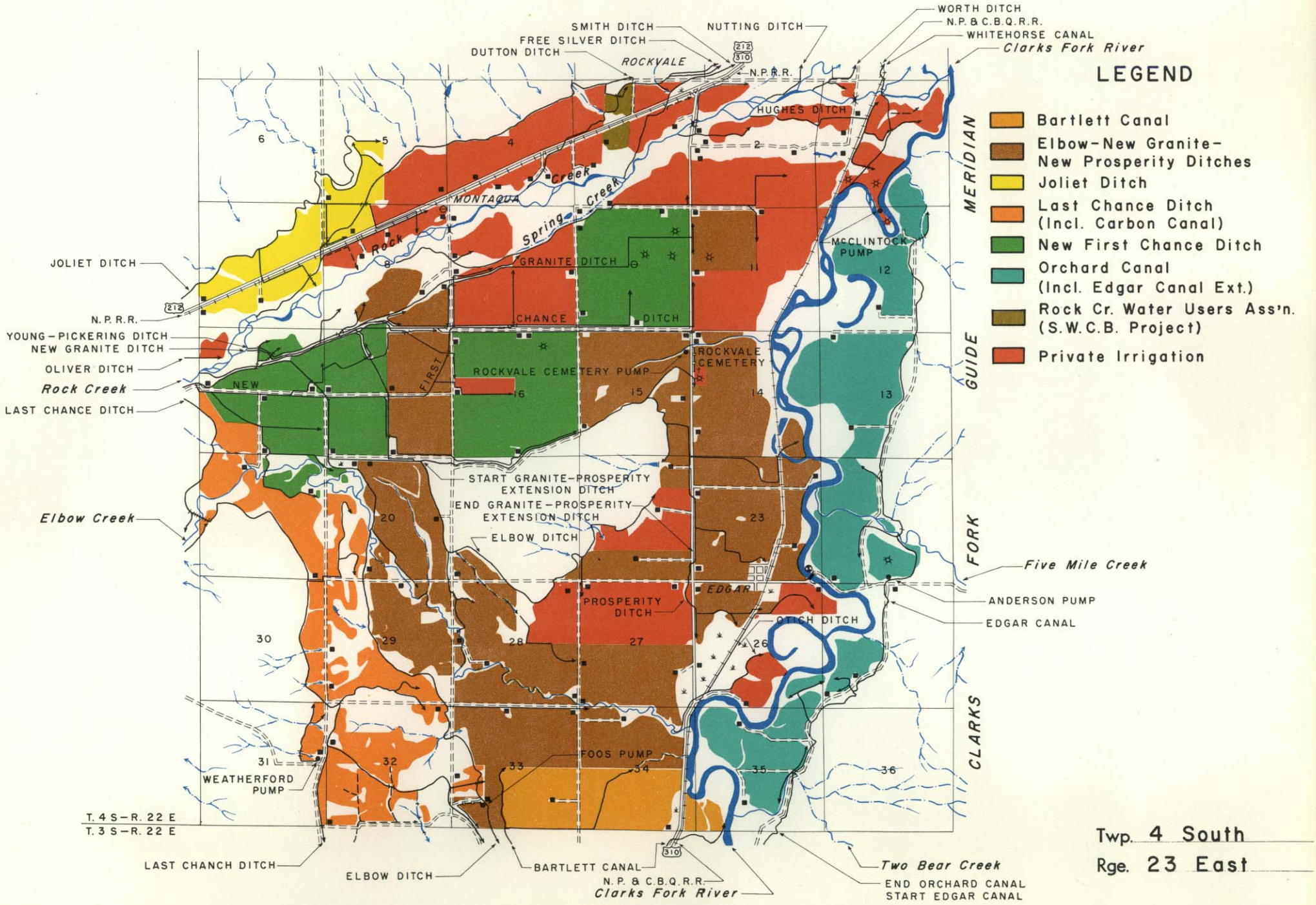
Twp. 3 South
Rge. 24 East

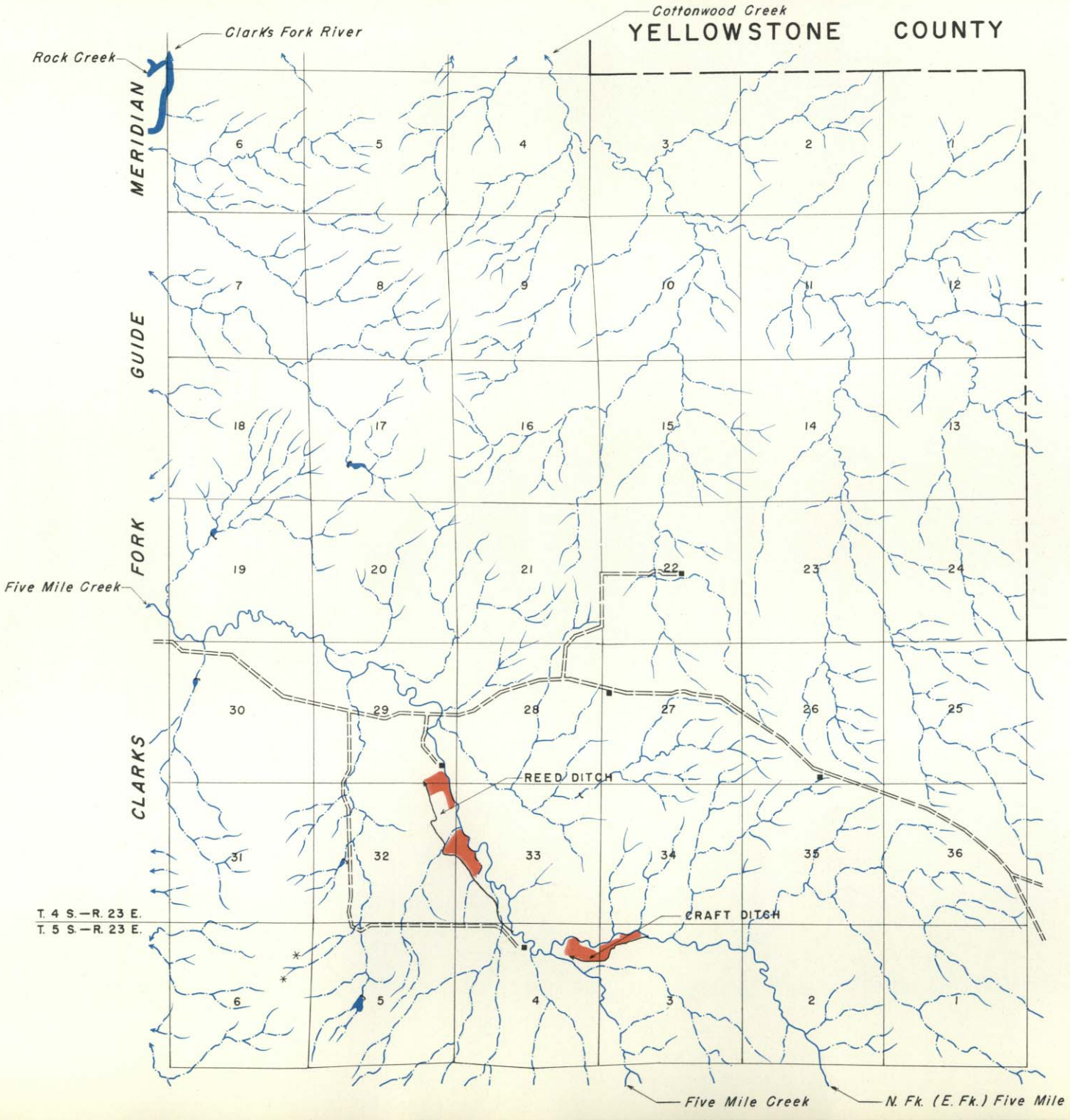

LEGEND
Weast Ditch
Private Irrigation
STILLWATER
COUNTY
MERIDIAN
GUIDE
CREEK
VALLEY
30
29
28
27
26
31
32
33
36
Chapman
Creek
Red Lodge Creek
WILSON DITCH
MIKKOLA DITCH
CLARK (HOINESS) DITCH
Cooney Reservoir
Cottonwood Creek
T. 4 S – R. 19 E
T. 5 S – R. 19 E
HOINESS DITCH
O'SHEA DITCH
(NOT IN USE)
LEEMAN DITCH
(NOT IN USE)
Twp. 4 South
Rge. 20 East

STILLWATER COUNTY




Cole Creek
Poison Spring
Squaw Creek
DUFFIELD DITCH
JOLIET DITCH
N.P.R.R.
STAMM PUMP & PIPE
NADEAU DITCH
OLIVER DITCH
Rock Creek
NEW FIRST CHANCE DITCH
LAST CHANCE DITCH
McBRIDE DITCH
SAFFEL DITCH
JOLIET
CARBONADO DITCH
JOLIET TOWN DITCH
Elbow Creek
LEIMBACH DITCH
Rock Creek
FOREHAND DITCH
FLUME
BURRIS PUMP
Draw
WHITE DITCH & PUMP
HUDDLESTON DITCH
WARD PUMP
BOYD
RICKMAN DITCH
HOYLE DITCH
N.P.R.R.
CARBONADO DITCH
WARD DITCH
Shanks
CARBONADO CEMETERY
SITE OF CARBONADO
WARD PUMP SITE
NOT IN USE BEYOND HERE
TRACE OF WARD DITCH
T. 4 S – R. 21 E
T. 5 S – R. 21 E
Cow Creek
Elbow Creek
LEGEND
Joliet Ditch
Last Chance Ditch (Incl. Carbon Canal)
Private Irrigation
Twp. 4 South
Rge. 22 East


LEGEND
Bartlett Canal
Elbow-New Granite-New Prosperity Ditches
Joliet Ditch
Last Chance Ditch (Incl. Carbon Canal)
New First Chance Ditch
Orchard Canal (Incl. Edgar Canal Ext.)
Rock Cr. Water Users Ass'n. (S.W.C.B. Project)
Private Irrigation
WORTH DITCH
N.P. & C.B.Q.R.R.
WHITEHORSE CANAL
Clarks Fork River
SMITH DITCH
NUTTING DITCH
FREE SILVER DITCH
DUTTON DITCH
ROCKVALE
N.P.R.R.
HUGHES DITCH
MERIDIAN
GUIDE
FORK
CLARKS
MONTAQUA
Rock Creek
Spring Creek
JOLIET DITCH
N.P.R.R.
YOUNG-PICKERING DITCH
NEW GRANITE DITCH
OLIVER DITCH
Rock Creek
LAST CHANCE DITCH
GRANITE DITCH
CHANCE DITCH
McCLINTOCK PUMP
ROCKVALE CEMETERY
ROCKVALE CEMETERY PUMP
NEW FIRST CHANCE DITCH
START GRANITE-PROSPERITY EXTENSION DITCH
END GRANITE-PROSPERITY EXTENSION DITCH
Elbow Creek
ELBOW DITCH
Five Mile Creek
ANDERSON PUMP
EDGAR CANAL
PROSPERITY DITCH
EDGAR DITCH
WEATHERFORD PUMP
FOOS PUMP
T. 4 S - R. 22 E
T. 3 S - R. 22 E
LAST CHANCH DITCH
ELBOW DITCH
BARTLETT CANAL
N.P. & C.B.Q.R.R.
Clarks Fork River
Two Bear Creek
END ORCHARD CANAL
START EDGAR CANAL
Twp. 4 South
Rge. 23 East



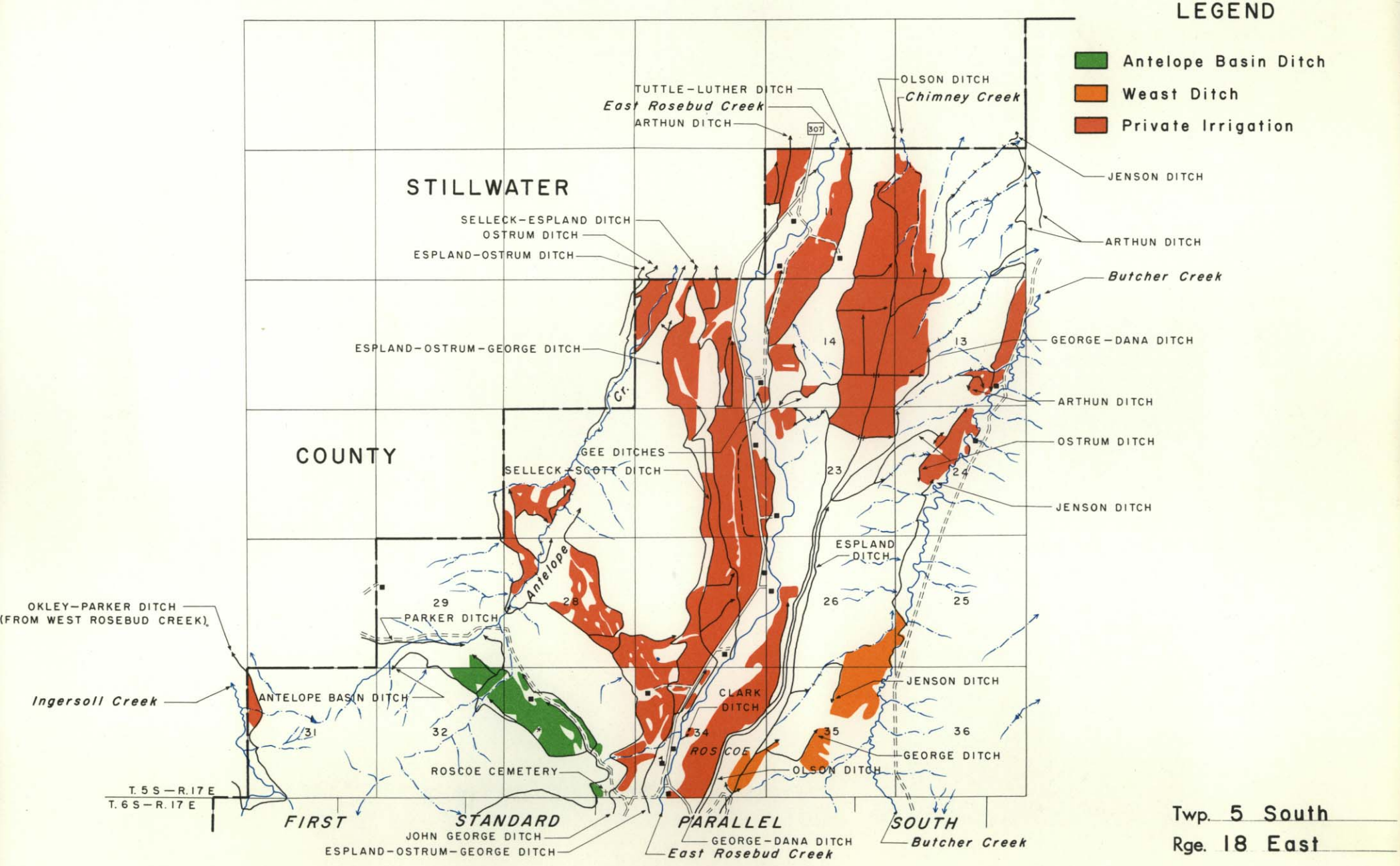
LEGEND

Private Irrigation

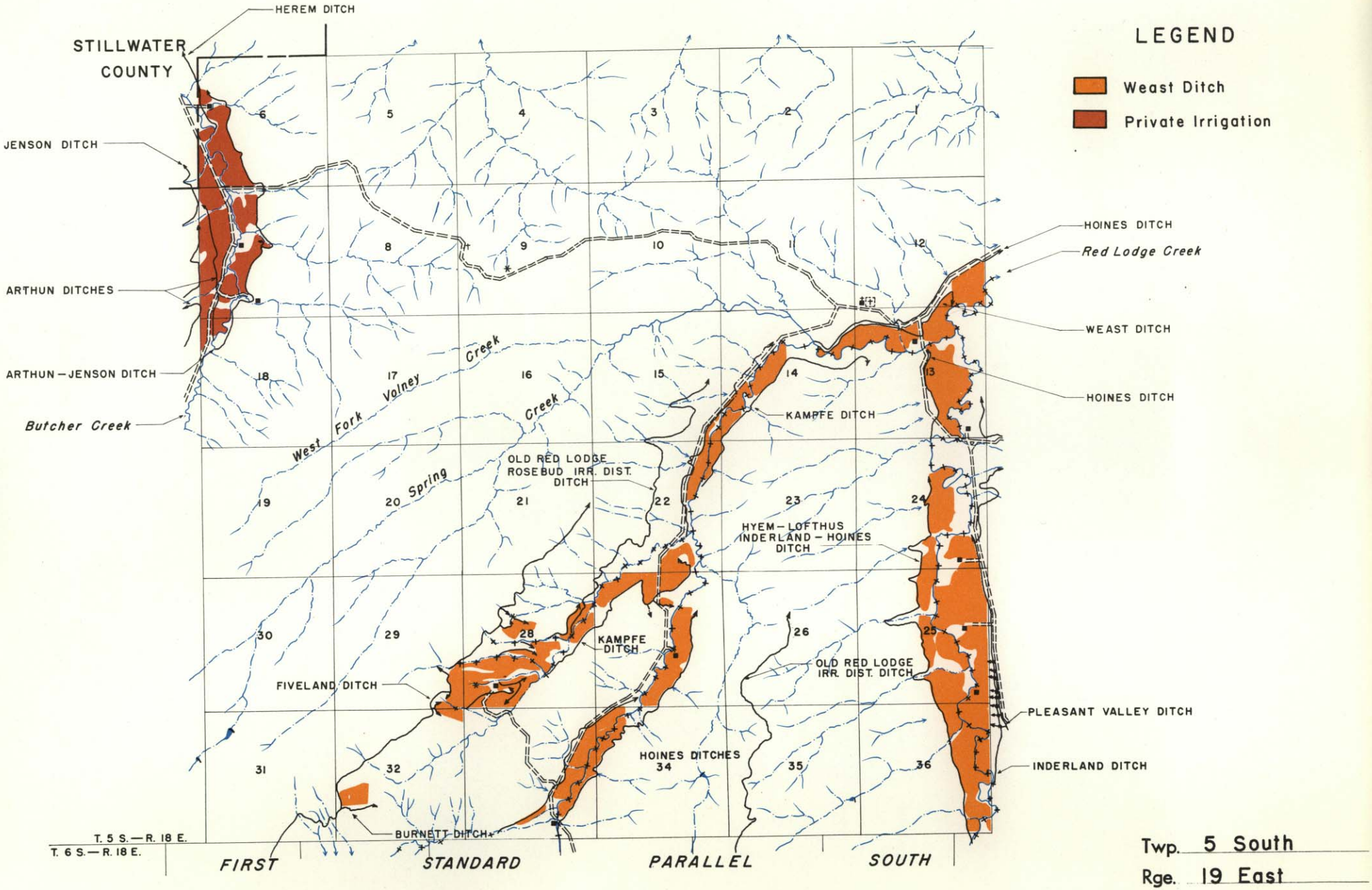
YELLOWSTONE COUNTY

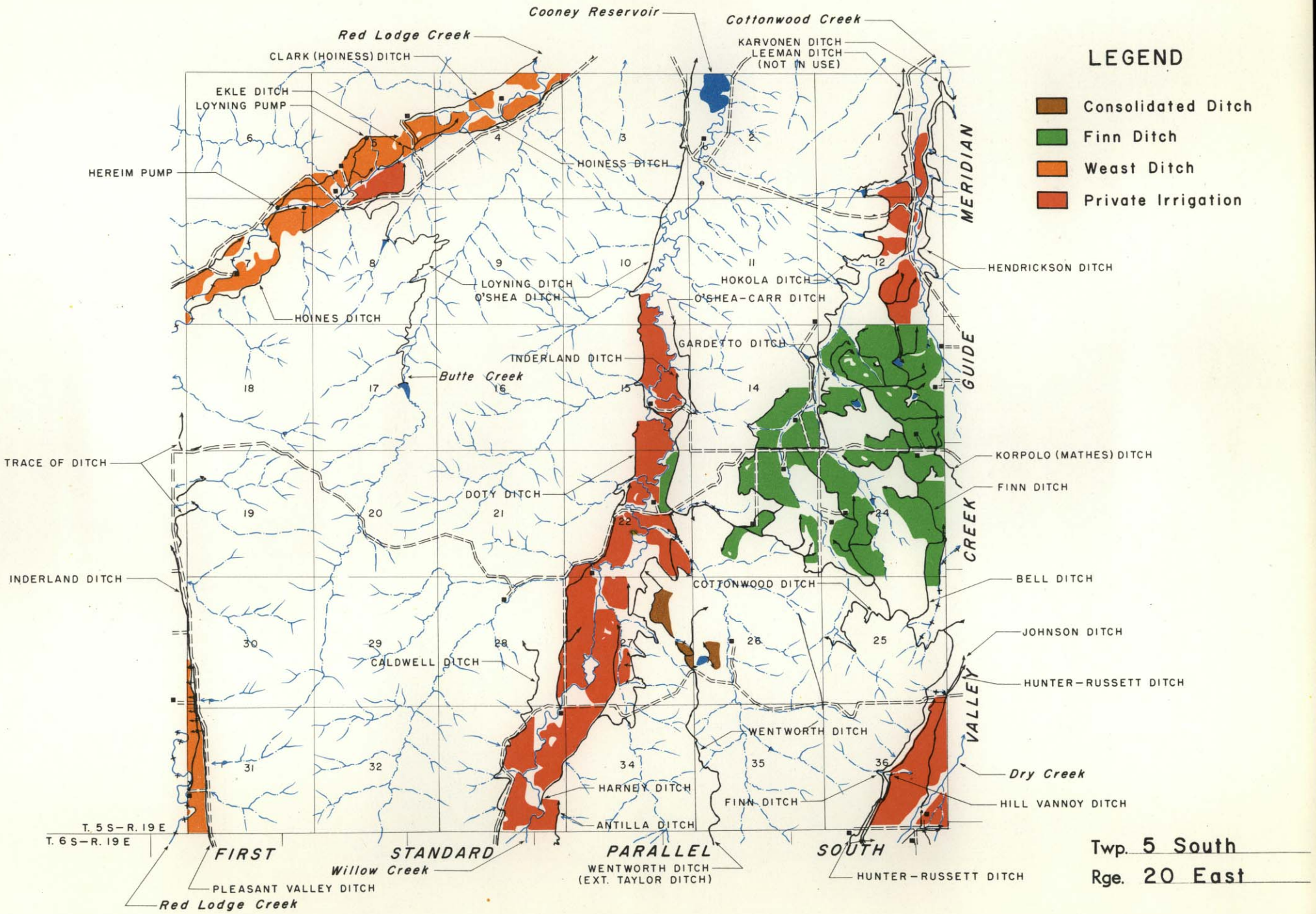
Twp. 4 & 5 South

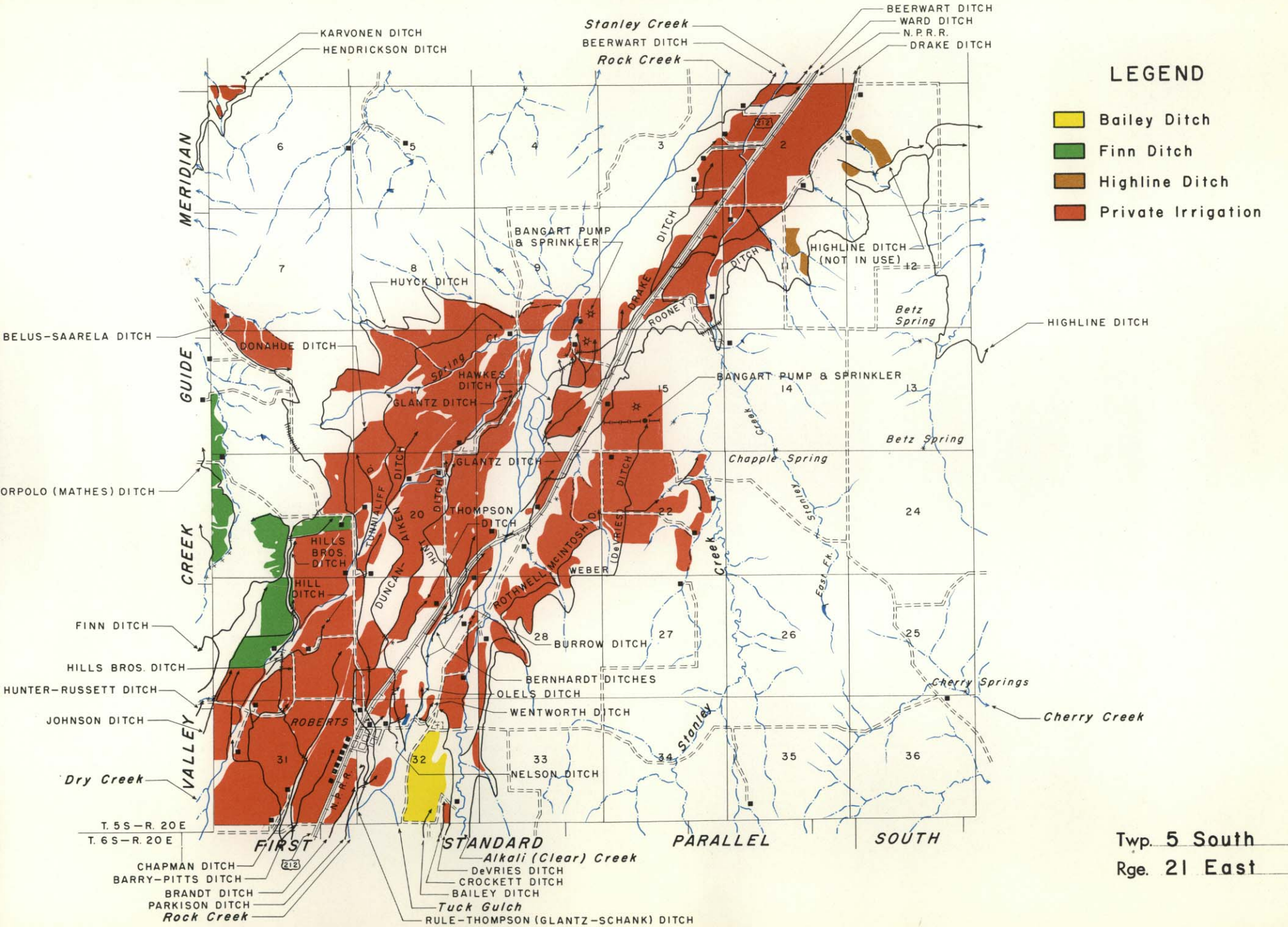
Rge. 24 East

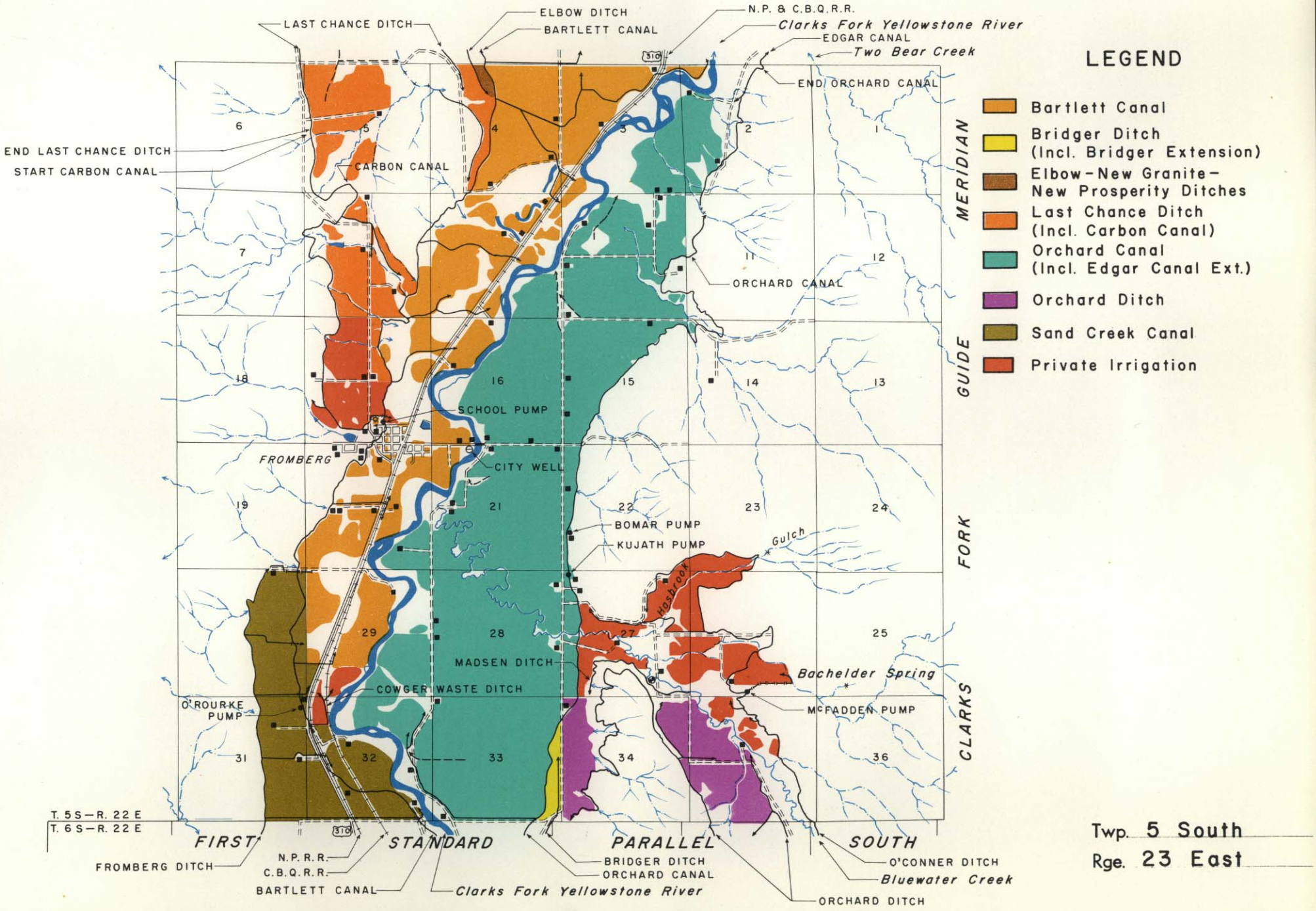


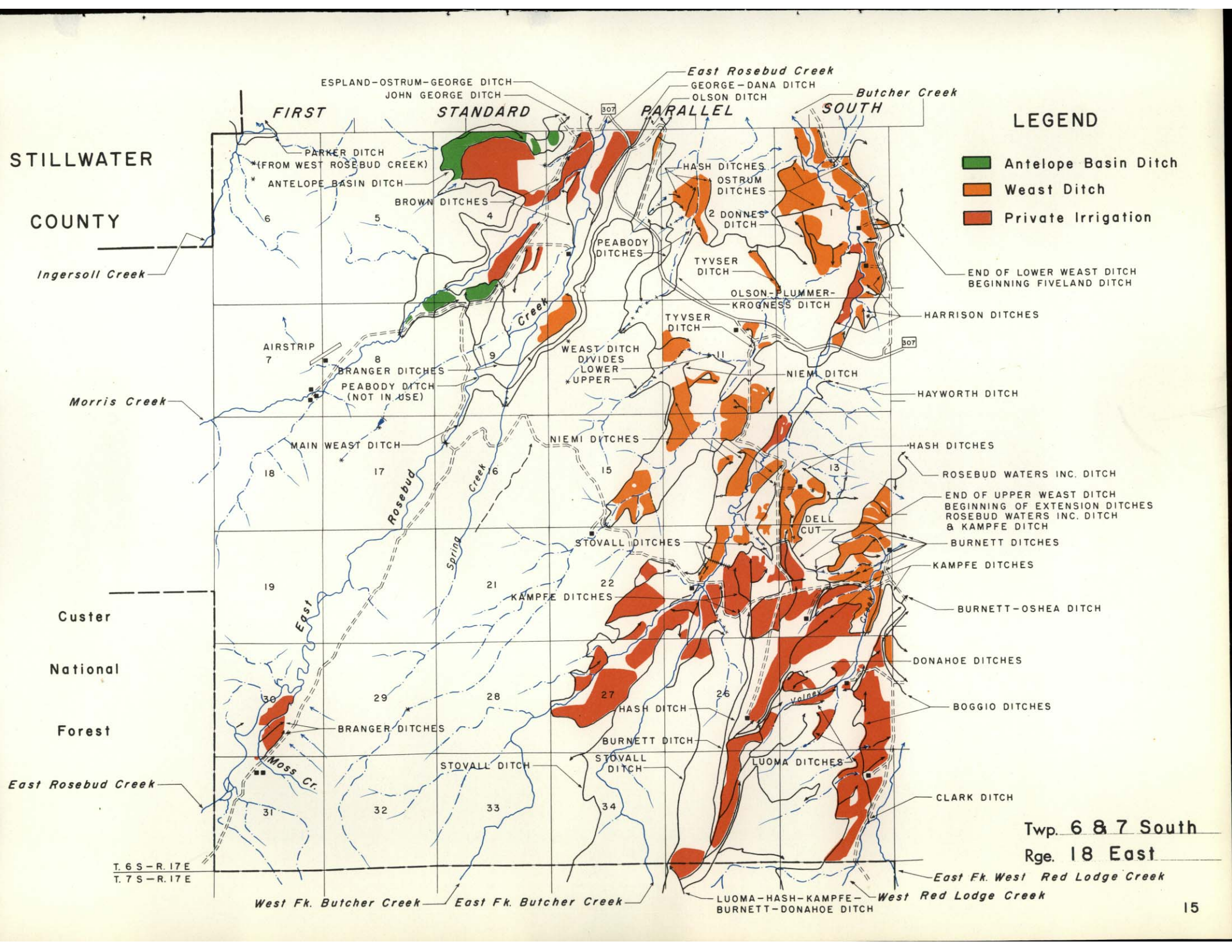
Twp. 5 South
Rge. 18 East

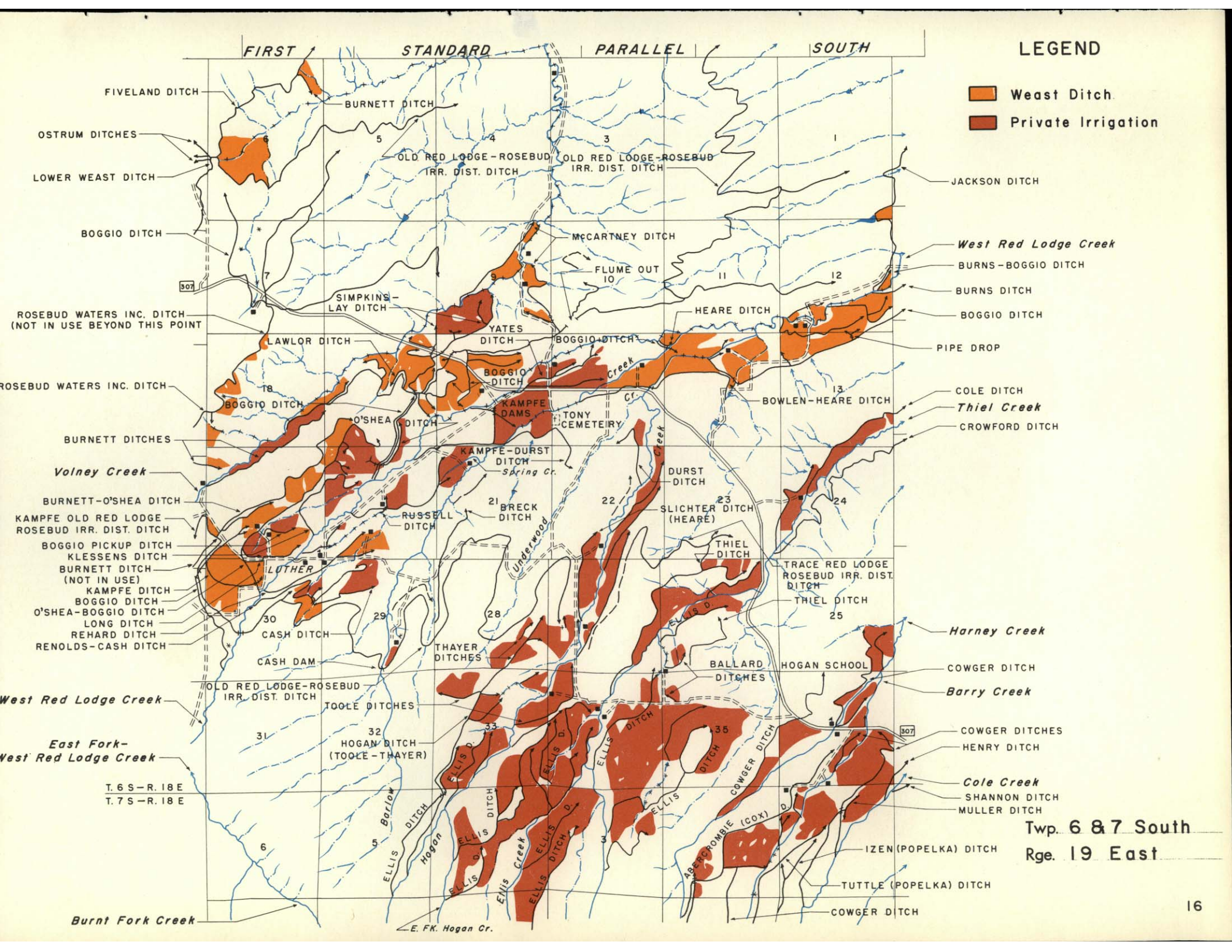

HEREM DITCH
STILLWATER COUNTY
JENSON DITCH
ARTHUN DITCHES
ARTHUN—JENSON DITCH
Butcher Creek
West Fork Valley Creek
Spring Creek
HOINES DITCH
Red Lodge Creek
WEAST DITCH
HOINES DITCH
KAMPFE DITCH
OLD RED LODGE ROSEBUD IRR. DIST. DITCH
HYEM—LOFTHUS INDERLAND—HOINES DITCH
KAMPFE DITCH
OLD RED LODGE IRR. DIST. DITCH
FIVELAND DITCH
PLEASANT VALLEY DITCH
HOINES DITCHES
INDERLAND DITCH
BURNETT DITCH
T. 5 S.—R. 18 E.
T. 6 S.—R. 18 E.
FIRST STANDARD PARALLEL SOUTH
LEGEND
Weast Ditch
Private Irrigation
Twp. 5 South
Rge. 19 East

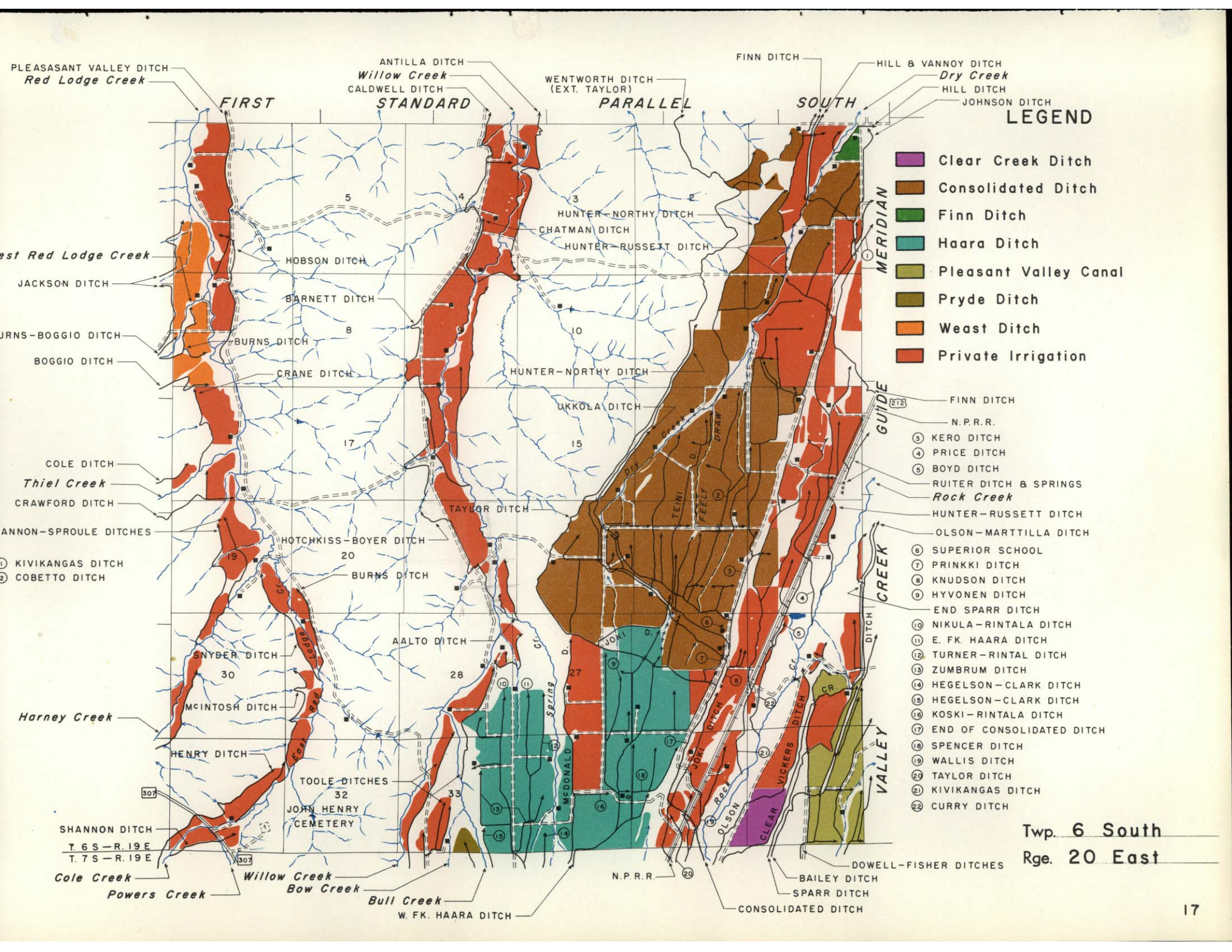

Cooney Reservoir
Cottonwood Creek
Red Lodge Creek
CLARK (HOINESS) DITCH
KARVONEN DITCH
LEEMAN DITCH
(NOT IN USE)
EKLE DITCH
LOYNING PUMP
HEREIM PUMP
HOINESS DITCH
MERIDIAN
HENDRICKSON DITCH
LOYNING DITCH
O'SHEA DITCH
HOKOLA DITCH
O'SHEA-CARR DITCH
HOINES DITCH
GARDETTO DITCH
INDERLAND DITCH
Butte Creek
GUIDE
TRACE OF DITCH
KORPOLO (MATHES) DITCH
FINN DITCH
DOTY DITCH
CREEK
INDERLAND DITCH
COTTONWOOD DITCH
BELL DITCH
JOHNSON DITCH
CALDWELL DITCH
HUNTER-RUSSETT DITCH
VALLEY
WENTWORTH DITCH
Dry Creek
HARNEY DITCH
FINN DITCH
HILL VANNOY DITCH
ANTILLA DITCH
T. 5 S-R. 19 E
T. 6 S-R. 19 E
FIRST
STANDARD
PARALLEL
SOUTH
Willow Creek
WENTWORTH DITCH
(EXT. TAYLOR DITCH)
HUNTER-RUSSETT DITCH
PLEASANT VALLEY DITCH
Red Lodge Creek
LEGEND
Consolidated Ditch
Finn Ditch
Weast Ditch
Private Irrigation
Twp. 5 South
Rge. 20 East


LEGEND
Bailey Ditch
Finn Ditch
Highline Ditch
Private Irrigation
KARVONEN DITCH
HENDRICKSON DITCH
Stanley Creek
BEERWART DITCH
Rock Creek
BEERWART DITCH
WARD DITCH
N.P.R.R.
DRAKE DITCH
MERIDIAN
GUIDE
CREEK
VALLEY
BANGART PUMP & SPRINKLER
HUYCK DITCH
DRAKE DITCH
ROONEY DITCH
HIGHLINE DITCH (NOT IN USE)
Betz Spring
HIGHLINE DITCH
BELUS-SAARELA DITCH
DONAHUE DITCH
HAWKES DITCH
GLANTZ DITCH
BANGART PUMP & SPRINKLER
Betz Spring
Chapple Spring
ORPOLO (MATHES) DITCH
THOMPSON DITCH
HILLS BROS. DITCH
HILL DITCH
DUNCAN-AIKEN DITCH
TOMHALIFF DITCH
HUNT DITCH
McINTOSH DITCH
(DeVRIES) DITCH
WEBER
ROTHWELL DITCH
Stanley Creek
East Fk.
FINN DITCH
HILLS BROS. DITCH
HUNTER-RUSSETT DITCH
JOHNSON DITCH
BURROW DITCH
BERNHARDT DITCHES
OLELS DITCH
WENTWORTH DITCH
ROBERTS
Cherry Springs
Cherry Creek
Dry Creek
NELSON DITCH
N.P.R.R.
T. 5 S — R. 20 E
T. 6 S — R. 20 E
FIRST STANDARD PARALLEL SOUTH
CHAPMAN DITCH
BARRY-PITTS DITCH
BRANDT DITCH
PARKISON DITCH
Rock Creek
Alkali (Clear) Creek
DeVRIES DITCH
CROCKETT DITCH
BAILEY DITCH
Tuck Gulch
RULE-THOMPSON (GLANTZ-SCHANK) DITCH
Twp. 5 South
Rge. 21 East


LAST CHANCE DITCH
ELBOW DITCH
BARTLETT CANAL
N.P. & C.B.Q.R.R.
Clarks Fork Yellowstone River
EDGAR CANAL
Two Bear Creek
END ORCHARD CANAL
END LAST CHANCE DITCH
START CARBON CANAL
CARBON CANAL
ORCHARD CANAL
SCHOOL PUMP
FROMBERG
CITY WELL
BOMAR PUMP
KUJATH PUMP
Gulch
Hasbrook
MADSEN DITCH
COWGER WASTE DITCH
Bachelder Spring
O'ROURKE PUMP
McFADDEN PUMP
MERIDIAN
GUIDE
FORK
CLARKS
T. 5S—R. 22 E
T. 6S—R. 22 E
FIRST STANDARD PARALLEL SOUTH
FROMBERG DITCH
N.P. R.R.
C.B.Q.R.R.
BARTLETT CANAL
Clarks Fork Yellowstone River
BRIDGER DITCH
ORCHARD CANAL
ORCHARD DITCH
O'CONNER DITCH
Bluewater Creek
LEGEND
Bartlett Canal
Bridger Ditch (Incl. Bridger Extension)
Elbow-New Granite-New Prosperity Ditches
Last Chance Ditch (Incl. Carbon Canal)
Orchard Canal (Incl. Edgar Canal Ext.)
Orchard Ditch
Sand Creek Canal
Private Irrigation
Twp. 5 South
Rge. 23 East


STILLWATER
COUNTY
Custer
National
Forest
FIRST
STANDARD
PARALLEL
SOUTH
ESPLAND-OSTRUM-GEORGE DITCH
JOHN GEORGE DITCH
East Rosebud Creek
GEORGE-DANA DITCH
OLSON DITCH
Butcher Creek
307
PARKER DITCH
(FROM WEST ROSEBUD CREEK)
ANTELOPE BASIN DITCH
BROWN DITCHES
HASH DITCHES
OSTRUM DITCHES
2 DONNES DITCH
PEABODY DITCHES
TYVSER DITCH
END OF LOWER WEAST DITCH
BEGINNING FIVELAND DITCH
OLSON-PLUMMER-KROGNESS DITCH
HARRISON DITCHES
Ingersoll Creek
AIRSTRIP
BRANGER DITCHES
PEABODY DITCH
(NOT IN USE)
WEAST DITCH DIVIDES
LOWER
UPPER
NIEMI DITCH
HAYWORTH DITCH
Morris Creek
MAIN WEAST DITCH
NIEMI DITCHES
HASH DITCHES
ROSEBUD WATERS INC. DITCH
END OF UPPER WEAST DITCH
BEGINNING OF EXTENSION DITCHES
ROSEBUD WATERS INC. DITCH
& KAMPFE DITCH
DELL CUT
STOVALL DITCHES
BURNETT DITCHES
KAMPFE DITCHES
KAMPFE DITCHES
BURNETT-OSHEA DITCH
DONAHOE DITCHES
BOGGIO DITCHES
BRANGER DITCHES
HASH DITCH
BURNETT DITCH
STOVALL DITCH
STOVALL DITCH
LUOMA DITCHES
CLARK DITCH
East Rosebud Creek
Moss Cr.
T. 6 S - R. 17 E
T. 7 S - R. 17 E
West Fk. Butcher Creek
East Fk. Butcher Creek
LUOMA-HASH-KAMPFE-BURNETT-DONAHOE DITCH
West Red Lodge Creek
East Fk. West Red Lodge Creek
Rosebud Creek
Spring Creek
East Creek
Volney Creek
LEGEND
Antelope Basin Ditch
Weast Ditch
Private Irrigation
Twp. 6 & 7 South
Rge. 18 East
15

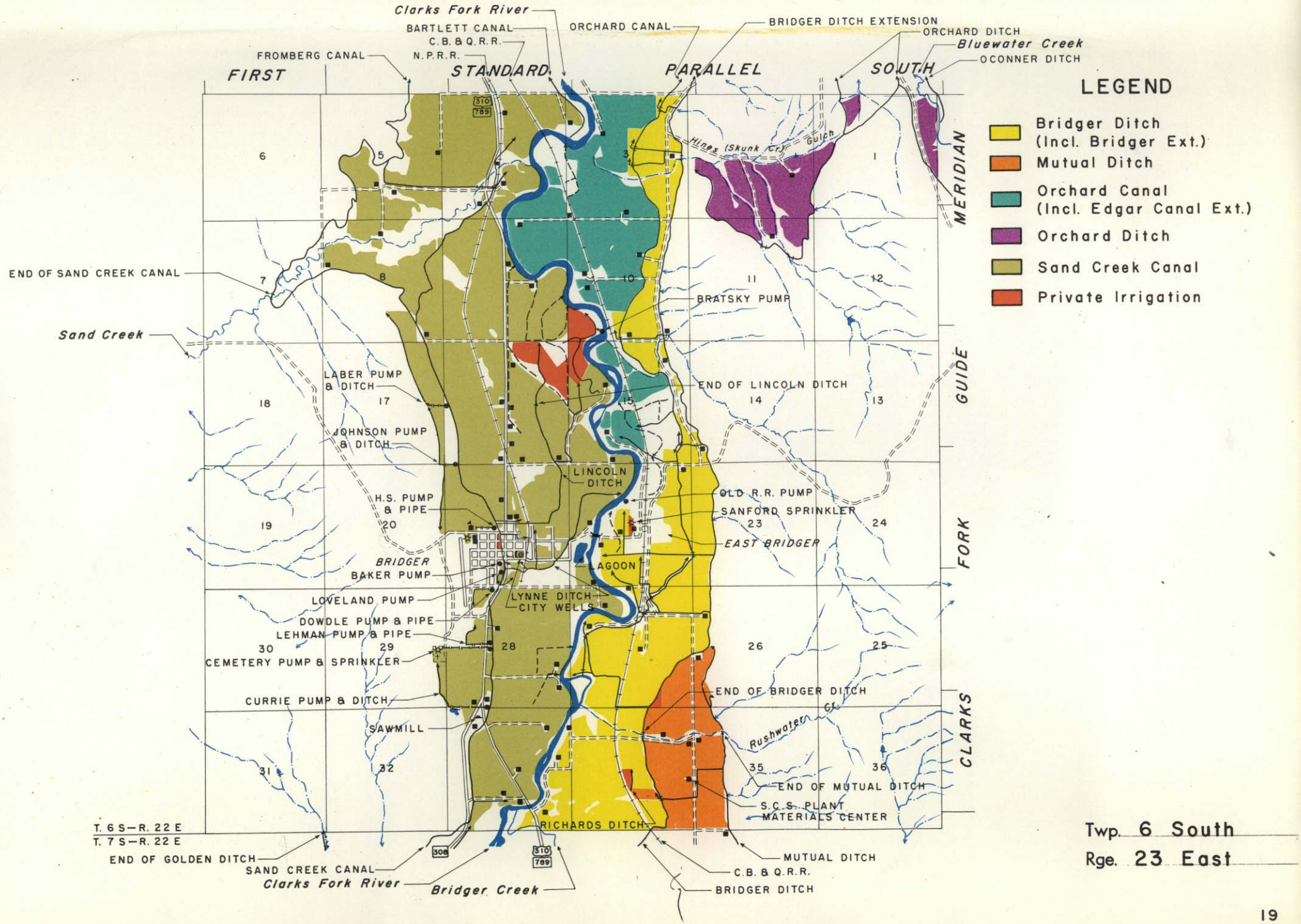

FIRST STANDARD PARALLEL SOUTH
LEGEND
Weast Ditch
Private Irrigation
FIVELAND DITCH
BURNETT DITCH
OSTRUM DITCHES
LOWER WEAST DITCH
OLD RED LODGE-ROSEBUD IRR. DIST. DITCH
OLD RED LODGE-ROSEBUD IRR. DIST. DITCH
JACKSON DITCH
BOGGIO DITCH
McCARTNEY DITCH
West Red Lodge Creek
BURNS-BOGGIO DITCH
FLUME OUT
SIMPKINS-LAY DITCH
BURNS DITCH
ROSEBUD WATERS INC. DITCH (NOT IN USE BEYOND THIS POINT
HEARE DITCH
BOGGIO DITCH
YATES DITCH
LAWLOR DITCH
BOGGIO DITCH
PIPE DROP
ROSEBUD WATERS INC. DITCH
BOGGIO DITCH
KAMPFE DAMS
TONY CEMETERY
BOWLEN-HEARE DITCH
COLE DITCH
Thiel Creek
O'SHEA DITCH
CROWFORD DITCH
BURNETT DITCHES
KAMPFE-DURST DITCH
Spring Cr.
Volney Creek
DURST DITCH
BURNETT-O'SHEA DITCH
BRECK DITCH
SLICHTER DITCH (HEARE)
KAMPFE OLD RED LODGE ROSEBUD IRR. DIST. DITCH
RUSSELL DITCH
Underwood
BOGGIO PICKUP DITCH
KLESSENS DITCH
THIEL DITCH
BURNETT DITCH (NOT IN USE)
LUTHER
TRACE RED LODGE ROSEBUD IRR. DIST. DITCH
KAMPFE DITCH
BOGGIO DITCH
THIEL DITCH
O'SHEA-BOGGIO DITCH
LONG DITCH
REHARD DITCH
CASH DITCH
Harney Creek
RENOLDS-CASH DITCH
THAYER DITCHES
CASH DAM
BALLARD DITCHES
HOGAN SCHOOL
COWGER DITCH
OLD RED LODGE-ROSEBUD IRR. DIST. DITCH
Barry Creek
West Red Lodge Creek
TOOLE DITCHES
COWGER DITCHES
HOGAN DITCH (TOOLE-THAYER)
HENRY DITCH
East Fork-West Red Lodge Creek
Cole Creek
SHANNON DITCH
T. 6 S - R. 18 E
T. 7 S - R. 18 E
MULLER DITCH
IZEN (POPELKA) DITCH
TUTTLE (POPELKA) DITCH
COWGER DITCH
Burnt Fork Creek
E. FK. Hogan Cr.
Twp. 6 & 7 South
Rge. 19 East
16

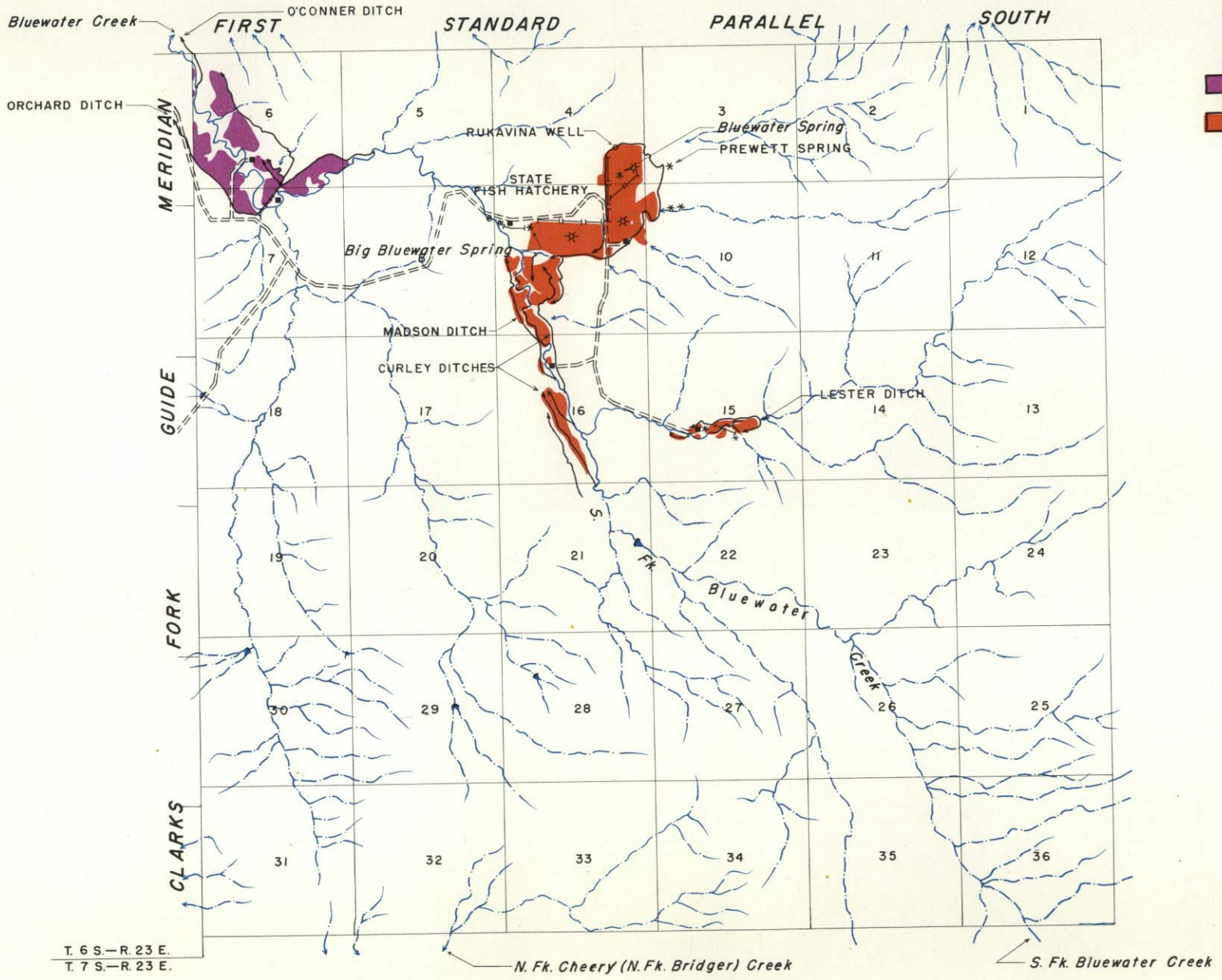

PLEASASANT VALLEY DITCH
Red Lodge Creek
ANTILLA DITCH
Willow Creek
CALDWELL DITCH
WENTWORTH DITCH
(EXT. TAYLOR)
FINN DITCH
HILL & VANNOY DITCH
Dry Creek
HILL DITCH
JOHNSON DITCH
FIRST
STANDARD
PARALLEL
SOUTH
MERIDIAN
GUIDE
CREEK
VALLEY
LEGEND
Clear Creek Ditch
Consolidated Ditch
Finn Ditch
Haara Ditch
Pleasant Valley Canal
Pryde Ditch
Weast Ditch
Private Irrigation
HUNTER-NORTHY DITCH
CHATMAN DITCH
HUNTER-RUSSETT DITCH
HOBSON DITCH
JACKSON DITCH
BARNETT DITCH
BURNS DITCH
BOGGIO DITCH
CRANE DITCH
UKKOLA DITCH
COLE DITCH
Thiel Creek
CRAWFORD DITCH
TAYLOR DITCH
HOTCHKISS-BOYER DITCH
BURNS DITCH
AALTO DITCH
SNYDER DITCH
McINTOSH DITCH
Harney Creek
HENRY DITCH
TOOLE DITCHES
JOHN HENRY CEMETERY
SHANNON DITCH
T. 6 S — R. 19 E
T. 7 S — R. 19 E
Cole Creek
Powers Creek
Willow Creek
Bow Creek
Bull Creek
W. FK. HAARA DITCH
N.P.R.R.
CONSOLIDATED DITCH
BAILEY DITCH
SPARR DITCH
DOWELL-FISHER DITCHES
FINN DITCH
N.P.R.R.
3 KERO DITCH
4 PRICE DITCH
5 BOYD DITCH
RUITER DITCH & SPRINGS
Rock Creek
HUNTER-RUSSETT DITCH
OLSON-MARTTILLA DITCH
6 SUPERIOR SCHOOL
7 PRINKKI DITCH
8 KNUDSON DITCH
9 HYVONEN DITCH
END SPARR DITCH
10 NIKULA-RINTALA DITCH
11 E. FK. HAARA DITCH
12 TURNER-RINTAL DITCH
13 ZUMBRUM DITCH
14 HEGELSON-CLARK DITCH
15 HEGELSON-CLARK DITCH
16 KOSKI-RINTALA DITCH
17 END OF CONSOLIDATED DITCH
18 SPENCER DITCH
19 WALLIS DITCH
20 TAYLOR DITCH
21 KIVIKANGAS DITCH
22 CURRY DITCH
1 KIVIKANGAS DITCH
2 COBETTO DITCH
Twp. 6 South
Rge. 20 East
17

LEGEND

- Bailey Ditch
- Clear Creek Ditch
- Finn Ditch
- Pleasant Valley Canal
- Rock Creek–Clear Creek Ditch
- Private Irrigation

Twp. 6 South
Rge. 21 East

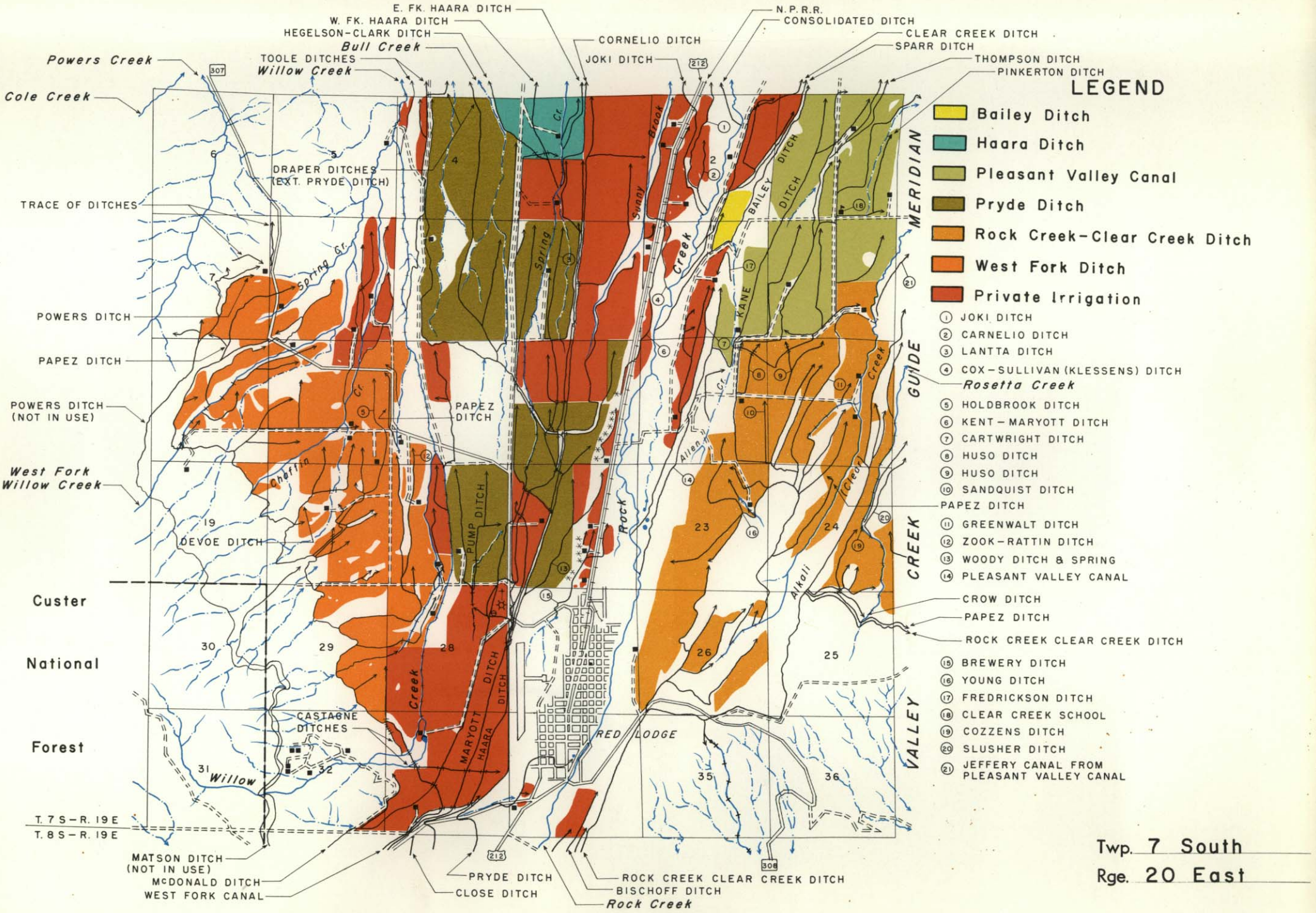

Clarks Fork River
BARTLETT CANAL
C.B. & Q.R.R.
N.P.R.R.
FROMBERG CANAL
ORCHARD CANAL
BRIDGER DITCH EXTENSION
ORCHARD DITCH
Bluewater Creek
OCONNER DITCH
FIRST STANDARD PARALLEL SOUTH
MERIDIAN
GUIDE
FORK
CLARKS
Hines (Skunk Cr.) Gulch
END OF SAND CREEK CANAL
Sand Creek
BRATSKY PUMP
LABER PUMP & DITCH
END OF LINCOLN DITCH
JOHNSON PUMP & DITCH
LINCOLN DITCH
H.S. PUMP & PIPE
OLD R.R. PUMP
SANFORD SPRINKLER
EAST BRIDGER
BRIDGER
BAKER PUMP
LAGOON
LOVELAND PUMP
LYNNE DITCH
CITY WELLS
DOWDLE PUMP & PIPE
LEHMAN PUMP & PIPE
CEMETERY PUMP & SPRINKLER
CURRIE PUMP & DITCH
END OF BRIDGER DITCH
SAWMILL
Rushwater Cr.
END OF MUTUAL DITCH
S.C.S. PLANT MATERIALS CENTER
RICHARDS DITCH
T. 6 S—R. 22 E
T. 7 S—R. 22 E
END OF GOLDEN DITCH
SAND CREEK CANAL
Clarks Fork River
Bridger Creek
MUTUAL DITCH
C.B. & Q.R.R.
BRIDGER DITCH
LEGEND
Bridger Ditch (Incl. Bridger Ext.)
Mutual Ditch
Orchard Canal (Incl. Edgar Canal Ext.)
Orchard Ditch
Sand Creek Canal
Private Irrigation
Twp. 6 South
Rge. 23 East



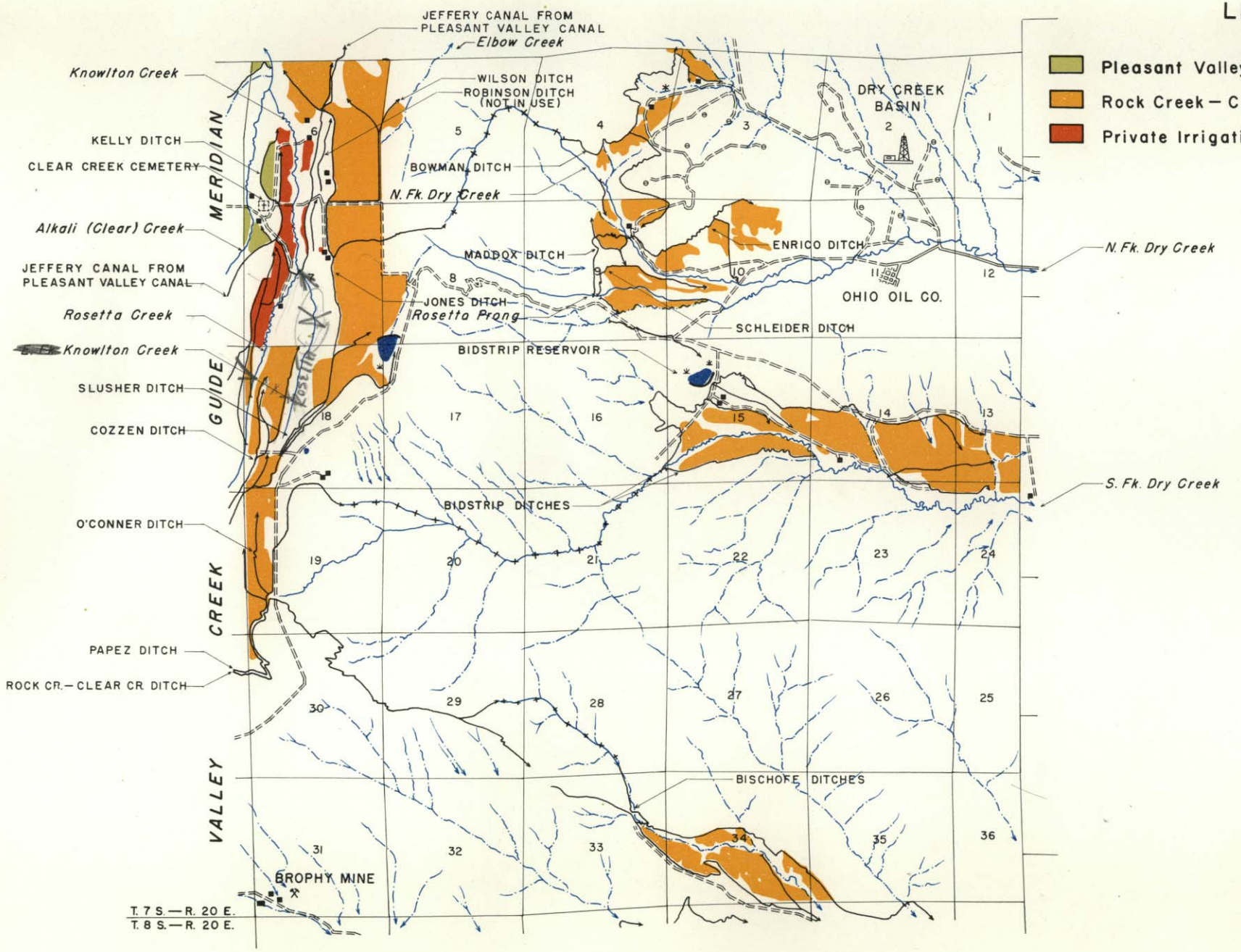
LEGEND

- Orchard Ditch
- Private Irrigation

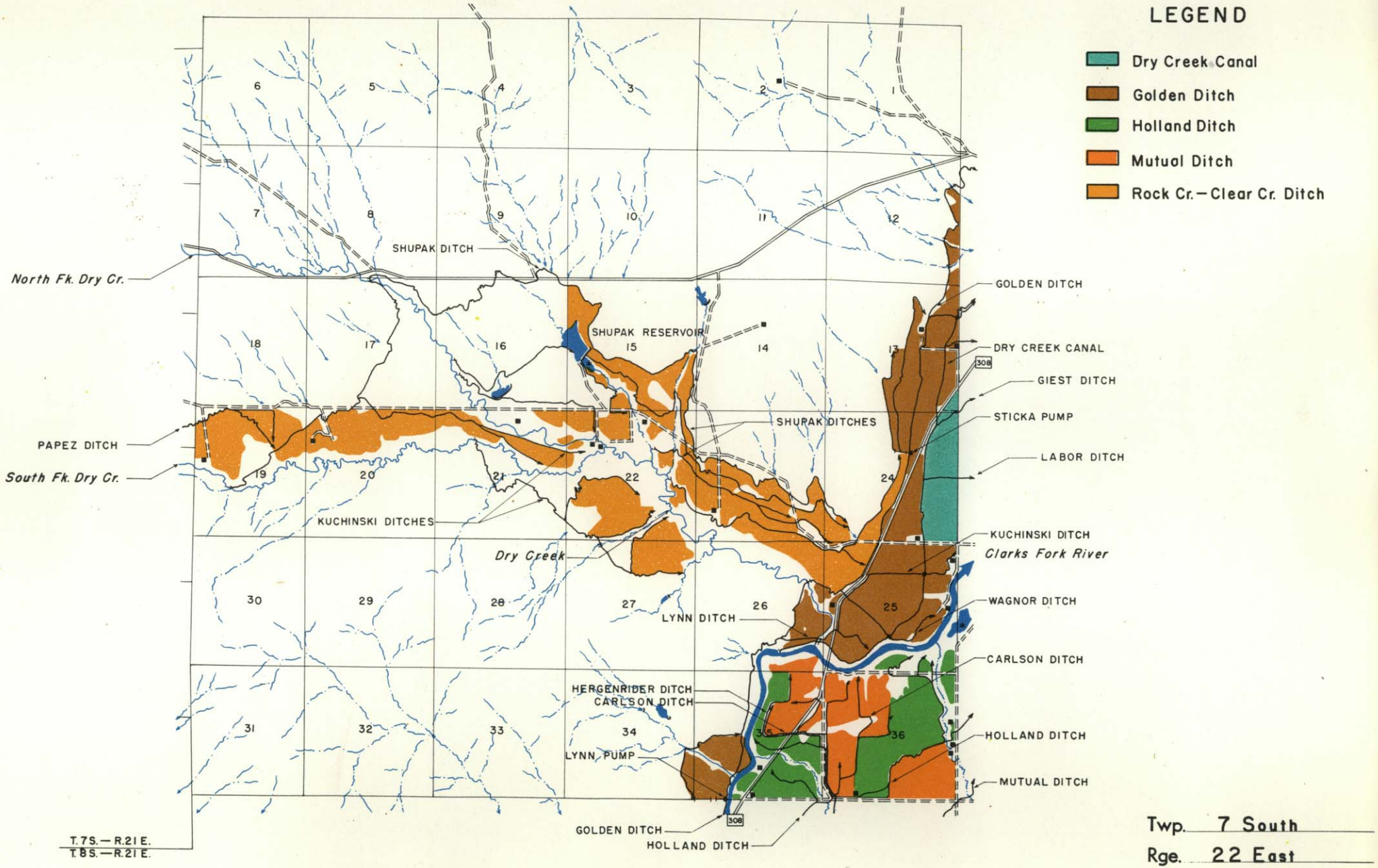
Twp. 6 South
Rge. 24 East

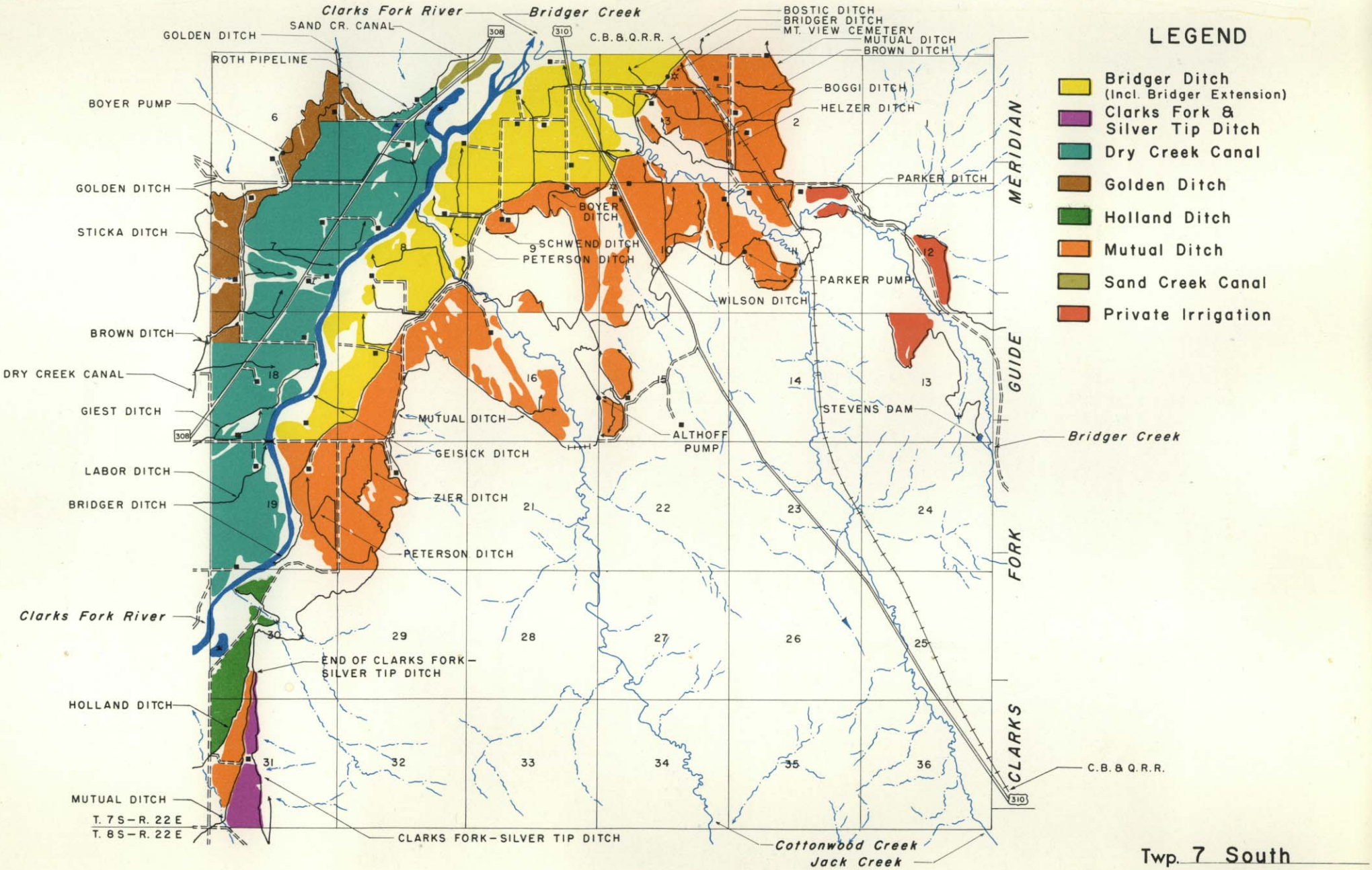


Twp. 7 South
Rge. 20 East



Twp. 7 South
Rge. 21 East


LEGEND
Dry Creek Canal
Golden Ditch
Holland Ditch
Mutual Ditch
Rock Cr.—Clear Cr. Ditch
SHUPAK DITCH
North Fk. Dry Cr.
SHUPAK RESERVOIR
GOLDEN DITCH
DRY CREEK CANAL
GIEST DITCH
STICKA PUMP
SHUPAK DITCHES
PAPEZ DITCH
South Fk. Dry Cr.
LABOR DITCH
KUCHINSKI DITCHES
KUCHINSKI DITCH
Dry Creek
Clarks Fork River
WAGNOR DITCH
LYNN DITCH
CARLSON DITCH
HERGENRIDER DITCH
CARLSON DITCH
HOLLAND DITCH
LYNN PUMP
MUTUAL DITCH
GOLDEN DITCH
HOLLAND DITCH
T. 7S. — R. 21 E.
T. 8S. — R. 21 E.
Twp. 7 South
Rge. 22 East

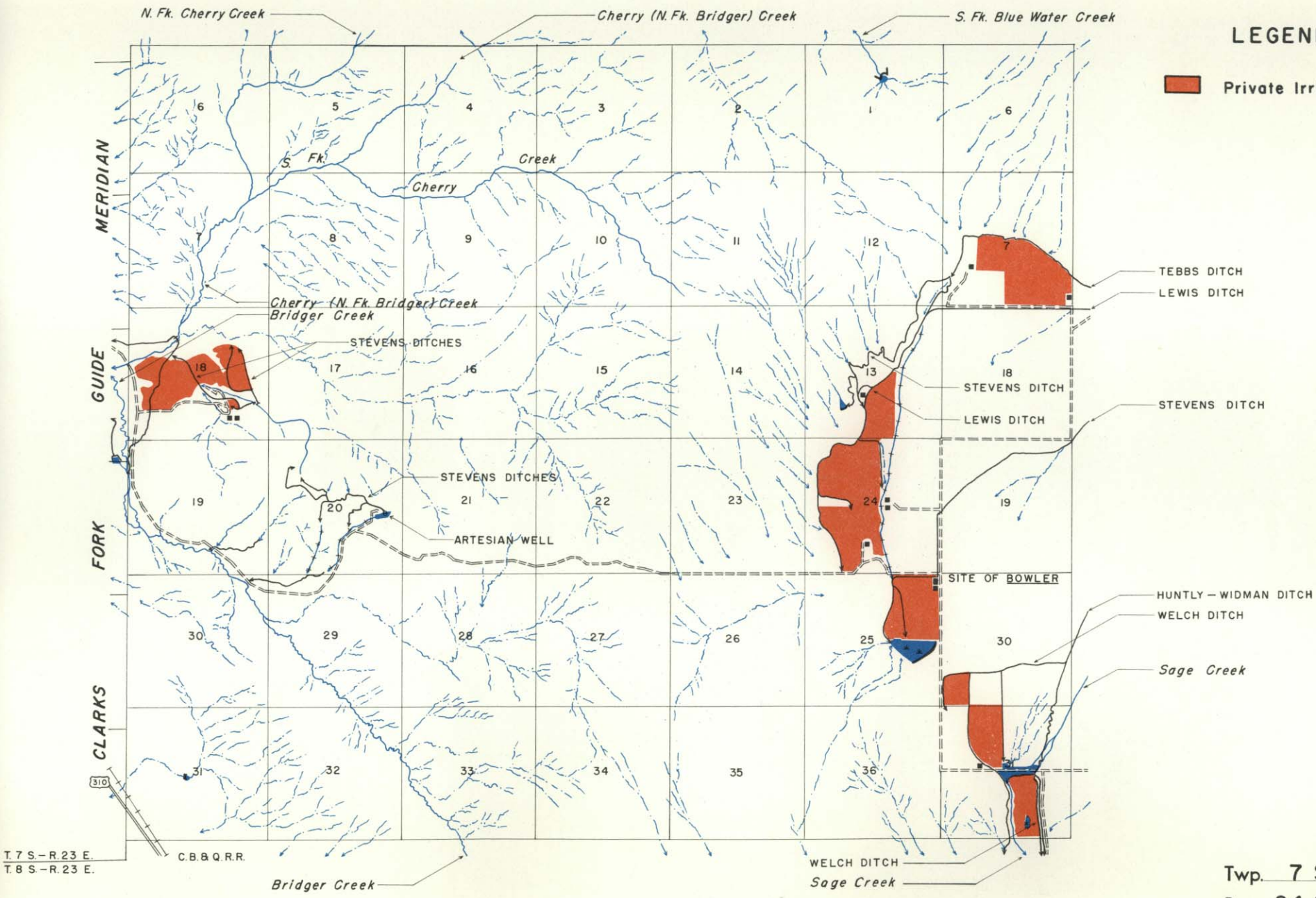


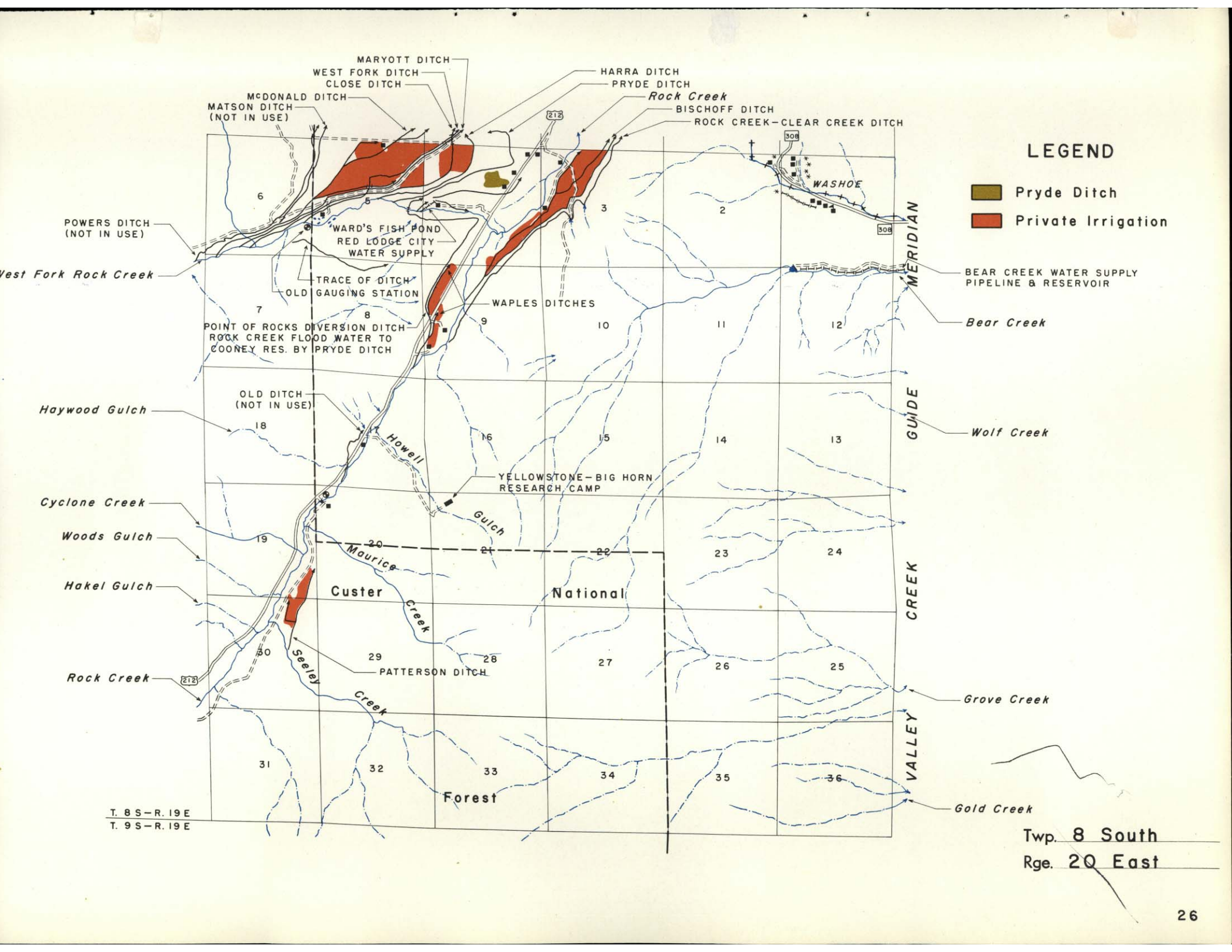
LEGEND

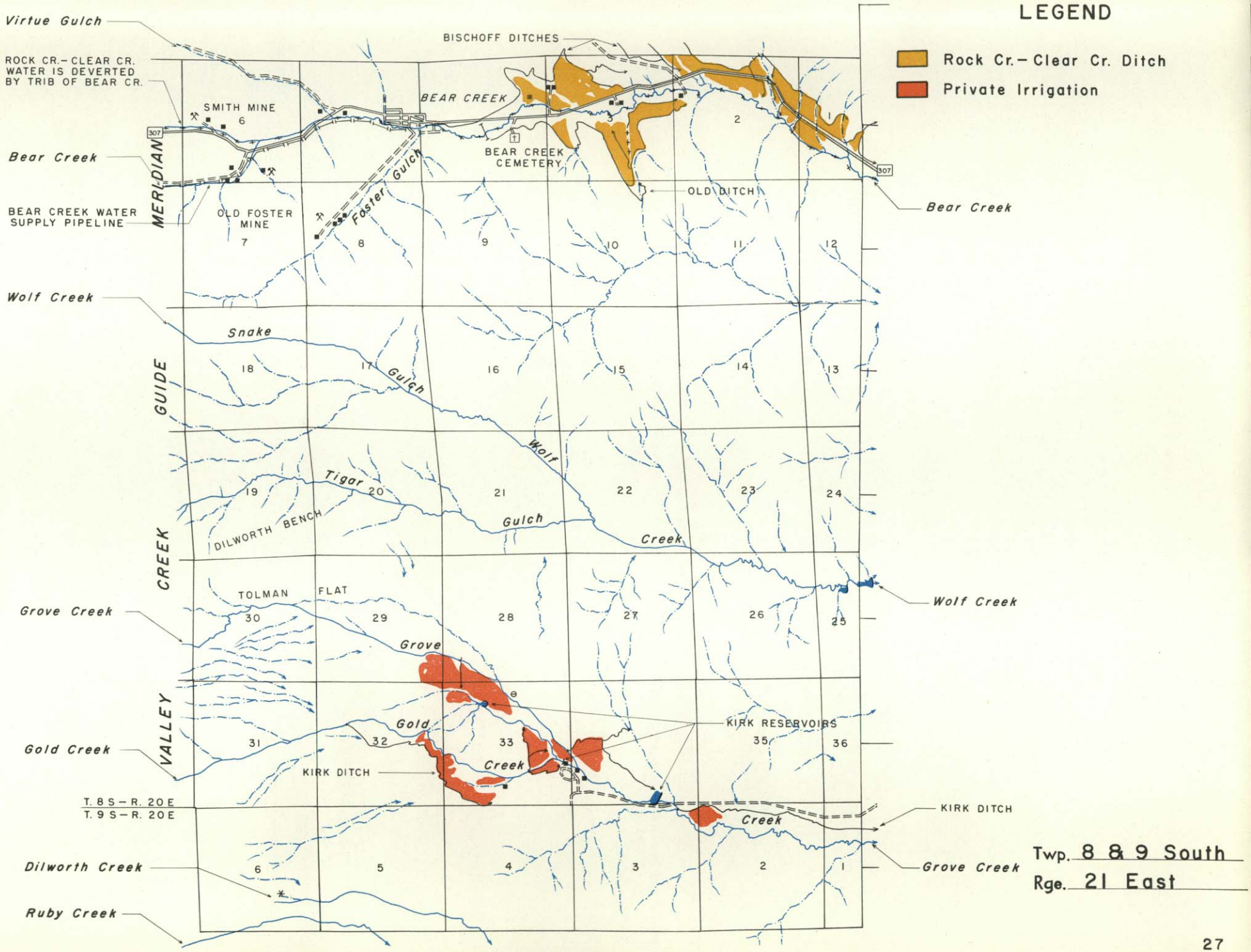
- Bridger Ditch (Incl. Bridger Extension)
- Clarks Fork & Silver Tip Ditch
- Dry Creek Canal
- Golden Ditch
- Holland Ditch
- Mutual Ditch
- Sand Creek Canal
- Private Irrigation

Twp. 7 South

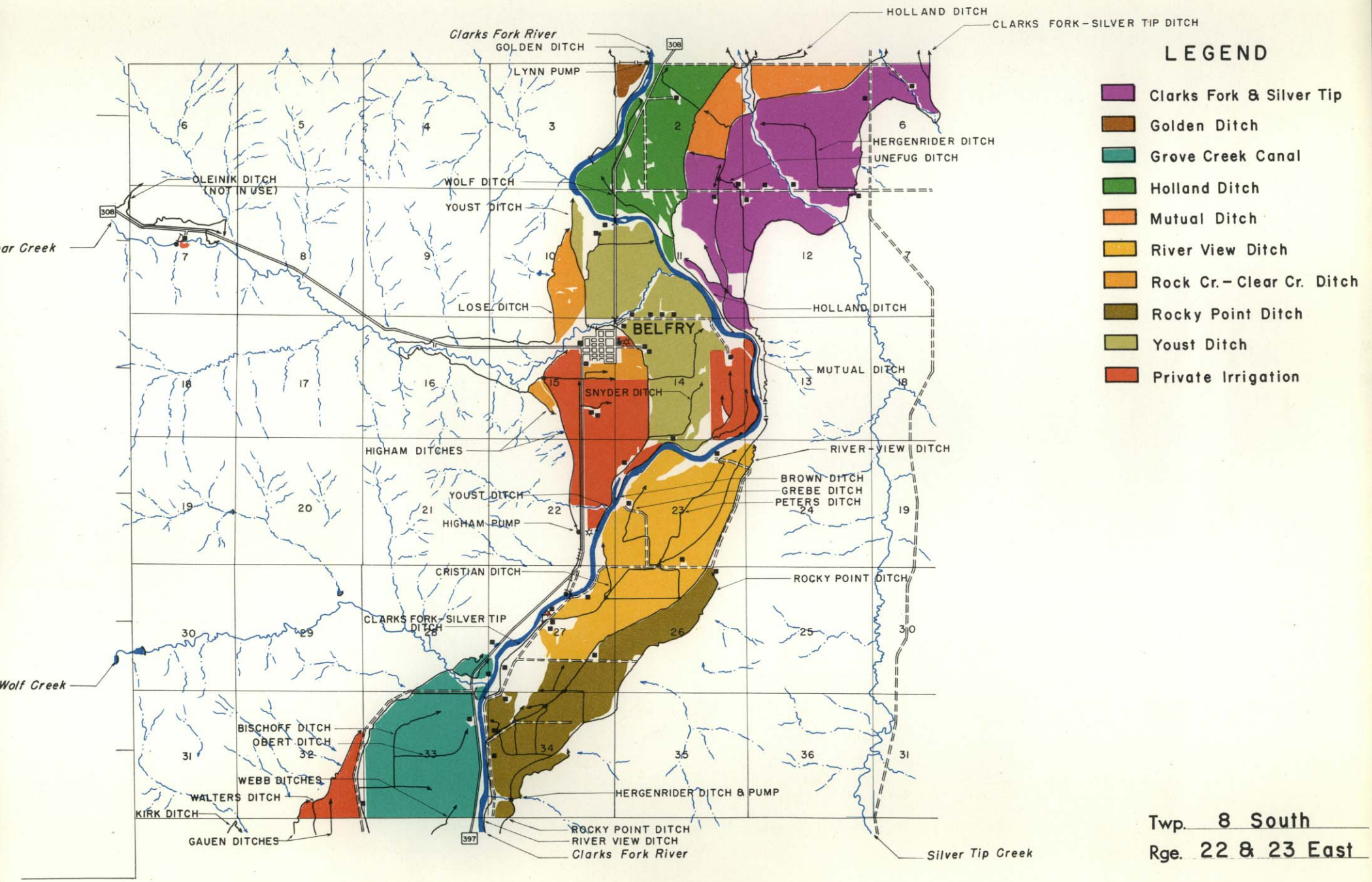
Rge. 23 East

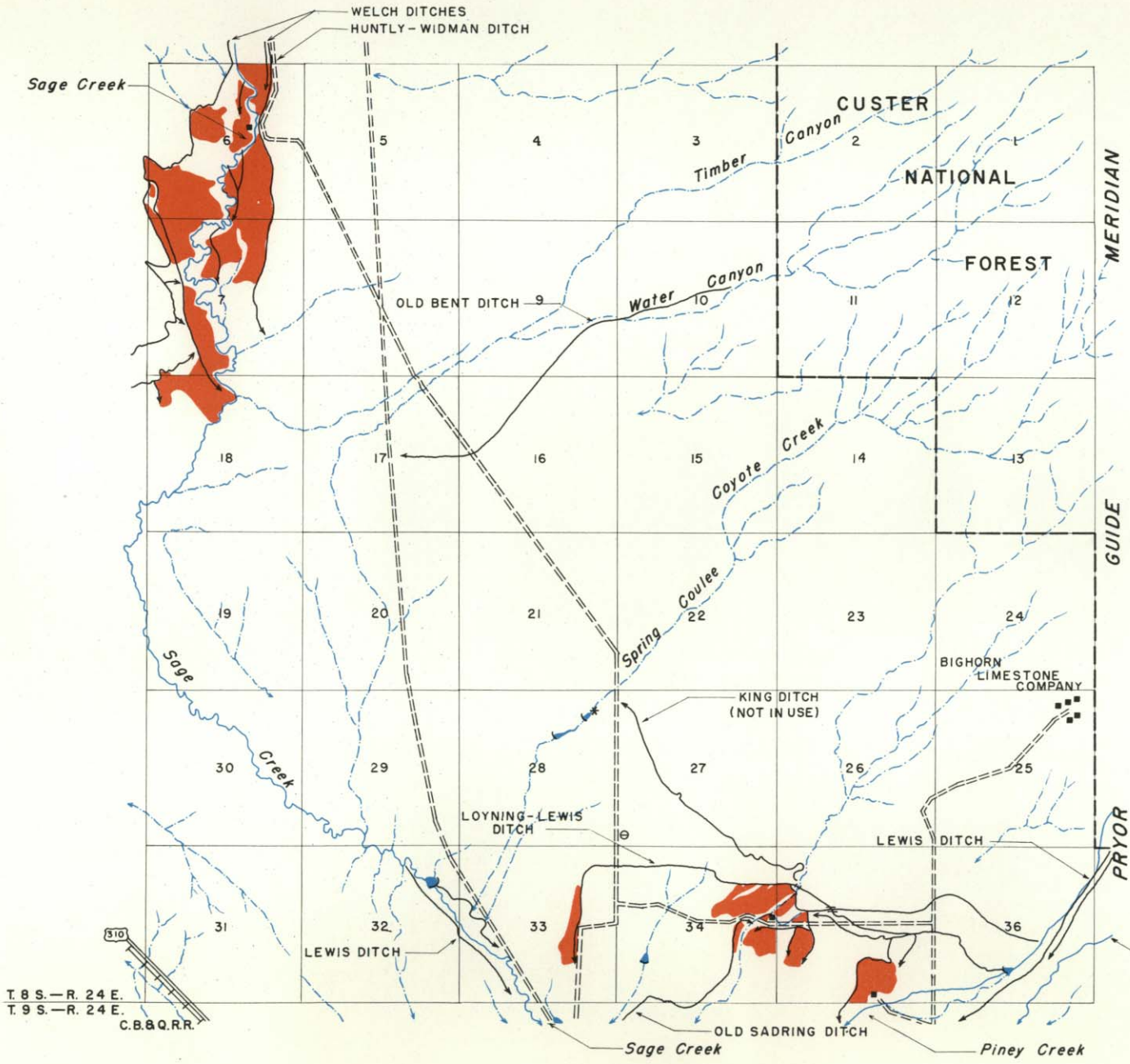

N. Fk. Cherry Creek
Cherry (N. Fk. Bridger) Creek
S. Fk. Blue Water Creek
LEGEND
Private Irrigation
MERIDIAN
GUIDE
FORK
CLARK'S
S. Fk. Cherry Creek
Cherry (N. Fk. Bridger) Creek
Bridger Creek
STEVENS DITCHES
STEVENS DITCHES
ARTESIAN WELL
TEBBS DITCH
LEWIS DITCH
STEVENS DITCH
LEWIS DITCH
STEVENS DITCH
SITE OF BOWLER
HUNTLY — WIDMAN DITCH
WELCH DITCH
Sage Creek
310
C.B. & Q.R.R.
T. 7 S. — R. 23 E.
T. 8 S. — R. 23 E.
Bridger Creek
WELCH DITCH
Sage Creek
Twp. 7 South
Rge. 24 & 25 East


MARYOTT DITCH
WEST FORK DITCH
CLOSE DITCH
McDONALD DITCH
MATSON DITCH (NOT IN USE)
HARRA DITCH
PRYDE DITCH
Rock Creek
BISCHOFF DITCH
ROCK CREEK-CLEAR CREEK DITCH
212
308
WASHOE
POWERS DITCH (NOT IN USE)
WARD'S FISH POND
RED LODGE CITY WATER SUPPLY
West Fork Rock Creek
TRACE OF DITCH
OLD GAUGING STATION
WAPLES DITCHES
POINT OF ROCKS DIVERSION DITCH
ROCK CREEK FLOOD WATER TO COONEY RES. BY PRYDE DITCH
BEAR CREEK WATER SUPPLY PIPELINE & RESERVOIR
Bear Creek
MERIDIAN
OLD DITCH (NOT IN USE)
Haywood Gulch
Howell
Wolf Creek
GUIDE
YELLOWSTONE-BIG HORN RESEARCH CAMP
Cyclone Creek
Gulch
Woods Gulch
Maurice
Hakel Gulch
Custer
National
Creek
CREEK
Forest
Seeley
PATTERSON DITCH
Rock Creek
Grove Creek
VALLEY
Gold Creek
T. 8 S-R. 19 E
T. 9 S-R. 19 E
LEGEND
Pryde Ditch
Private Irrigation
Twp. 8 South
Rge. 20 East



Twp. 8 & 9 South
Rge. 21 East


HOLLAND DITCH
CLARKS FORK-SILVER TIP DITCH
Clarks Fork River
GOLDEN DITCH
LYNN PUMP
HERGENRIDER DITCH
UNEFUG DITCH
OLEINIK DITCH (NOT IN USE)
WOLF DITCH
YOUST DITCH
LOSE DITCH
HOLLAND DITCH
BELFRY
MUTUAL DITCH
SNYDER DITCH
HIGHAM DITCHES
RIVER VIEW DITCH
BROWN DITCH
GREBE DITCH
PETERS DITCH
YOUST DITCH
HIGHAM PUMP
CRISTIAN DITCH
ROCKY POINT DITCH
CLARKS FORK-SILVER TIP DITCH
BISCHOFF DITCH
OBERT DITCH
WEBB DITCHES
WALTERS DITCH
KIRK DITCH
GAUEN DITCHES
HERGENRIDER DITCH & PUMP
ROCKY POINT DITCH
RIVER VIEW DITCH
Clarks Fork River
Silver Tip Creek
Wolf Creek
LEGEND
Clarks Fork & Silver Tip
Golden Ditch
Grove Creek Canal
Holland Ditch
Mutual Ditch
River View Ditch
Rock Cr. - Clear Cr. Ditch
Rocky Point Ditch
Youst Ditch
Private Irrigation
Twp. 8 South
Rge. 22 & 23 East

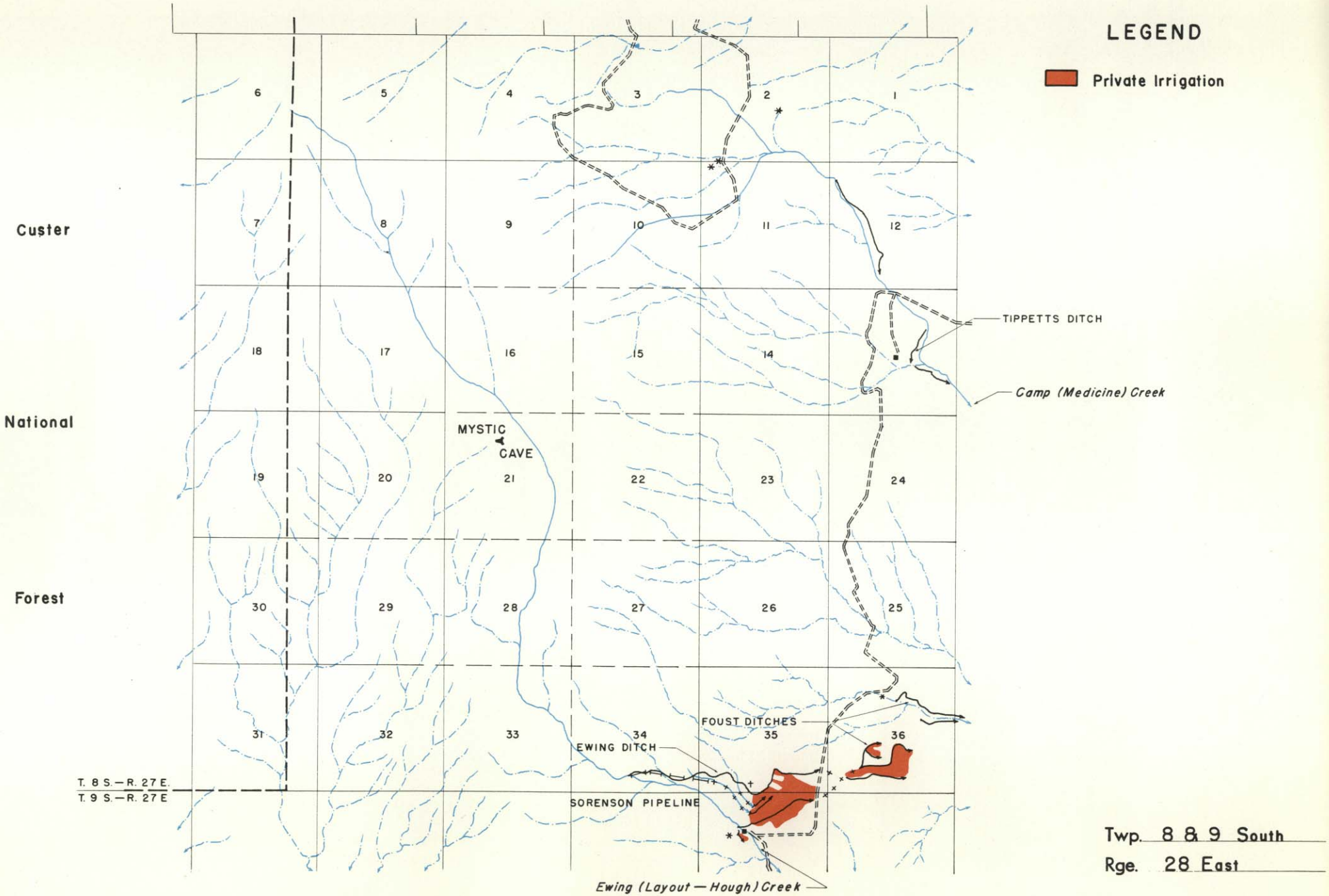


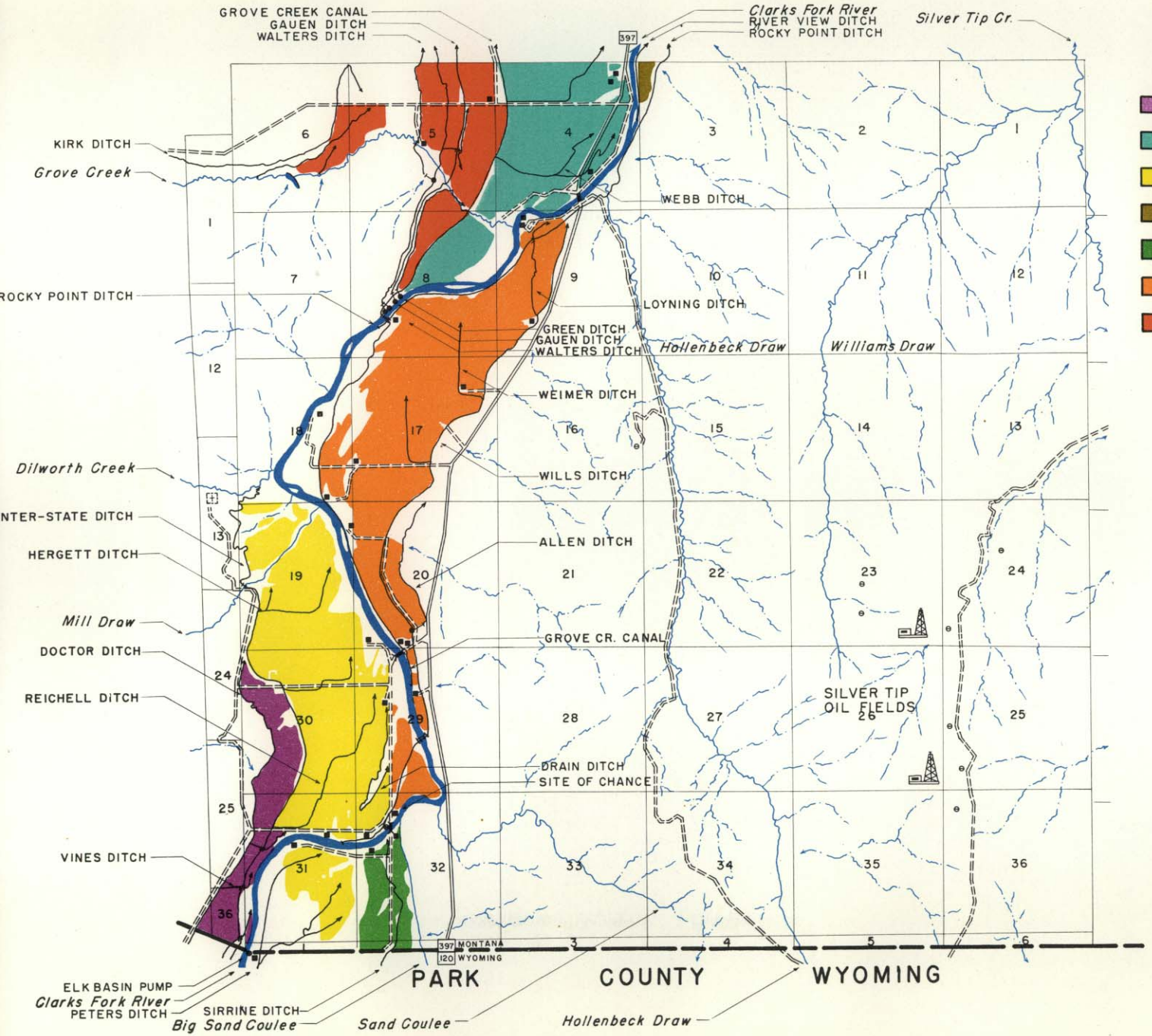
LEGEND

Private Irrigation

Twp. 8 South

Rge. 25 East

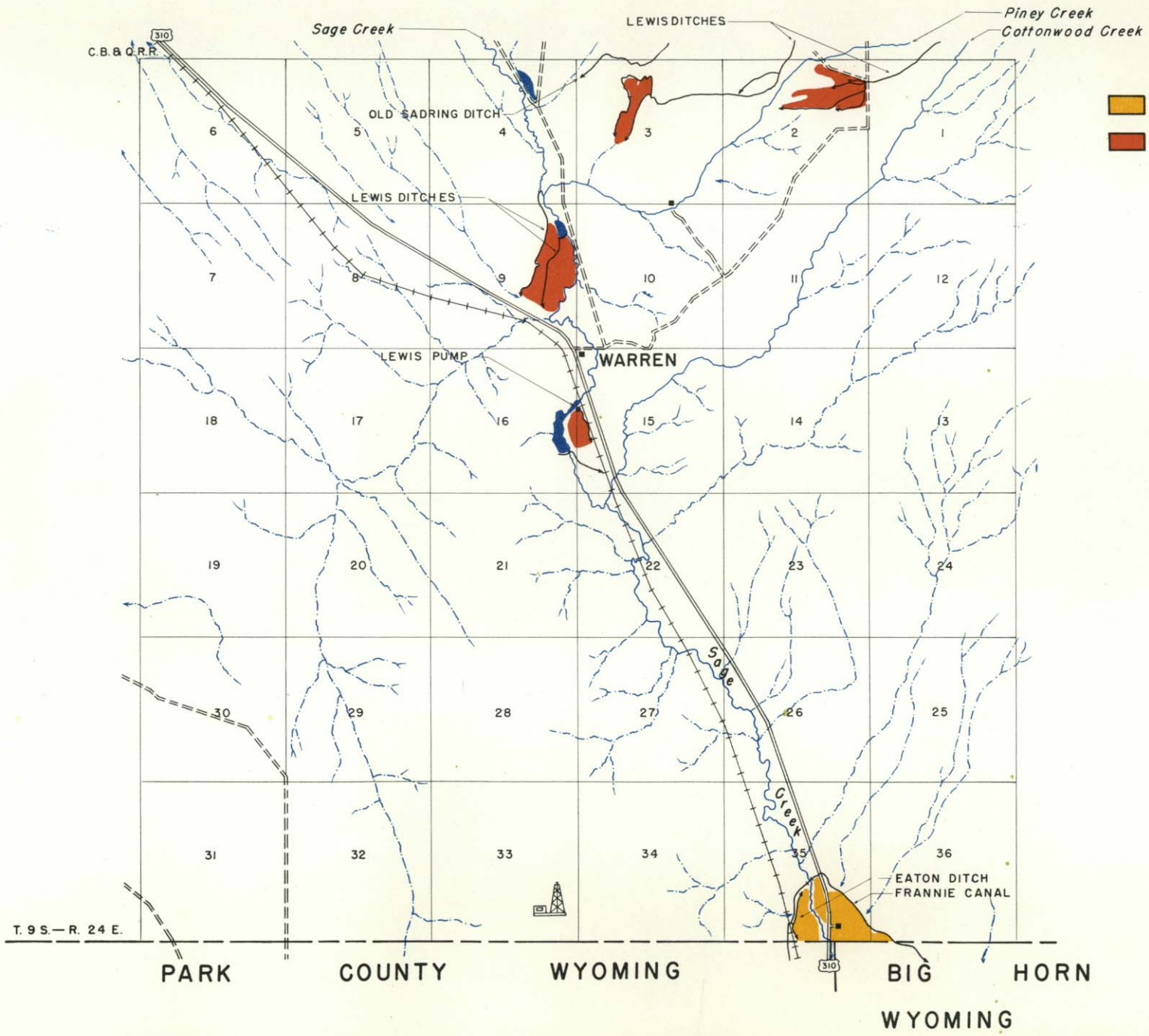

LEGEND
Private Irrigation
Custer
National
Forest
6
5
4
3
2
1
7
8
9
10
11
12
18
17
16
15
14
19
20
21
22
23
24
30
29
28
27
26
25
31
32
33
34
35
36
MYSTIC CAVE
TIPPETTS DITCH
Camp (Medicine) Creek
FOUST DITCHES
EWING DITCH
SORENSON PIPELINE
Ewing (Layout — Hough) Creek
T. 8 S. — R. 27 E.
T. 9 S. — R. 27 E.
Twp. 8 & 9 South
Rge. 28 East

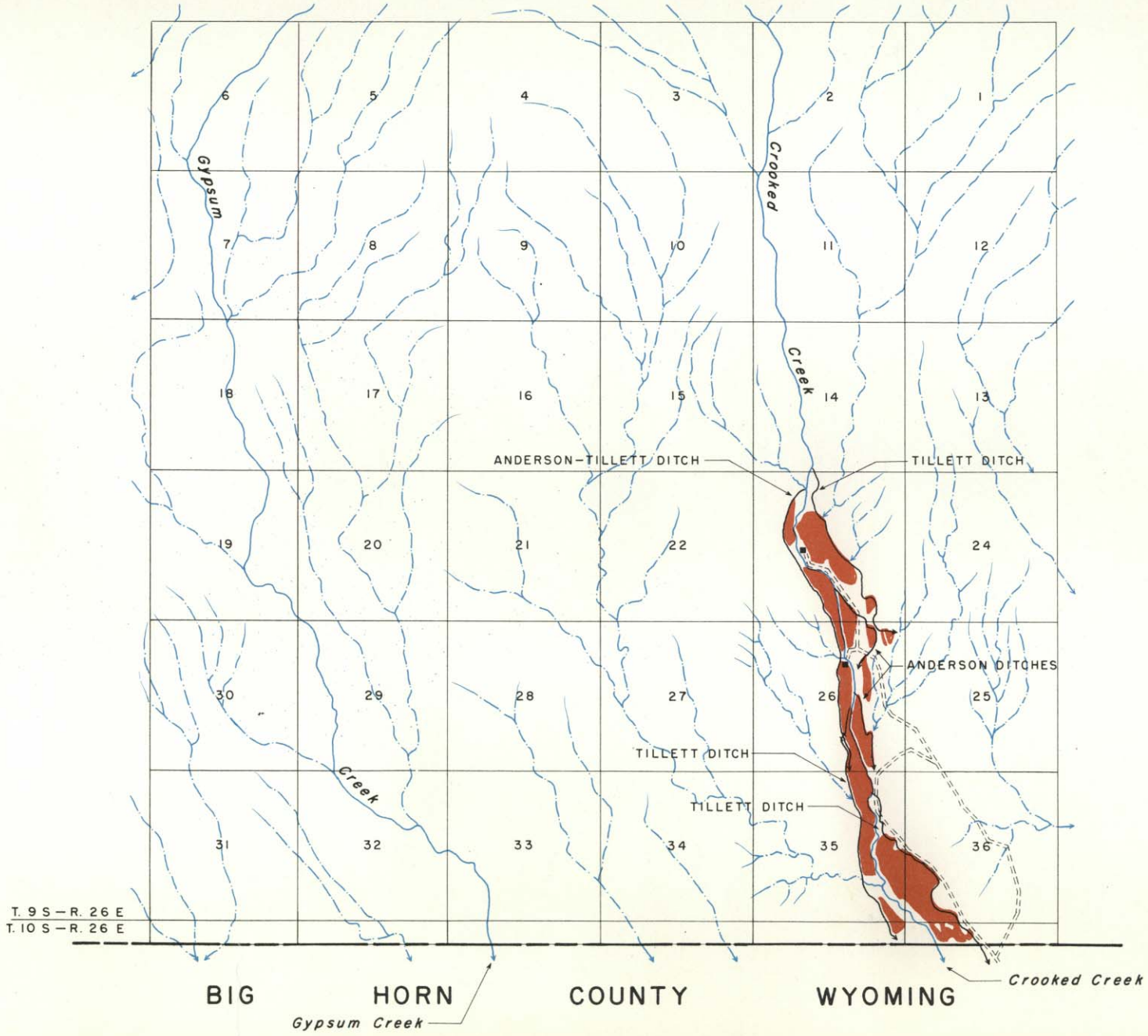


LEGEND

- Doctor Ditch
- Grove Creek Canal
- Inter-State Ditch
- Rocky Point Ditch
- Sirrine Ditch
- Wills Canal
- Private Irrigation

Twp. 9 & 10 South
Rge. 21 & 22 East


Sage Creek
LEWIS DITCHES
Piney Creek
Cottonwood Creek
C.B.&Q.R.R.
310
OLD SADRING DITCH
LEWIS DITCHES
LEWIS PUMP
WARREN
Sage Creek
EATON DITCH
FRANNIE CANAL
T. 9 S.—R. 24 E.
PARK COUNTY WYOMING
BIG HORN WYOMING
LEGEND
Frannie Canal
Private Irrigation
Twp. 9 South
Rge. 25 East


LEGEND
Private Irrigation
6
5
4
3
2
1
Gypsum
Crooked
7
8
9
10
11
12
Creek
18
17
16
15
14
13
ANDERSON-TILLETT DITCH
TILLETT DITCH
19
20
21
22
24
ANDERSON DITCHES
30
29
28
27
26
25
TILLETT DITCH
Creek
TILLETT DITCH
31
32
33
34
35
36
T. 9 S — R. 26 E
T. 10 S — R. 26 E
BIG
HORN
COUNTY
WYOMING
Gypsum Creek
Crooked Creek
Twp. 9 & 10 South
Rge. 27 East