Planning

Water Resources Survey

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

Teton County, Montana

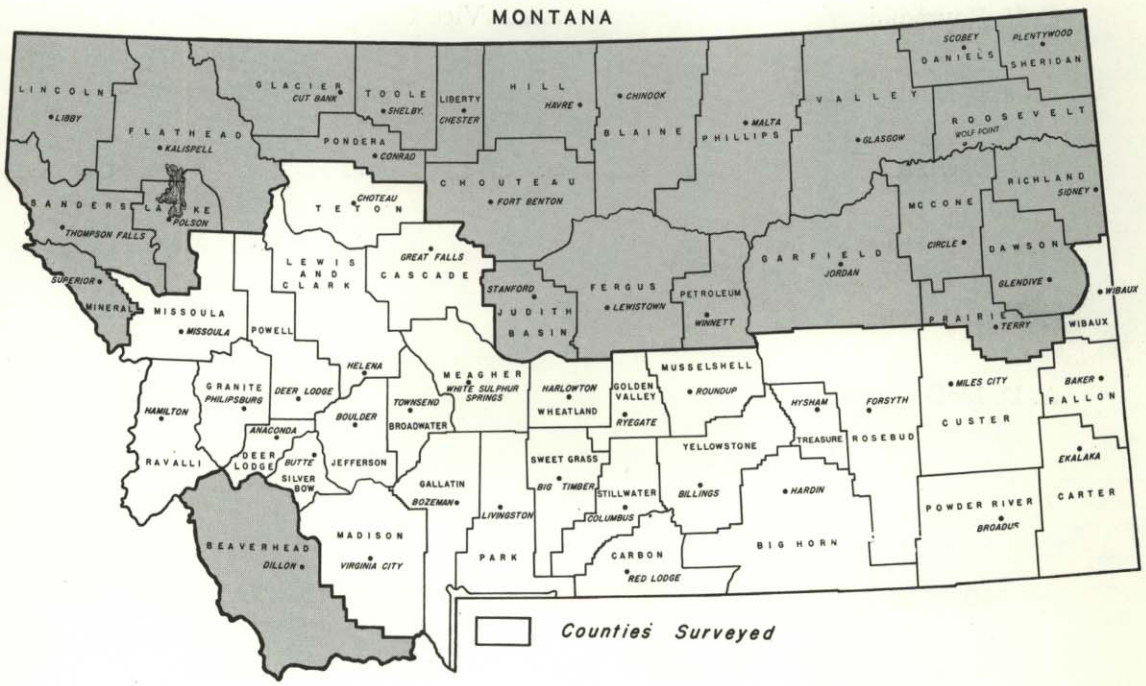
Published by
STATE ENGINEER'S OFFICE
Helena, Montana, June, 1962

WATER RESOURCES SURVEY

TETON COUNTY MONTANA

Part I

History of Land and Water Use
on Irrigated Areas



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June, 1962

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C. C. Bowman, Irrigation Engineer and Consultant, Bozeman

June, 1962

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

Dear Governor Babcock:

Submitted herewith is a consolidated report on the Water Resources Survey of Teton County, Montana.

This work was accomplished with funds made available to the State Engineer by the 37th Legislative Session, 1961, and in co-operation with the State Water Conservation Board and the Montana State Agricultural Experiment Station.

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, Custer, Deer Lodge, Fallon, Gallatin, Golden Valley, Granite, Jefferson, Lewis and Clark, Madison, Meagher, Missoula, Musselshell, Park, Powder River, Powell, Ravalli, Rosebud, Silver Bow, Stillwater, Sweet Grass, **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 this report 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,

FRED E. BUCK, State Engineer

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 co-operation 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.

County Officials

C. O. Juelfs, County Commissioner

Homer Rowland, County Commissioner

Martin Shannon, County Commissioner

G. E. Monkman, Clerk and Recorder

Elmer Erickson, Clerk of the District Court

Chester O. Baker, Assessor

Robert G. Dunbar — Professor of History, Montana State College

Dr. M. G. Burlingame — Department Head of History, Montana State College

Mrs. Gordon Monkman — Choteau, Montana

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Robert Gronberg	Secretary, Eldorado Co-operative Canal Company
Gordon Monkman	Secretary, Farmers Co-operative Canal Company
George Ebner	Manager, Sun River Project, Greenfields Irrigation District
Elmer Knaff	Secretary, Teton Co-operative Canal Company
D. P. Fabrick	President, Teton Co-operative Reservoir Company

The State Engineer's Office, Water Resources Survey, hereby expresses sincere appreciation to the many ranchers, farmers and stockmen who have given their helpful co-operation in this survey.

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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 January 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 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 Co. 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 Appropriations 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. After the Commissioner has been appointed the Judge gives him full instructions on how the water is to be apportioned and distributed in accordance with the 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 of the water in Lyman Creek near Bozeman. Before the adjudication of claims to the waters of Prickly 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 1,100 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 intercounty streams are found distributed 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 be readily 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 a 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 competent 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 aggrieved party. Another difficulty arises in determining the ownership of a water right when land under an ajudicated stream becomes subdivided in later years and the water 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 an adjudicated stream 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 the 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 other Western Reclamation States have used similar methods 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 Engineer, all recorded, appropriated and decreed water rights including 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 accelerating development as the need for its use increases and economical energy for pumping becomes available. Continued rapid development without some regulation of its use will 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 have become 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. (Chaper 237, Revised Codes of Montana, 1961).

This bill became effective as a law on January 1, 1962, with the State Engineer of Montana 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 water fit for domestic, livestock, or agricultural use. The Administrator, after a notice and hearing, is authorized to fix definite standards for determining fresh water in any controlled ground water area or subarea of the State.

(b) "Acquifer" 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 artificially withdrawn.

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

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

(f) "Administrator" means State Engineer 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 and 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 purposes of administration, large ground water areas may be divided into convenient administrative units known as "subareas".

Section 2. RIGHTS 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.

Montana's Ground Water Code provides for four different types of forms that may 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 deligently 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 subirrigation or other natural processes so as to enable such persons to describe the means of using ground water; to estimate the 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 subirrigation or other natural processes), prior to January 1, 1962 and will require the person within two (2) years after January 1, 1962, to file a declaration in the office of the county clerk of the county in which the claimed right is situated and shall contain the following information: (1) Name and address of the claimant; (2) the beneficial use on which the claim is 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 comply with this requirement shall in no wise work a forfeiture by not filing form No. 4, "Declaration of Vested Ground Water Rights", or prevent any such claimant from establishing such rights in the courts, but he must maintain the burden of proving such unrecorded rights. The law provides, however, that the court shall accept the filing of a "Declaration of Vested Ground Water Rights" as prima facie evidence of the right. This means that if a user has failed to make a filing and a case comes up in court to adjudicate the rights, the one who has not made a filing must prove his case by witnesses.

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

Copies of the four types of 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 Engineer); 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 filing of water right records in a central office under control of a responsible State agency, will provide the only efficient means for the orderly development and preservation of our water supplies and will protect all of Montana's use—on both ground and surface waters.

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 of 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 Engineer's Office 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.

HISTORY AND ORGANIZATION

Teton County is located in the northwestern part of Montana, east of the Rocky Mountains and southeast of Glacier National Park.

The Blackfeet Indians, consisting of the Piegan and Blood tribes, were in possession of this area as far back as recorded by white man's history. The Lewis and Clark expedition explored this part of the country to locate some of the headwaters of the major streams that emptied into the Missouri River. They traveled very light and mostly at night to evade the Blackfeet Indians and went as far north as the Marias River.

The Blackfeet Nation was hostile to American trappers and traders during this period, so in 1842, the American Fur Trading Company, wishing to trade with the Indians, established a permanent post at Fort Benton, in the Blackfeet territory. During the 60s and 70s, these Indians frequently attacked immigation trains moving between Fort Benton and such mining camps as Virginia City, Bannock and Last Chance Gulch (Helena).

Fort Shaw, a military post, was established on the Sun River, south of Fairfield, in 1867 to protect the people migrating into the territory. Soon after this Fort was built, many cattle were driven into the area from Texas. The present boundaries of the Indian Reservations in northern Montana were not established until about 1885, and trapping and trading with the Indians were the chief industries in this part of the territory for many years after the Lewis and Clark Expedition. Temporary trading posts, around which some of the local towns originated, were established at such points as Fort Shaw, Choteau and Dupuyer. Early freight trails from Fort Shaw through Choteau may still be seen on unbroken plateaus as deep depressions in the ground made by the wagon trains.

Prior to 1869, the Blackfeet Indian Agency had been located at Fort Benton, but due to the hostility of the whites, the United States government thought it best to choose a new site for the Agency. The new site chosen in 1869 was three and one-half miles northwest of the present town of Choteau, and called "Four Persons" or "Four Men", where four Crees were killed by the Piegans (Pikuni) in 1857. In 1876, "Old Agency" on the Teton River was abandoned, when A. B. Hamilton and I. N. Hazlett, merchants at the Agency, moved their store to the present site of Choteau.

The first permanent settlements in Teton County were made by "Squatters" near the military forts and trading posts, and by stockmen who generally located on the larger streams. Jim Gibson was one of the first to file on a homestead in the county, near what is now Choteau, in 1873. He was followed by Ed Dennis and other cattlemen. Irrigation was developed by the early stockmen in the stream valleys and on some of the lower benches during the late 80s and 90s. They saw the need for raising hay as a supplement for their grazing lands to prevent severe cattle losses during the winter months. The western part of Teton County is primarily a grazing area, suitable chiefly for the production of livestock, while the central, south and eastern parts of the county are tillable, much of which is adaptable to irrigation.

Teton County was formed March 1, 1893, from Chouteau County and was later sub-divided to form Toole, Glacier and Pondera Counties. The history of Teton County, as created, is a history of each locality.

Choteau, the county seat and the largest town in the county, is located in the valley of the Teton River, about 25 miles east of the Rocky Mountains and 55 miles northwest of the city of Great Falls. The town of Choteau was named after a famous St. Louis family of fur traders who played a prominent part in the development of fur trade in the Upper Missouri Valley. This family had a remarkable influence with the Indians, and for many years, the name of Chouteau was a passport which commanded safety and hospitality among the western Indians. The memory of the family is perpetuated by the naming of a creek in South Dakota, a county in Montana, and the county seat (Choteau) of Teton County.

In 1883, Isaac N. Hazlett layed out the townsite of Choteau, part of which was on his homestead, west of Main Street; and his partner, A. B. Hamilton, claimed the land on the east side of the street. Choteau was incorporated in 1894 as a town, and in 1913 was listed as a city, with Julius Hirshberg (known as Uncle Julius) as its first Mayor. The railroad came into Choteau that year, and the town grew to its present population of 1600.

Fairfield is the second largest town in Teton County, having a population of about 700. It is located in the southern part of the county, with its primary resources being agriculture. Fairfield's growth showed a marked increase, due to the reclamation program carried on by the government. The United States Bureau of Reclamation administrative offices are located at Fairfield, but the town is not considered an old-timer, its growth beginning with the increase in farming operations after 1900. Actually, the history of Fairfield and the Greenfields Bench is directly related to the development of the Sun River Irrigation Project. The agricultural lands surrounding the town have stabilized its growth, and thereby may curtail any sharp increase in its population.

Dutton, the third largest town in Teton County, has a population of about 400. It is located in the eastern part of the county on a branch line of the Great Northern Railway. The year of 1910 saw many people moving to the Dutton vicinity. At that time, Dutton was a mere railroad siding, named after a freight and passenger agent of the Great Northern Railway, by the name of Dutton. The town is situated in an area which is one of the finest wheat raising districts in Montana.

Other small towns and rural communities are: Agawam, Bole, Bynum, Collins, Farmington, Pendroy and Power.

Agawam: Agawam is a small station at the end of a branch line of the Chicago, Milwaukee, St. Paul and Pacific Railroad which passes through the Farmington area. Agawam is an Indian name meaning "marshy land".

Bole: The original name for Bole was Limington, a station on the Great Northern Rail-

road, some ten miles north and east of Choteau. The name of Limington was changed in 1915 to Bole, after the editor of the Great Falls Tribune.

Bynum: Bynum is named after the Bynum family who settled there early in the 1880s. Stephen Bynum and his family operated a store and the Post Office at what is now known as "Old Bynum" on the banks of Muddy Creek, approximately fourteen miles northwest of Choteau.

Collins: The small community of Collins was named for Mrs. Nat Collins, called the "Cattle Queen of Montana". When the narrow gauge railroad from Great Falls to Canada was abandoned and replaced by a standard gauge in 1902, the railway stations of "Old Collins" and "Brighton" were consolidated under the name of new Collins of today.

Farmington: Farmington is a small rural community six miles north of Choteau, on a branch line of the Chicago, Milwaukee, St. Paul and Pacific Railroad. The agricultural area surrounding Farmington was known as the Burton Bench, but is known today as the Farmington Bench.

Pendroy: The town of Pendroy came into being in 1916, when the Great Northern Railway was extended north from Bynum. The town was named after L. C. Pendroy, who owned land near the present town.

Power: Power is located in the southeastern part of Teton County on a branch line of the Great Northern Railway. One of the earliest land marks in the Power vicinity is an old stone and frame two-story building built by Major George Steele (Steell), prominent in the early life of Teton County. The land owned by Steele was later developed into a cattle ranch by T. C. Power, of Helena, for whom the town was named.

CLIMATE

Teton County climate is influenced to a considerable extent by topography, ranging in elevation from near 9,000 feet along mountain ridges and east of its western border to about 3,400 feet where the Teton River flowing eastward, leaves the County. The principal drainage is that of the Teton River, which, along with its tributaries (Deep Creek and Muddy Creek) drains most of the County. Much of the very mountainous western edge of the County is drained by the North Fork of the Sun River above Gibson Reservoir (flowing south to southeast) and upper Dupuyer Creek (flowing northeast). The varying directions and sizes of these drainages also add local climate influences. The County as a whole is mountainous or hilly, but there are large areas level enough for grain and stock ranching from several miles west of Highway 89 to the eastern border.

While its location east of the Continental Divide would tend to classify its climate as a so-called "continental" type, there is an important exception in the Foehn (known as Chinook locally) winds that blow several times each winter, often for days without interruption. These Foehn winds, which can develop gale or stronger speeds, have the effect of shortening cold spells, removing snow from the windier sections east of Sun River Canyon, and producing relatively clear, sunny winter weather. It is not uncommon for temperature rises of 40° F.,

or even more to occur within a few hours when the Foehn begins to blow. The area is visited a few times each winter by invasions of cold air from Arctic sources, usually following a southward-moving cold front. Mid-winter temperatures can fall to near or below zero after such cold air arrives, and to well below zero (particularly when the ground is snow-covered) on clear nights before the Foehn begins. The coldest observed in the County in 50 years was —50° at Choteau on February 15, 1936, but most winters produce minimums in the —20° to —30° range. Below zero readings seldom last more than two or three days, and most of the County will average between 43° and 44° in a normal year.

Summer temperatures are warm most days, afternoon highs averaging 80° or a little warmer during July and August—except in the mountainous western fourth where averages a little under 80° are more common. On the other hand, extremely warm weather seldom occurs, and afternoon highs of 100° or warmer are uncommon, occurring in the County only once every 7 or 8 years. In 50 years (not consecutive) at Choteau, the hottest has been 106°—only once, on August 26, 1899. Even the warmest summer days, however, are followed by nighttime cooling to the 45°-55° range by the next morning. July minimums at Choteau average about 49°, usually with only small changes from day to day. The 32° freeze-free season at Choteau (fairly representative of the central and eastern parts of the County) averages 105 days, from May 30 to September 12, while the 28° freeze-free season averages from May 15 to September 23—131 days.

As expected in a mountainous area, precipitation varies considerably from the mountainous western edge to the lower elevations central and east. It averages annually about 11.5 inches at places like Bynum, Choteau, and Fairfield to 14 to 15 inches at slightly higher points such as Blackleaf and Pendroy, and to about 28 inches at Wrong Creek on the Sun River north fork above Gibson Reservoir. It is believed that annual precipitation reaches 60 inches or more on some of the western mountains. Except in the mountains, where half or more of the annual total falls as snow and contributes substantially to the spring runoff observed in all streams with mountain sources, a high precentage of the annual average has been measured during the April-September growing season. In the important agricultural areas, as much as 82 percent of the yearly normal accumulates between April 1 and September 30 (see table below). May and June are the wettest months over the lower elevations, while seasonal variations over the mountains are less pronounced. The late spring and early summer normally comprise the "wet" season which is especially helpful to the considerable "dryland" agriculture that operates in the County. Winter precipitation (December-March) usually totals less than one inch of water content from winter snowfall or around 35 inches (except in the mountains). Individual snowstorms seldom deposit more than a few inches, and snow, wind, and cold rarely combine in sufficient strength to produce blizzard conditions—except in the mountainous higher elevations along the western edge of the County. In the higher mountains, winter snows are usually quite heavy and can probably reach annual totals of 500 inches or more in some places.

Except along the western edge mountain ridges, the County experiences considerable clear, sunny weather throughout the year. Summer relative humidity is not high, and oppresive combinations of heat and humidity are unknown. In fact, relative humidities of 25 percent or less occur on several afternoons each summer. High winds can occur, usually

during peaks of well-developed Foehn situations, which may be observed two to six or eight times a season. Thunderstorms are fairly common during late June, July, and August, being observed on about 20 to 30 days each year. Occasionally one of these thundershowers may carry hail, sometimes large and heavy enough to cause crop or, more rarely, structural damage. Really severe hail damage, however, seldom occurs over more than a very small area, and most hail that does occur is observed in the eastern half of the County.

Tornadoes are practically unknown. A few funnel-shaped clouds have been reported over the years, but there is no instance on record of confirmed tornado damage. Fog is uncommon over Teton County, usually occurring on only a few days a year, and even then usually lasting only a few hours per occurrence. Nearly all fog occurs in late fall or early winter—it is rare during spring and summer.

Selected temperature and precipitation data for Teton County are listed in the following table:

TEMPERATURE

Station	Highest of Record	Lowest of Record	June Average	July Average	Annual Average
Blackleaf (1955-1960)	96	-36	21.3	62.5	40.7
Choteau (1918-1960) #	106	-50	22.0*	66.4*	43.5*
Fairfield (1927-1960)	101	-44	21.7*	66.9*	43.9*
Conrad (Pondera) (1911-1960)	103	-45	19.6*	67.0*	43.1*

Also (1893-1898 (1905-1907)
* 1931-1960

PRECIPITATION

Station	Yearly Average	Growing Season + Average	Per Cent Falling in Growing Season	Wettest Year	Driest Year
Blackleaf (1950-1960)	14.92	11.00	74%	21.42 (1953)	8.36 (1960)
Bynum 4 SSE (1952-1960)	11.51	8.94	78%	16.34 (1953)	7.19 (1960)
Choteau (1918-1960) #	11.45*	9.34*	82%	22.52 (1927)	5.60 (1960)
Conrad (Pondera) (1911-1960)	12.18*	9.49*	78%	19.48 (1941)	6.87 (1960)
Dutton (1940-1960)	13.34	9.83	74%	19.10 (1953)	8.36 (1952)
Fairfield (1927-1960)	11.72*	9.32	80%	18.03 (1927)	4.48 (1935)
Pendroy (1941-1960)	13.52	10.58	78%	19.45 (1953)	8.21 (1952)
Wrong Creek (Storage) (1951-1959)	28.11	15.93	† 57%	35.97 (1953)	16.92 (1952)

+ April-September
* 1931-1960
# Also 1893-1898, 1905-1907
† Estimated

SOILS

Soil formation is not a simple process, yet a knowledge of a few of the factors which contribute to the development of soil aids in understanding the pattern of soil distribution. Soils are formed largely through the action of climate on parent material over an extended period of time. Vegetation is relegated to secondary position because its distribution is to a considerable extent controlled by climate and parent material. Topography also has an important influence on soil formation, because it affects both local climate and erosion. Erosion slows soil development by removing some of the products of soil formation.

Teton County occupies a transitional zone between the Rocky Mountains and the Northern Great Plains. The mountains were formed after the Mesozoic era by a fault known as the "Lewis Overthrust". They rise 2,000 to 4,000 feet above the gravel capped plateaus and are eroded into sharp barren peaks and serrated ridges.

A strip along the western border of the County approximately ten to twelve miles wide comprises most of the mountainous area of the County. Much of this area consists of barren rock or shallow, poorly developed soils (Lithosols). The high, relatively level table lands grow grass and forbs, and where there is sufficient depth of unconsolidated material, Black and Dark Brown (Chernozem and Chestnut) soils have developed. The soils are fertile, but the area has a short growing season. In this area, some alluvial soil occurs along the stream channels.

Gray Wooded soils occur in a band 2-5 miles wide approximately following the eastern edge of the Lewis and Clark National Forest. These soils have organic matter or duff on the surface one to two inches thick. Below this lies a thin layer of bleached material, followed by a blocky subsoil horizon extending to a depth of one foot or more. The profile contains considerable stone. The area originally was covered with conifer forest, but a large portion has been logged and burned. The present cover consists of grass or a thin stand of Limber pine, a dense stand of Lodgepole pine, with an understory of brushy forbs and grass.

From the eastern edge of the Gray Wooded soils to a line running approximately north and south about 3 miles east of Choteau, the well developed soils consist of Chernozem and Chestnut soils, but these are interspersed with shallow and gravelly soils showing only slight development. The Chernozem soils occur most frequently toward the western edge of the zone and are associated with higher effective precipitation. Precipitation effectiveness is associated with total precipitation and its seasonal distribution, temperature which is associated with elevation, and wind movement. In general, the Chernozem soils are higher in organic matter, more fertile, and less subject to drought than the Chestnut soils. The shallow and gravelly soils are likely to be more subject to drought than the developed upland soils, because they generally do not have the capacity to store much moisture.

East of the line running north and south about 3 miles east of Choteau, the soils are predominately a mixture of Chestnut and Brown soils interspersed with shallow and gravelly soils. The Brown soils are developed under a lower effective precipitation than the Chestnut soils and are consequently more subject to drought unless irrigated.

In the southeast corner of the County and in the vicinity of Greenfields Lake, several square miles of clayey, salty soils occur, much of which is poorly drained. Some areas, particularly in the eastern part of the County, contain soils that are adversely affected by absorbed sodium which causes a dense impervious layer a few inches below the surface. Several areas in the central part of the County also have a lime cemented hardpan soil. (For detailed Soils information—see Teton County Soil Reconnoissance Survey published in 1937, Bulletin 332 by the Montana Agricultural Experiment Station).

CROPS AND LIVESTOCK

Teton County includes an area of approximately 1,468,160 acres. According to 1959 Bureau of the Census figures 1,246,526 acres, or about 85% is included in farms. The non-farm portion of the County lies at the extreme west end, including a portion of the Lewis and Clark National Forest. This is a mountainous area bounded on the west and south by the North Fork of the Sun River.

The economy of the County is based very largely on the production and sale of crops and livestock. Bureau of the Census figures show that in 1959 there were 831 farms and ranches in operation. This brings the average operating unit size to approximately 1,500 acres with an average value per farm of $99,863. in land and buildings. The average per acre value of farm land on this basis was $64.25. The total value of farm and ranch land and buildings in the County amounts to $82,986,153.00.

The estimated value of the total agricultural production in 1959 was $17,206,290. This total was divided between $12,518,800 as a value for crops and $4,687,490 for livestock and livestock products. These figures will, of course, vary somewhat from year to year.

A table which accompanies this text lists the principal crops of winter wheat, spring wheat, durum, oats, barley and flaxseed. It also shows a division between irrigated and non-irrigated acreages and yields. The total production and value is listed on this table. In addition to the crops listed, there are varying amounts of other crops such as canary seed and mustard in some years. A substantial part of the hay production, mostly alfalfa, comes from the irrigated Fairfield area. This tonnage will range from 40,000 to 50,000 tons, much of it for sale as a cash crop.

The use of irrigation is a highly important factor in stabilizing the economy of the County. The largest irrigation development is that of the Greenfields Irrigation District in the Fairfield area at the southern edge of the county. There are 63,648 acres under irrigation in this project area. Elsewhere in the County, there are 77,366 acres under irrigation by many private individual systems, one irrigation district, and four local ditch companies. These areas lie north and east of Choteau in the Agawam and Bynum areas, along the stream valley above and below Choteau on the Teton River, and in the numerous smaller stream valleys coming out of the foothills at the eastern edge of the mountains.

The central, northern and eastern parts of the County include some of the most consistently

productive dryland areas in Montana. Virtually all of the dryland production is carried on under an alternate crop and fallow system which stabilizes production and tends to conserve soil and moisture. The entire County is included in an active Soil and Water Conservation District with conservation measures being used by a high percentage of operators on both dryland and irrigated units. The entire County is also included in a legally organized Weed Control District. This district operates quite effectively, but the control of noxious perennial weeds is still a serious problem, especially in areas under irrigation. A greater amount of progress toward the eradication of the noxious perennial weed problem is being accomplished in the dryland areas.

The livestock and grazing figures in the accompanying table are based on a total of 44,000 head of cattle and calves, including 2,700 milk cows; 27,100 head of sheep and lambs; 1,400 head of horses and mules for a total of 51,220 animal units. The sheep and lamb grazing is figured on the basis of one animal unit for each five head of sheep and lambs. The grazing value for this number of animal units is based on a six-month grazing period with an estimate of $2.50 per animal unit month for 307,320 animal unit months involved. The above items are the basis on which the estimated value of $768,300 for the grazing has been reached.

The principal breeds of beef cattle are Herefords, Angus and Polled Herefords. There are approximately 10 purebred breeders in the County with all three breeds mentioned above being represented. Four cattle ranchers are participating in the Montana Beef Performance Registry Association program. The entire County has been designated a modified certified brucellosis-free area for about five years. An effective testing and vaccination program is being continued for the eventual elimination of brucellosis in the County. A few operators have done some drylot feeding of cattle on a more or less trial basis, but feeding to slaughter finish has not become established as a general practice in the County.

Dairying is the principal business of numerous units in the Fairfield area. The size of these dairy units has increased considerably within the past few years, and their production and efficiency have improved with the development of better methods and the use of improved equipment. The operation of a dairy herd testing and improvement association has been a factor in the improvement of the efficiency and production in the dairy business.

The importance of swine production has shown a substantial increase within the last two or three years. The 1959 Census shows 5,368 hogs and pigs on 177 farms in the County. There has been an increase in this number since 1959, though accurate current figures are not available.

The poultry business as a commercial venture is important only on a relatively small number of units in the County, but there were 38,290 chickens on 375 units according to the 1959 farm census.

Listed below is a table showing the crops, their acreages, yields and value, with a total of livestock and livestock products sold during the year 1959.

CROPS PRODUCTION, 1959, HARVESTED ACRES

CROPS	Irrigated		Non-Irrigated		TOTALS		
	Acres	Yield Per Acre	Acres	Yield Per Acre	Acres	Bushels	Value
Winter Wheat	7,000	43.0 bu	118,200	29.0 bu	125,200	3,728,800	$5,966,100
Durum	300	34.0	13,100	16.0	13,400	350,800	652,500
Spring Wheat	4,600	30.0	35,400	20.0	40,000	846,000	1,446,700
Oats	3,000	44.0	3,600	29.0	6,600	236,400	130,000
Barley	4,300	39.0	84,300	34.0	88,600	3,033,900	1,972,000
Flaxseed	1,400	15.0	1,000	9.0	2,400	30,000	80,700
All small grains and flaxseed, except nothing shown for premium on Malting Barley					276,200	8,225,900	$10,248,000
Potatoes	210	150 cwt			210	31,500 cwt	105,500
All hay	28,200	1.49	25,700	0.84 tons	53,900	63,500 tons	1,397,000
Annual grazing Value						307,320 A.U.M.	768,300
Annual total crops value							$12,518,800
Annual livestock and livestock products sold							4,687,490
Total Agricultural production sold							$17,206,290

SOURCES OF WATER SUPPLY

Teton County drainage areas consist of streams flowing into Missouri River Tributaries; the principal streams being, the Teton River and the North Fork of the Sun River. The topography of Teton County is comprised mainly of two bench lands; the Fairfield Bench and the Farmington Bench, which lie on the eastern slope of the Rocky Mountains.

North Fork of the Sun River: The North Fork of Sun River heads on the west boundary of Teton County and flows in a south and east direction to form most of the boundary of the western and southern part of the county. This stream is adjudicated and its water used in Teton, Lewis and Clark and Cascade Counties.

It is from the North Fork of Sun River that the water is supplied for the largest single

unit of irrigation in the county, the Greenfields Division of the Sun River Project, built by the United States Bureau of Reclamation. Water is supplied to the project by the storage of flood water in reservoirs located on upper tributaries of the river. The project is divided into two divisions; the Fort Shaw Division in Cascade County and the Greenfields Division in both Teton and Cascade Counties.

Teton River: Teton River headwaters are located in the western part of Teton County, high in the mountains on the eastern slope of the Continental Divide. This stream is adjudicated and flows generally east across the county to its confluence with the Marias River in Chouteau County, and supplies water for irrigation in Teton and Pondera Counties. Water from this stream is used by three Ditch Companies; Eldorado, Farmers and Teton Co-operative Canal Companies, and one Reservoir Company, the Teton Co-operative Reservoir Company. The first three Canal Companies use water for irrigation on the Farmington Bench, while the Reservoir Company supplies water for the Brady Irrigation Company, Bynum Irrigation District and to some individual private ditch systems.

Deep (Gravel Bottom) Creek: Deep Creek headwaters are located in the southwestern part of the county, with the stream flowing in an easterly direction to its confluence with the Teton River. The waters of this stream are used only by private irrigation systems.

Willow Creek: Willow Creek headwaters rise in the west-central part of Teton County, and flow in an easterly direction into Deep Creek. The waters of this stream are used for private ditch systems.

Muddy Creek: Muddy Creek headwaters rise in the northwestern part of Teton County, and the stream flows easterly into the Teton River near the town of Collins. Water from this stream is used by one Irrigation Company and private ditches.

Dupuyer Creek: Dupuyer Creek has its headwaters in the northwest part of the county and flows northeasterly into Pondera County to its confluence with Birch Creek six miles west of Valier. There is very little irrigation from the main stream. Most of the water used for irrigation is diverted by private systems from the tributaries.

Spring Coulee: Spring Coulee heads in the central part of the county, north of Farmington and follows a southeasterly direction to its confluence with the Teton River. This stream is adjudicated and its water used for private irrigation.

Spring Creek: Spring Creek headwaters are in the central part of Teton County and it follows a southerly route through the town of Choteau to its confluence with the Teton River. This stream is also adjudicated with its water used for private irrigation.

McDonald (Spring) Creek: McDonald Creek heads in the west-central part of the county and flows east to its confluence with the Teton River a short distance northwest of Choteau. This stream is adjudicated in the Decree of the Teton River and its water used for private irrigation.

SNOW SURVEYS

Snow surveys are made annually in Teton County for the purpose of predicting the probable streamflow from the winter snowpack which will be available for use during spring and summer months. This information is useful to farmers and ranchers who irrigate, reservoir operators, power companies and other water management agencies. With water forecast information, farmers and ranchers can plan crops for the year, amounts of water for each crop, number of irrigations, etc. Other water users can plan economic operation of reservoirs and flood control structures.

Snow surveys consist of measuring the snow water equivalent, depth and density of the snowpack. The ten high elevation stations that serve Teton County are:

	SNOW COURSE Name	Number	Elev.	Year Estab.	Dates Meas. (1)
West Teton drainage					
	Freight Creek	12-A-1	6000	1948	3, 4
	West Fork	12-B-1	6000	1948	3, 4
	Waldron Creek	12-B-2	5600	1948	3, 4
North Fork Sun drainage					
	Cabin Creek	12-B-6	5400	1949	3, 4
	Gates Park	12-B-5	5300	1949	3, 4
	Wrong Creek	12-B-4	5700	1949	3, 4
	Wrong Ridge	12-B-3	6800	1949	3, 4
	Goat Mountain	12-B-7	7000	1934	3, 4, 5
South Fork Sun drainage					
	Benchmark	12-B-8	5500	1948	3, 4
	Five-Bull	12-B-9	5600	1948	3, 4

Current season information predicting probable streamflow from the winter snow pack is available at the Soil Conservation Service, Bozeman, Montana.

(1) Numerals 3, 4, 5 refer to March 1, April 1 and May 1 measurements.

STREAM GAGING STATIONS

The U. S. Geological Survey measures the flow of streams, cooperating with funds supplied by several state and federal agencies. The results have been published yearly in book form as Water-Supply Papers, the latest being for the year 1960. Prior to general issuance, advanced 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 Teton County from the beginning of measurements through the water year 1960. The water year begins October 1 and ends September 30 of the following year.

The irrigated acreage figures shown for diversions above the gage are taken from the final results of the Water Resources Survey for the active gaging stations operating at the present time. For the gaging stations now discontinued, the acreage figures above the gage were estimated by the Geological Survey at the date of operation.

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.

North Fork Sun River near Augusta* (*)

The water-stage recorder is 400 feet upstream from Arsenic (formerly Medicine) Creek, 1 mile upstream from the South Fork and 25 miles northwest of Augusta. The drainage area is 258 square miles. Records are available from May 1911 through Sept. 1912 and beginning October, 1945 to date (1962). Prior to July 1946, a staff gage and a wire-weight gage were used. The maximum discharge was 4,840 cfs (June 3, 1948) and the minimum, 27 cfs (November 21, 1949). The average discharge for 16 years (1911-12, 1945-60) was 364 cfs or 263,500 acre-feet per year. The highest annual runoff was 332,400 acre-feet (1959) and the lowest, 200,400 (1949). There are no diversions or regulations above the gage.

*This station was formerly designated as the North Fork of the North Fork of Sun River near Augusta, under which name it was reported in the Water Resources Survey of Lewis and Clark County.

Sun River near Augusta*

The water-stage recorder was about 150 feet upstream from the diversion dam and 18 miles northwest of Augusta. Records are available from August 1889 through December 1890 and July 1904 through September 1940. Prior to January 1, 1916 staff or chain gages were read at site 8 miles downstream. January 1, 1916 to September 30, 1936 a slope gage on diversion dam was used. The maximum discharge was 32,300 cfs (June 21, 1916) and the minimum 3.4 cfs (April 18, 1938). The average discharge for 37 years (1889-90, 1904-40) was 820 cfs or 593,700 acre-feet per year. The highest annual runoff was 1,173,000 acre-feet (1916) and the lowest, 272,000 (1931).

*This station was formerly designated as North Fork of Sun River near Augusta, under which name it was reported in the Water Resources Survey of Lewis and Clark County.

Muddy Creek near Power

The water-stage recorder was at the road bridge 1¾ miles west of Power. The drainage area is 137 square miles. Records are available from April 1935 through October 1939. The

maximum discharge was 870 cfs (June 24, 1938) and the minimum, 0.2 cfs (May 27, 1936) but may have been lower during periods of ice effect. The highest annual runoff was 21,670 acre-feet (1938) and the lowest, 15,990 (1936). The natural flow is increased by waste water from the Sun River Canal and by return flow from irrigation. There were no known diversions or regulations above the gage.

Teton River near Farmington

The water-stage recorder was 300 feet downstream from highway bridge, 1⅛ miles downstream from South Fork Teton River, and 20 miles west of Farmington. The drainage area is 105 square miles (revised). Records are available from June 1947 through October 1954. The maximum discharge was 2,780 cfs (June 3, 1948), and the minimum, 12 cfs (March 28, 1951). The average discharge for 7 years (1947-54) was 165 cfs or 119,500 acre-feet per year. The highest annual runoff was 163,100 acre-feet (1953) and the lowest, 67,260 acre-feet (1949). Diversions above the station were negligible.

Teton River at Strabane*

The chain gage was at bridge at Strabane, 8 miles downstream from mouth of South Fork of Teton River and 14 miles northwest of Choteau. The drainage area is approximately 170 square miles. Records are available from June 1908 through September 1925. Supplemental records of occasional gage-heights and discharge measurements are available from November 1904 to December 1906. Prior to May 9, 1906 staff gages about 1 mile downstream, and from May 9, 1906 to March 23, 1911, gages about half a mile upstream were read. The maximum discharge observed was 3,810 cfs (June 21, 1916) and the minimum, no flow at times in 1920-21. The average discharge for 9 years (1908-17) was 151 cfs or 109,300 acre-feet per year and for 7 years (1917-24) was 68.8 cfs or 49,810 acre-feet per year. The highest annual runoff was 163,000 acre-feet (1916) and the lowest, 25,600 acre-feet (1919). There were several small irrigation diversions above the station. Starting in 1918 canal diverted floodwaters above the station for storage in Bynum Reservoir.

*Published as "near Belleview" prior to 1910.

Spring Creek near Strabane

The staff gage was at highway bridge 1¼ miles south of Strabane, and 13 miles west of Choteau. The drainage area is 5.17 square miles. Records are available from June through December 1913 and from May 1917 through September 1920. The maximum discharge observed was 66 cfs (May 31, 1917) and the minimum observed was 0.4 cfs (August 31 to September 20 and September 22-26, 1919). There were no regulations or diversions above the gage.

Spring Creek near Choteau

The staff gage was half a mile upstream from mouth and 10 miles northwest of Choteau. The drainage area is 10.4 square miles. Records are available from May 1917 through September 1920. The maximum discharge observed was 138 cfs (May 26, 1917), and the minimum

observed was 5.0 cfs (August 12 to September 26, 1919). There were several small diversions for irrigation above the station.

Teton River near Choteau

The wire-weight gage was at highway bridge, 1 mile upstream from Deep Creek, and 1½ miles south of Choteau. The drainage area is approximately 260 square miles. Monthly discharge records are available for April through July 1906, and for most months of irrigation seasons from June 1913 through June 1919. Fragmentary gage-height record and discharge measurements are available from November 1904 to March 1906. The maximum discharge was 4,500 cfs (June 22, 1916) and the minimum, 1 cfs (July 19, 20, 1906 and August 9-16, 1913). There were many diversions above the station.

Deep Creek at Frazier's Ranch near Choteau

The chain gage was half a mile upstream from Barrett Creek and 20 miles southwest of Choteau. The drainage area is approximately 38 square miles. Records are available from May 25 to November 15, 1912. The maximum discharge was not determined; the minimum observed was 22 cfs on several days during November. The runoff for the period June through October was 16,000 acre-feet. There were no diversions or regulations above the station.

Willow Creek near Choteau

The staff gage was about 3 miles upstream from mouth and 9 miles southwest of Choteau. The drainage area is approximately 120 square miles. Records are available from April 1912 through September 1917.The maximum discharge observed was 880 cfs (June 21, 1916) and the minimum, no flow (July 20 to September 30, 1914). The average discharge for 5 years (1912-17) was 29.4 cfs or 21,280 acre-feet per year. The highest annual runoff was 39,200 acre-feet (1917) and the lowest, 8,450 acre-feet (1915). There were several small diversions for irrigation above the station.

Deep Creek near Choteau

The chain gage was 2 miles downstream from Willow Creek and 5 miles southwest of Choteau. The drainage area is approximately 240 square miles. Records are available from April 1911 through December 1924. The maximum discharge observed was 3,700 cfs (June 21, 1916) and the minimum observed was 3.0 cfs (July 23-27, 1919). The average discharge for 13 years (1911-24) was 70.4 cfs or 50,970 acre-feet per year. The highest annual runoff was 119,000 acre-feet (1916) and the lowest, 20,400 acre-feet (1919). There were several small diversions for irrigation above the station.

Muddy Creek near Bynum

The wire-weight gage was 200 feet upstream from Blackleaf Creek and 2½ miles northwest of Bynum. The drainage area is approximately 82 square miles. Records are available for the open water periods from June 1912 through December 1924. The maximum discharge

was 976 cfs (June 21, 1916) and the minimum, no flow on many days. There were numerous small irrigation diversions above the station.

North Fork Muddy (Blackleaf*) Creek

The chain gage was 200 feet upstream from mouth and 2 miles northwest of Bynum. The drainage area is approximately 65 square miles. Records are available for chiefly the open water periods from June 1912 through December 1924. The maximum discharge observed was 600 cfs (June 21, 1916) and the minimum, no flow at times in most years. Most of the flow at low stages is diverted for irrigation above the station.

* A recent decision of the Board of Geographic Names has designated this stream as North Fork Muddy Creek.

Muddy Creek near Agawam

The wire-weight gage was at highway bridge 1½ miles southeast of Agawam. The drainage area is 262 square miles. Records are available from June 17 through September 1917. The maximum discharge observed was 150 cfs (June 17) and the minimum observed was 9 cfs (September 20). There were several small diversions for irrigation above the station.

Teton River near Dutton*

The water-stage recorder is 300 feet downstream from Kerr Bridge, 1 mile downstream from Hunt Coulee, and 10 miles northeast of Dutton. The drainage area is 1,308 square miles. Records are available from August 1954 to date, (1962). The maximum discharge was 1,310 cfs (June 21, 1958) and the minimum daily, 20 cfs (January 24-26, 1957). The average discharge for 6 years (1954-60) was 157 cfs or 113,700 acre-feet per year. The highest annual runoff was 147,400 acre-feet (1958) and the lowest, 92,650 acre-feet (1960). There are diversions above the station for irrigation of about 35,000 acres and for storage in Bynum Reservoir (capacity 75,000 acre-feet). There are diversions for irrigation of about 44,000 acres above the station. Records of chemical analysis, suspended-sediment loads and water temperatures for the period August 1954 to September 1957 are published in reports of the U. S. Geological Survey.

*This gaging station is now in operation (1962).

RESERVOIRS

Details of the operation records since 1939-40 of the following reservoirs are available in the U. S. Geological Survey Publications. All records prior to 1939 may not be available in the U. S. Geological Survey Office, but might be obtained from the reporting agency.

Gibson Reservoir

Gibson Reservoir is located on the North Fork of the Sun River 19 miles northwest of Augusta. The dam was completed in 1929. The reservoir has a usable capacity of 105,000

acre-feet for irrigation (88,560 acre-feet prior to 1941). Records were furnished by the Bureau of Reclamation.

Pishkun Reservoir (Off stream storage)

Pishkun Reservoir, completed in 1925, is located 14 miles northwest of Augusta. Water stored in the reservoir for irrigation is diverted by canal from the North Fork of the Sun River. The usable capacity is 32,050 acre-feet. Records were furnished by the Bureau of Reclamation.

METALLIFEROUS DEPOSITS

Mining has been virtually nonexistent in Teton County and the only known metalliferous deposits are the Choteau titaniferous magnetite beds. These iron and titanium-bearing sedimentary beds occur in the Virgelle sandstone of Cretaceous age. The beds range from a few inches to 6 feet thick and contain an average metal content of 43.7 percent iron and 7.2 percent titanium. Outcrops of these metalliferous sandstones are found in a narrow belt, which bisects the County from southeast to northwest and which passes slightly west of the town of Choteau. Folded beds form long narrow outcrops whereas non-folded beds tend to cap plateau-like hills.

The United States Bureau of Mines has made beneficiation tests on these ores, but has failed to produce a present-day blast furnace feed because of intimate intergrowths between iron and titanium minerals.

Also of interest in Teton County is the radioactive nature of the Eagle sandstone of Cretaceous age. However, it is reported that the radioactivity is caused by the thorium-bearing mineral monazite rather than by uranium minerals.

MINERAL FUELS AND GROUNDWATER

Teton County is geologically situated so that its eastern and greater portion lies on the Sweetgrass arch, while western portion extends across the complexly faulted and folded zone along the Rocky Mountain front known to geologists as the Disturbed Belt. One rather prominent geological feature of the County is the Virgelle Sandstone ridge or cliff which extends northwesterly from the vicinity of Simms to north of Bynum. In the Bynum area the Virgelle contains a dark-brown horizon with unusually high proportions of titaniferous magnetite. These deposits are subcommercial at this time (1962).

Oil and Gas

Extensive oil and gas exploration in northern Teton County brought about oil discoveries in the Bannatyne, Pondera, and Gypsy Basin Fields. Natural gas was discovered in the Blackleaf Canyon area.

Bannatyne Oil Field.—This field was discovered by the Genou Oil Company, July 1927,

in section 8, T. 25N., R. 1E. This field is of particular interest to geologists largely because it is the southernmost known occurence of oil on the Sweetgrass arch, and because of the occurrence of oil in Jurassic strata (Swift formation).

Production:

Oil	1960	15,568 bbls.
Accumulative Total through 1960		114,000 bbls.

Pondera Oil Field.—Discovery well drilled by Midwest Refining Company, June 1927, in section 17, T. 27N., R. 4E., about 6 miles southwest of Conrad. The discovery well came in as a gasser with initial production of 3½ million cubic feet of gas per day, but total production of natural gas has been of no great importance. The producing formation is the Madison Limestone.

Production:

Oil	1960	504,819 bbs.
Accumulative Total through 1960		15,102,000 bbls.

Gypsy Basin Oil Field.—Discovery well drilled by Western Oils Company, July 1954, in section 6, T. 28N., R. 6W. Producing formation is the Madison Limestone. The field lies mostly in Pondera County and production figures are listed by the Montana Oil and Gas Conservation Commission as being from Pondera County.

Production:

Oil	1960	8,283 bbls.
Accumulative Total through 1960		19,000 bbls.

Other oil discoveries were in the Pendroy Field (section 35, T. 26N., R. 5W.) and in the West Pendroy Field (section 9, T. 26N., R. 6W.). There is no record of commercial production from these two fields.

Natural gas was discovered in March 1958, by Northern Natural Gas Company, in the Disturbed Belt (section 13, T. 26N., R. 9W.). The well yielded up to 3.3 million cubic feet of gas per day but is now shut in. This was the first gas discovery in the Disturbed Belt and the area of discovery was named the Blackleaf Canyon Gas Field.

COAL

Teton County contains a portion of the Blackfoot-Valier Coal Field which begins in Cascade County about 30 miles south of the town of Choteau and extends north through Teton, Pondera, and Glacier counties to the Canadian border. The coal occurs in the Two Medicine and St. Mary River Formations of Late Cretaceous age, and may be found in five horizons—three in the Two Medicine Formation and two in the St. Mary River Formation.

Throughout the field, it is thin, bony, and sporadic in distribution. The coal is of high volatile bituminous rank, but there has been no commercial mining operations in Teton County.

GROUND WATER

There are few water wells in Teton County over 100 feet in depth, for groundwater possibilities are limited to the unconsolidated materials covering the bedrock in that part of Teton County east of the Virgelle Sandstone ridge. The dark shales of the Colorado group are the surface bedrock in this part of the County, and the Colorado is a poor source of groundwater. Thus, if water cannot be obtained from alluvial fill, terrace gravels, or thick unconsolidated cover, it is necessary to drill deep wells to the lower part of the Colorado group or to the underlaying Kootenai Formation.

West of the Virgelle ridge, the bedrock of the Two Medicine Formation may yield small amounts of good quality water to wells. There are large deposits of Terrace gravel and other unconsolidated materials in the western part that should yield small to moderate amounts of water.

SOIL CONSERVATION DISTRICT

The Teton County Soil Conservation District was organized in 1947. Prior to that time a portion of the County was in the Sun River Soil Conservation District. That portion remained in the Sun River District until November 17, 1959. On that date, at the request of the two boards of supervisors, the transfer was made consolidating the entire County into the Teton County Soil Conservation District.

The District is governed by a board of five supervisors who are elected by the land occupiers in the County. They carry out a program in erosion control, water conservation, soil fertility management and proper land use.

Under State law they have the power to call upon local, State and Federal agencies to assist in carrying on a soil and water conservation program. The District has memoranda of understanding signed with the Soil Conservation Service and Extension Service to provide assistance in carrying out a sound soil and water conservation program.

The Soil Conservation Service assists the District by furnishing and interpreting basic data on soils, plant cover and other features of the land. Technical data are interpreted in terms of acceptable alternative land use and treatment to help guide the farm and ranch operators in developing sound conservation plans. It also aids District cooperators in performing operations requiring technical skills beyond the experience of the individuals involved.

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 wise use of the soil and water resources of the community.

One of the major problems of these Districts is to acquaint the urban people, who

comprise a large percentage of the total population of the Districts with the need for conservation.

Technical phases of the District's program include detailed soil surveys, forest site and utilization investigations, range site and condition surveys, ground water investigations, topographic and other engineering surveys. By a careful analysis of this basic resource, information, proper land use, and needed conservation treatment of each field can be determined. The technician interprets the surveys and provides 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 the technicians, the farmers or ranchers make the final decisions, which are recorded in the Conservation Plan. The cooperator determines what will be done on his place and when it will be carried out.

When the plan is completed, the cooperator is given further technical assistance on layout work essential in establishing conservation practices on the land as called for in the Conservation Plan. This technical assistance is provided without cost to the cooperating farmer or rancher.

The total area of Teton County is 1,468,160 acres, of which 312,535 acres, or 21% are Federal lands. There are approximately 523,000 acres of cropland, 560,000 acres of range and pasture, and 27,000 acres of forest and woodland. Most of the latter acreage is grazed.

Assistance requested of the District is a little over one-third by those on irrigated units. Other assistance is about equally divided between dryland operators and operators on range units.

Work done since the District was organized in 1947 consists primarily of improving irrigation systems, drainage, land leveling and livestock water developments. Nineteen irrigation reservoirs have been constructed mainly to supply supplemental livestock feed. Other conservation practices installed include improving cropping systems, ditch construction, installing water control structures, pasture and hayland planting, grazing land management, tile drains, stubble mulch tillage, strip cropping, grassed waterways, diversions, stream bank protection, irrigation pumping plants, improvement of wildlife habitat and land clearing.

On range land the assistance is on livestock water developments and water spreading to increase both pasture and hay, proper range use based on condition surveys, reseeding and deferred grazing.

On dryland, technical assistance is given on proper land use, stubble mulching, contour and windstrip cropping, tree planting, grassed waterways and diversions.

Because of the nature of the work, technical assistance is a little greater on the irrigated land. Land leveling, tile and open drains, revision of irrigation systems, structures, soil management, crop rotations and ditch lining are the main practices.

The Teton County Soil Conservation District has working agreements with all irrigation groups in the County except the Greenfields Irrigation District. Technicians in the soil conservation District work closely with personnel of this irrigation District as well as with individual farmers on drainage and irrigation practices. The other irrigation companies are provided technical assistance on structure replacement, ditch enlargement, maintenance and ditch re-location.

Since the District has been in operation, irrigation water application has been improved on 20,500 acres; 5,600 acres have been leveled and border dikes installed; 5,141 acres of new land have been brought under irrigation; 64 miles of open ditches have provided drainage for 6,840 acres of wet land; 960 irrigation structures have been installed to reduce erosion and provide for control of irrigation water; 22 diversion dams and 116 miles of diversions have been constructed; 6,625 acres of water spreading has been provided and 45 spring developments completed. These are a part of the practices installed.

An inventory of soil and water conservation needs was recently completed in the County District as part of a National Inventory of Soil and Water Conservation Needs. This inventory revealed that approximately 75% of the non-irrigated cropland is in need of additional treatment and is feasible to treat; approximately 39% of the irrigated cropland is in need of conservation treatment; approximately 60% of the range, 59% of the tame pasture and 13% of irrigated native grassland needs treatment and is feasible to treat; need exists for approximately 85 miles of windbreak planting; and that most of the existing woodland is in need of conservation treatment. The needed treatment consists primarily of a combination of conservation practices to adequately control erosion and conserve moisture.

It has been the policy of the District to work with groups of cooperators wherever possible to make the most efficient and permanent use of the soil and water resources.

Cooperative efforts of the landowners and operators, other groups and agencies have contributed to the success of the District.

VALUE OF WATER TO WILDLIFE RESOURCES

Many fine trout waters are found in Teton County. The main rivers occurring in this county are Sun River and the North Fork of Sun River. The North Fork of Sun River and its tributaries are presently being inventoried through funds made available jointly by the Fish and Game Department and the Allan Foundation. This study is designed to ultimately aid in improved fishery management of the fine primitive area. This river and its tributaries provides fishing for rainbow and cutthroat trout. Other trout streams in this county are Teton River, Birch Creek, Dupuyer Creek, Willow Creek, Deep Creek and their tributaries.

Bynum Reservoir, Eureka Reservoir, and Willow Creek Reservoir have all been treated by the Fish and Game Department within the last few years with fish toxicants to remove undesirable fish. Willow Creek Reservoir is now producing large rainbow trout, with Eureka Reservoir expected to be a good producer of rainbow in 1962 and Bynum Reservoir in 1963. All are fertile waters which provide excellent trout growth. Diversion Dam on Sun River

is popular for its rainbow fishing. Some rainbow fishing is also provided in Gibson Reservoir. Pishkun Reservoir is a good fishing lake providing nice catches of rainbow trout and some large northern pike. Split Rock Lake is one of the best northern pike producers in the State. This county thus has a variety of good fishing waters.

Some of the finest recreational hunting in this part of the State can be found in Teton County. The mountainous western part provides excellent deer hunting. Antelope are found throughout the prairie portion of the area. A part of the famous Sun River Elk Range lies in the county and provides a stabilizing influence on this resource. Bird hunting in the form of pheasants, huns, sharp-tailed grouse, mountain grouse and waterfowl can be found within a short distance from any point. Pheasant hunting in the Fairfield-Agawam area is recognized statewide for its quality.

Freezout Lake, a State Game Management Area, is located between Fairfield and Choteau. It is a monument to cooperation between an Irrigation District and the Fish and Game Department, in providing recreation. This lake, once a waste area problem for the irrigation district, is now managed for public hunting. It has approximately 6,000 acres of water surface and literally thousands of ducks and geese now use Freezout. People come from all over the State to enjoy this recreational area.

Teton County, from the variety and abundance of fish and wildlife found there, is furnishing a great deal of outdoor recreation to the people of the State of Montana.

LEWIS AND CLARK NATIONAL FOREST

The Lewis and Clark National Forest was created by Presidential Proclamation on February 22, 1897. The Reserve extended to Flathead Lake on the west, Glacier Park on the north, along the face of the Rocky Mountains on the east, and Lewis and Clark Pass on the south. On June 9, 1903, another Presidential Proclamation enlarged the area by combining the Flathead and Lewis and Clark Reserves. On July 1, 1908, large areas were transferred from the Lewis and Clark National Forest (formerly called Forest Reserve) to the Blackfoot, Flathead, and Kootenai National Forests. Further reductions were made through the years which resulted in the present Rocky Mountain Division of the Lewis and Clark National Forest with a net of 776,000 acres. Of this total, 228,000 acres are located in Teton County.

Part of the Bob Marshall Wilderness Area is in Teton County. Of the total of 228,000 acres, 62,000 acres are in the wilderness area. The Bob Marshall Wilderness Area was formed in 1940 by consolidating the Sun River Primitive Area with the South Fork and Pentagon Primitive Areas.

The earliest recorded history of the area was in 1806 when, on the return trip, Captain Meriwether Lewis crossed the Continental Divide at Lewis and Clark Pass and then went north to the Teton River in search of another pass. Since there is little mining or good agricultural potential in this mountainous area, trapping was the major reason earlier explorers penetrated the rugged interior. As settlers began building homesteads in the Great Plains to the east and railroads pushed west, need for building materials and fuelwood spurred the harvesting of timber in the 1880's.

There is no privately owned land within the forest boundary in Teton County.

Water management is the most important land use of the National-Forest land. This means that timber, forage, and all other resources must be managed to control water quality, reduce floods, produce maximum water yield, and time streamflow to meet water needs.

There are downstream storage structures in each of the major drainages, holding a total of 250,000 acre-feet of water. In addition, much water is taken directly from the streams.

During the period from early settlement to the present time, there has been little logging activity on the Lewis and Clark National Forest lands in Teton County. Recently, there has been a demand for the timber and 10 million board feet have been sold. Under timber management plans a sustained annual cut of 5 million feet can be maintained. Many areas of commercial timber are not economically operable at the present time. This is because the merchantable timber is found in narrow stringers or small pockets, and the rough topography makes road costs extremely high.

Since there is no commercial timber on lands in private ownership, the industry is dependent on the National Forest for its log supply.

The Lewis and Clark National Forest provides livestock summer range for 14 local ranchers. The forage produced on the forest is an important item in these ranch operations. Grazing permits provide for the grazing of 915 cattle for an average season of 3 months.

Good hunting and fishing can be found throughout the forest. Game animals are abundant. Big game species include moose, elk, mule deer, white-tailed deer, big horn sheep, Rocky Mountain goat, black bear, and grizzly bear.

Due to inaccessibility some areas are rarely hunted. This has had detrimental effects on both the game and the forage. Generally, though, the number of animals is in balance with the available forage.

Fire, next to insects and disease, is the forest's worst enemy. From the late 1880's through the early 1940's, fire denuded large areas. Over one-half of the forest has burned within the last century. Much of the area has been reburned several times in that period. Reproduction is lacking in some burns that occurred as early as 1910. There have been no large fires since the early 1940's.

Fire control receives top priority on the Lewis and Clark National Forest during the critical summer months. Improved fire fighting methods and development of new equipment has contributed greatly in keeping the fires small.

Recreation is one of the most important uses of the Lewis and Clark National Forest. There has been a constant increase in use in past years. This pattern of increasing use promises to continue. Multiple-use management planning recognizes this need and areas are being set aside for future developed recreational areas. There are 11 summer home residences at the present time and one campground with 10 family units. Visits to forest areas in 1961 totaled 14,200.

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

Big Horn, Broadwater, Carbon, Carter, Cascade, Custer, Deer Lodge, Fallon, Gallatin, Golden Valley, Granite, Jefferson, Lewis & Clark, Madison, Meagher, Missoula, Musselshell, Park, 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**	**79,568.50**	**19,137.50**	**98,706.00**
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	1,724.00	0	1,724.00
Teton River	61,228.00	14,255.00	75,483.00
Musselshell River	64,789.00	57,870.00	122,659.00
Little Missouri River	42,332.00	1,499.00	43,831.00
Grand Total Missouri River Basin	**684,246.08**	**163,321.50**	**847,567.58**
Yellowstone River Drainage Basin			
Yellowstone River	**303,501.00**	**96,148.00**	**399,649.00**
Stillwater River	27,489.00	16,403.00	43,892.00
Clark Fork River	91,768.00	24,195.00	115,963.00
Big Horn River	65,395.00	25,579.00	90,974.00
Tongue River	28,170.00	7,762.00	35,932.00
Powder River	35,948.00	2,299.00	38,247.00
Grand Total Yellowstone River Basin	**552,271.00**	**172,386.00**	**724,657.00**
Columbia River Drainage Basin			
Clark Fork (Deer Lodge, Hellgate, Missoula) River	**145,804.70**	**14,934.20**	**160,738.90**
Bitterroot River	111,102.43	3,200.00	114,302.43
Grand Total Columbia River Basin	**256,907.13**	**18,134.20**	**275,041.33**
Grand Total in the Counties Completed to Date	**1,493,424.21**	**353,841.70**	**1,847,265.91**

*Names 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 TETON COUNTY BY RIVER BASINS

MISSOURI RIVER BASIN	Present Irrigated Acres	Irrigable Acres Under Present Facilities	Maximum Irrigable Acres
***Missouri River**	**0**	**0**	**0**
Sun River	1,047.00	0	1,047.00
North Fork Sun River	75,781.35	962.00	76,743.35
Unnamed Creek	5.00	0	5.00
Richardson Creek	49.00	0	49.00
Seepage	23.00	0	23.00
Arnold Coulee Creek	40.00	0	40.00
Meadow Creek (Split Rock Coulee)	150.00	0	150.00
Oil Well Creek	10.00	0	10.00
Seepage Springs	156.00	0	156.00
Seepage	72.00	0	72.00
Seepage Creek	67.00	0	67.00
Cutting Shed (Wood) Coulee	177.00	0	177.00
Unnamed Coulees	54.00	0	54.00
A Coulee	114.00	0	114.00
Big Coulee (Spring Creek)	0	0	0
Seepage	26.00	0	26.00
Big Muddy Creek (Big Hole Basin)	94.00	0	94.00
Unnamed Stream (Muddy Creek)	62.00	17.00	79.00
Spring (Spring Branch) (Flat) Coulee	135.00	0	135.00
Total Sun River and Tributaries	**78,062.35**	**979.00**	**79,041.35**
Marias River	0	0	0
Two Medicine Creek	0	0	0
Birch Creek	0	0	0
Dupuyer Creek	0	0	0
North Fork Dupuyer Creek	588.00	0	588.00
South Fork Dupuyer Creek	706.00	0	706.00
Scoffin Creek	58.00	0	58.00
South Fork Scoffin (Spring) Creek	140.00	0	140.00
Dry Fork (North Fork of Dry Fork) Marias River	0	0	0
Middle Fork of Dry Fork of Marias River	0	0	0

*Names 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 TETON COUNTY BY RIVER BASINS

MISSOURI RIVER BASIN—(Continued)	Present Irrigated Acres	Irrigable Acres Under Present Facilities	Maximum Irrigable Acres
Jensen Coulee (Middle Fork of Dry Fork of Marias River)	101.00	0	101.00
Ben English Coulee	0	0	0
Ganong Coulee	55.00	0	55.00
Pondera Coulee	0	0	0
South Pondera Coulee	0	0	0
Bynum Springs (Hanson) Coulee	76.00	0	76.00
Teton River	44,519.00	13,226.00	57,745.00
Fairburn Springs	167.00	0	167.00
Unnamed Creeks	55.00	0	55.00
Spring (McDonald) Creek	137.00	0	137.00
Cashman Coulee	0	0	0
Stewart Creek	0	0	0
Ruben Stewart Springs	102.00	0	102.00
Bruce (Coal Bank) Coulee	34.00	0	34.00
Deep (Gravel Bottom) Creek	3,261.00	210.00	3,471.00
North Fork Deep (Gravel Bottom) Creek	544.00	0	544.00
Barrett Creek	40.00	0	40.00
Battle Creek	125.00	0	125.00
Beaver Creek	13.00	0	13.00
Spring	17.00	0	17.00
Mineral Spring Creek	49.00	0	49.00
Quigley Coulee	187.00	0	187.00
Hay Coulee	194.00	0	194.00
Bruce Coulee	0	0	0
Wolf Coulee	0	0	0
Mowry Springs	85.00	0	85.00
Willow Creek	691.00	0	691.00
North Fork Willow Creek	746.00	0	746.00
Seepage Water	15.00	0	15.00
South Fork of North Fork of Willow Creek	18.00	0	18.00
Little Deep Creek	23.00	0	23.00
Swamp Creek	62.00	0	62.00
Little Spring (Childress) (Swamp) (No. Fk. Willow) Creek	133.00	0	133.00
South Fork Willow Creek	1,702.00	0	1,702.00
Collins Creek	21.00	0	21.00

IRRIGATION SUMMARY OF TETON COUNTY BY RIVER BASINS

MISSOURI RIVER BASIN—(Continued)	Present Irrigated Acres	Irrigable Acres Under Present Facilities	Maximum Irrigable Acres
North Jefferson (North Fork Middle Willow) Creek	186.00	0	186.00
South Jefferson (South Fork Middle Willow) Creek	55.00	0	55.00
Theboe (Reservoir) Lake	112.00	0	112.00
Coulee	34.00	0	34.00
Unnamed Stream	7.00	0	7.00
Spring (Watson) (Fowler Coulee) Creek	680.00	0	680.00
Willow (Dog) Coulee	29.00	0	29.00
Seven Mile (Black) Coulee	21.00	0	21.00
Total Deep (Gravel Bottom) Creek and Tributaries	**9,050.00**	**210.00**	**9,260.00**
Private Lake	10.00	13.00	23.00
Spring (Stone) Creek	436.00	33.00	469.00
Certain Spring	131.00	0	131.00
Priest Butte Lake	0	0	0
Road Coulee	0	0	0
Waste	46.00	0	46.00
Greenfield (Freezeout) Lake	0	0	0
Cole (Spring) (Kruck) Coulee	0	0	0
Well	10.00	0	10.00
Floweree (Lake) (Dipping Tank Creek) Coulee	0	0	0
Jefferson Creek	84.00	0	84.00
Bole (Flat) Coulee	149.00	0	149.00
Crossen Coulee	0	0	0
Silverman Coulee	98.00	0	98.00
Kelley (Caskey) Coulee	60.00	0	60.00
Gamble (Deep) (Thompson) (Waste) Coulee	88.00	0	88.00
Spring Coulee	349.00	347.00	696.00
Drainage	165.00	35.00	200.00
Northwest Branch Spring (Widmark) Coulee	0	0	0
Waste	83.00	0	83.00

IRRIGATION SUMMARY OF TETON COUNTY BY RIVER BASINS

MISSOURI RIVER BASIN—(Continued)	Present Irrigated Acres	Irrigable Acres Under Present Facilities	Maximum Irrigable Acres
North Branch Spring (Truchots Slough) Coulee	0	0	0
Drain Ditch	50.00	0	50.00
Creamery (John Chalmers) (McCormack) (Otness) (Rodgers) Coulee	280.00	128.00	408.00
Muddy Creek	1,409.00	36.00	1,445.00
North Fork Muddy (Blackleaf) Creek	761.00	0	761.00
Hoy (Blackleaf) (Hay) Coulee	0	0	0
Cow Creek	150.00	0	150.00
Miles (Spring) Creek	125.00	0	125.00
Gansman (Hay) (Shepherd Spring Creek) Coulee	507.00	0	507.00
Squaw Coulee	20.00	0	20.00
Brookdale Creek	52.00	0	52.00
Holland Coulee	0	0	0
Holland Springs	182.00	0	182.00
South Fork Muddy (Bear) Creek	69.00	0	69.00
Rinker Creek	720.00	0	720.00
Adams (Blind Horse) Creek	27.00	0	27.00
Clark Fork Muddy Creek	15.00	30.00	45.00
French (Frenchy Creek) Coulee	127.00	0	127.00
Black Spring	50.00	0	50.00
Alkali (Slough) Creek	0	0	0
Bynum Reservoir	0	0	0
Cooper Coulee	0	137.00	137.00
Spring	10.00	0	10.00
Blacktail (Deadman) (South Spring Fork Muddy) Creek	61.00	0	61.00
Chicken Coulee	53.00	30.00	83.00
Bosley Springs	102.00	0	102.00
Foster (Mitchell Slough) (Spring Branch of Muddy Creek) Creek	0	0	0
Slough (Ralston Gap Coulee) Creek	347.00	0	347.00

IRRIGATION SUMMARY OF TETON COUNTY BY RIVER BASINS

MISSOURI RIVER BASIN—(Continued)	Present Irrigated Acres	Irrigable Acres Under Present Facilities	Maximum Irrigable Acres
Jones (Coulee) (Graves Coulee) (Spring Creek) (Spring Hill Coulee) Creek	185.00	0	185.00
Strand Coulee	50.00	0	50.00
Farmers Coulee	75.00	30.00	105.00
Kropp (Muki) (Maucki) (Old Joe) Coulee	28.00	0	28.00
Total Muddy Creek and Tributaries	**5,125.00**	**263.00**	**5,388.00**
Total Teton River and Tributaries	**61,228.00**	**14,255.00**	**75,483.00**
Total Irrigation in Teton County	**141,014.35**	**15,234.00**	**156,248.35**

BRADY IRRIGATION COMPANY

HISTORY

The Brady Irrigation Company was first incorporated on June 19, 1909 with its term of existence to extend for a period of 40 years. Capital stock of the Company was set at $50,000 divided into 500 shares of a par value of $100 each. The original shares of stock subscribed to were held by Alexander Truchot, 100 shares; Thomas O. Larson, 100 shares; and Kenneth McKenzie, 50 shares. Each of these men held the position as a director in the Corporation.

On June 22, 1949, re-incorporation papers were filed to extend the Company's corporate existence for another 40 year period. Two amendments were included in the re-incorporation articles; the first changed the Company's principal place of business from Choteau in Teton County, to the town of Brady in Pondera County, and the second amendment increased the number of directors from three (3) to five (5).

A short time after the irrigation company was formed, a supplemental water supply was obtained from the Teton Co-operative Reservoir Company (Bynum Reservoir). One hundred and fifty-six (156) shares of stock were purchased by the Brady Irrigation Company in the Teton Co-operative Reservoir Company.

In 1936, when the Brady Irrigation Company completed construction of the dam at Brady Lake Reservoir on Farmers Coulee, their water supply was increased to the extent that it was not necessary to exercise a use of all the water shares held in the Teton Co-operative Reservoir Company.

PRESENT STATISTICS

Location: The majority of irrigated land under the Brady Irrigation Project is in Pondera County, with only one water user in Teton County. This land is located in sections 16 and 21 in T. 26 N., R. 3 W.

Length and Capacity of Canals: There are approximately 28 miles in the canal system used by the Brady Irrigation Company. The supply canal to the reservoir system has its point of diversion from the left bank of Muddy Creek near the line between sections 35 and 36 in the SW¼SW¼ of section 36 in T. 26 N., R. 4 W., and has a capacity of approximately 200 cfs. Its length is about 2½ miles to a point where it spills into Round Lake. From Round Lake, the supply canal continues North ¼ mile to Eyraud Lake, and from this lake follows a course another ¼ mile to Brady Lake. All of these connecting canals are a part of the main supply system for the Irrigation Project.

The main canal diverts from a small regulating reservoir which is located below the dam at Brady Lake in the SE¼NE¼ of section 20 in T. 26N., R. 3W. In Teton County, the length of the main canal to the Pondera County line is 2¾ miles and has a carrying capacity of about 175 cfs.

Reservoirs: The three reservoirs used in conjunction with the project are located along the supply canal in the order named; Round Lake, Eyraud Lake, Brady Lake. A combined capacity of 3,300 acre feet of water is stored in the three reservoirs with Brady Lake having the largest storage capacity of the three.

Operation and Maintenance: Usual average yearly charge for operation and maintenance is $2.00 to $2.50 per acre of land irrigated.

Present Users: Under this Ditch Company last year (1961), there were 44 stockholders owning all of the Company's stock, one of which is supplied water in Teton County. This Irrigation Company does not have an equivalent in the amount of water one share represents; the water being supplied only to the acreage requirements.

Acreage Irrigated: In 1961, there were 195 acres irrigated and 36 acres potentially irrigable from the Brady Irrigation Company canal system in Teton County.

WATER RIGHT DATA

In addition to owning 156 water shares in the Teton Co-operative Reservoir Company, the Brady Irrigation Company has the following appropriative water right filings: An appropriation by Alexander Truchot from Muddy Creek, dated April 1, 1909 for 400 cfs. (Ref. Book VIV-B of Transcribed Records, Page 306, in the Clerk and Recorders Office, Choteau, Montana; An appropriation by Alexander Truchot from Farmers Coulee, dated April 1, 1909 for 100 cfs. (Ref. Book VIV-B of Transcribed Records, Page 307, in the Clerk and Recorders office, Choteau, Montana; An appropriation by Alexander Truchot from Kropp Coulee, dated April 9, 1909 for 100 cfs. (Ref. Book VIV-B of Transcribed Records, Page 330, in the Clerk and Recorders Office, Choteau, Montana).

(See Maps in Part II, Page 34)

BYNUM IRRIGATION DISTRICT

HISTORY

The Bynum Irrigation District was created in conjunction with the Teton Co-operative Reservoir Company (Bynum Reservoir), the reservoir being the source of water supply for the District. (For detailed information on the Bynum Reservoir see the Teton Co-operative Reservoir Company of this report).

Plans to form the Bynum Irrigation District were initiated in 1920, but it was a few years later before a signed petition was filed with the District Court asking for the creation of an Irrigation District. After a public hearing in Court, the Judge handed down a decree on July 18, 1925, creating the Bynum Irrigation District and establishing its boundaries. The decree approved issuance of bonds for the District in the amount of One Million Dollars. Of this amount, the sum of $500,000. was to be used to purchase 80% or more of the capital stock of the Teton Co-operative Reservoir Company for adequate water rights and water

supply for the District; the balance of the proceeds to be used for construction of the irrigation works, including costs of property rights, engineering, legal and administrative fees.

The distribution system of the project consists of a main canal from the Bynum Reservoir to Muddy Creek, a highline lateral and the utilization of Muddy Creek from the end of the main canal through the project for the delivery of water to laterals diverting at various points along the creek. At the lower end of the project, water is delivered to the Brady Irrigation Company and other minority stockholders of the Teton Co-operative Reservoir Company.

In 1924, work was started to raise the dam at the Bynum Reservoir from the elevation of 4,178 feet to 4,185 feet above sea level, which would increase its capacity from 75,000 acre feet to a maximum capacity of 90,000 acre feet. Included in the new work was the construction of 1,300 lineal feet of embankment across a sag west of the dam proper, and 500 lineal feet of spillway in a sag beyond the embankment. The diversion canal from the Teton River to the Bynum Reservoir was enlarged from 350 cfs to 1,000 cfs to adequately handle flood conditions of the Teton River.

The irrigable lands of the Bynum Irrigation District, as first organized, embraced an area of some 40,710 acres. By additions and eliminations, the District now contains 32,436 acres, of which about 20,538 acres are classified as irrigable lands, all of which are held in private ownership. The average value of the lands within the District in 1924 was $25. per acre for dryland and $100. per acre when irrigated.

PRESENT STATISTICS

Location: The location of lands under irrigation within the District are in sections 1-3, inclusive, 10-16, incl., 20-25, incl., and section 36, T. 26N, R. 6W; sections 1-22, incl. and 27-32, incl., T. 26N, R. 5W; sections 6-9 inclusive and sections 16-18 inclusive, T. 26N, R. 4W.

Length and Capacity of Canals: Water is supplied to the District by the outlet, or "A" canal, from the Bynum Reservoir to Muddy Creek. From Muddy Creek, the highline, "N" canal, diverts water for the project in the NE¼NE¼, section 29, T. 26N, R. 6W. Its length is aproximately 26.4 miles and has a capacity adequate to supply water to the lands below.

The capacity of other canals of the District listed below are not defined, but they are large enough to supply the water needs of the lands they serve. These canals are designated as "S", "C", "D" and "E".

"S" Canal has its point of diversion on the south bank of Alkali Creek in the NE¼NE¼ of section 27, T. 26N, R. 6W, having a total length of three miles. "C" Canal diverts from the north bank of Muddy Creek in the NW¼SW¼, section 23, T. 26N, R. 6W and has a length of six miles. "D" Canal has its point of diversion from the north bank of Muddy Creek in the NE¼SE¼, section 30, T. 26N, R. 5W, with a length of 8.5 miles. "E" Canal diverts from the north bank of Muddy Creek in the NE¼NW¼, section 27, T. 26N, R. 5W, with a length of 8.5 miles.

Operation and Maintenance: Water charges for the District are based on each acre assessed as irrigable land. In 1961, there was a total of 17,487 acres assessed at $2.00 per acre. Of the $2.00 charged, $1.10 is for operation and maintenance, with 90¢ allocated to the sinking fund, including payment of interest. The equivalent of water used on the project is two acre feet for each irrigable acre. In an average year, total of approximately 35,000 acre feet of water is furnished by the Bynum Reservoir to the District.

Present Users: There were 63 individual water users supplied water for the irrigation of their lands under the Bynum Irrigation District during the year of 1961.

Acreage Irrigated: In 1961, there were 15,352 acres irrigated and 5,186 acres potentially irrigable under the District. A yearly assessment of $2.00 per acre is made on the maximum irrigable acreage of 20,538 acres, without regard to actual application of water on the land.

WATER RIGHT DATA

Water supplied to the Bynum Irrigation District is based on the 704 shares of stock owned in the Teton Co-operative Reservoir Company (Bynum Reservoir). When the District was formed, 800 shares of stock were purchased by the District from the Bynum Reservoir Company; since that time, 96 shares were disposed of, leaving a total of 704 shares presently owned by the District. (For water rights appurtenant to the Bynum Reservoir, see the Teton Co-operative Reservoir Company of this report).

(See Maps in Part II, Pages 35, 36, 37, 40, 41)

ELDORADO CO-OPERATIVE CANAL COMPANY

HISTORY

The Eldorado Co-operative Canal Company, one of the oldest irrigation companies operating in Teton County, filed Articles of Incorporation under the laws of the Territory of Montana on May 23, 1883. Among the men instrumental in the formation of the company were: Ira Myers, George Steell, Daniel W. Buck, Matthew Carroll, Alfred B. Hamilton, Isaac N. Hazlett and Samuel Burd.

Capital stock of the ditch company was $60,000. divided into 1200 shares valued at $50. each. The original corporate name for the company was "The Eldorado Ditch Company" with its term of existence beginning on September 1, 1883 and to continue for a period of twenty years.

On August 25, 1903, Incorporation Articles were filed extending the term of existence another twenty years and the name changed to "The Eldorado Co-operative Canal Company". The last incorporation occurred on October 24, 1924 and stipulated an increase in the capital stock from $60,000. to $75,000. and the shares increased from 1200 to 1500 at a par value of $50. each. The term of existence was designated as forty years.

PRESENT STATISTICS

Location: This Irrigation Company consists of a direct diversion out of the Teton River with several branch laterals to supply water for the irrigation of land in sections 28, 29, 31-34, inclusive, T. 26N, R. 4W; sections 3-9, incl., 16-18, incl., T. 25N, R. 4W and sections 1, 2, 12, 13, 15, 19, 20 and 21, T. 25N, R. 5W.

Length and Capacity of Canals: The main canal diverts from the left bank of the Teton River in the NW¼NW¼, section 33, T. 25N, R. 6W and follows a northeasterly direction for a distance of 14.5 miles. Its initial capacity is 200 cfs.

Operation and Maintenance: Under this irrigation project, yearly charges for operation and maintenance are $1. for each share of stock owned in the Canal Company.

Present Users: All of the 1,370 shares are owned by twelve stockholders in the Canal Company. Each share of stock represents 2½ miner's inches of water.

Acreage Irrigated: In 1961, the Eldorado Canal furnished water for the irrigation of 10,198 acres, with 994 acres potentially irrigable under the existing system. In addition to these acreage figures listed, the Eldorado Co-operative Canal Co. and Teton Co-operative Reservoir Co. irrigate 1,285 acres by waters mingled on lands from both systems.

WATER RIGHT DATA

All of the water rights owned and used by the Eldorado Co-operative Canal Company were decreed in the adjudication of the Teton River. Due to the early priority dates of water rights, no water shorage exists for the Eldorado Co-operative Canal Company.

The decreed water rights for the company are listed as follows: (1) Decreed to Eldorado Co-operative Canal Company from the Teton River, 3,000 miner's inches, dated May 17, 1883; (2) Decreed to George D. Beattie from the Teton River, 400 miner's inches, dated December, 1882, (Purchased by the Eldorado Co-operative Canal Company); (3) Decreed to Edward and Lucy Dennis from the Teton River, 200 miner's inches, dated April 1, 1880, (acquired by stock); (4) Decreed to Frank Truchot from the Teton River, 300 miner's inches, dated 1876, (acquired by stock).

(Reference for all the above water rights may be found in the Teton River Decree, Case #371, dated March 28, 1908, Judgement Book I, Page 425 and Orders and Decree Book XVIII, Page 94, Clerk of District Court, Choteau, Montana)

(See Maps in Part II, Pages 29, 30, 35, 36, Eldorado Co-operative Canal Company)

(Also see Maps in Part II, Page 35, Mingled water of Eldorado and Teton Co-operative Reservoir Companies)

FARMERS CO-OPERATIVE CANAL COMPANY

HISTORY

The development of irrigation on a large scale in Teton County by irrigation companies began early in the 1880s and 1890s. These large irrigation systems, as well as private filings on the rivers and creeks, brought in more homesteaders and the area around Choteau became the farming section of the county. One of several irrigation companies formed at that time was the Farmers Co-operative Canal Company.

On June 3, 1897, Articles of Incorporation were filed, creating the Farmers Co-operative Canal Company. The water for this project was to be taken from the Teton River to irrigate the land in the Farmington area. Capital stock of the corporation was set at $10,000., divided into 100 shares at a par value of $100. each. The term of existence was defined as 20 years after the date of incorporation. At a meeting held on May 21, 1904, the stockholders requested that the capital stock be made assessable.

On June 13, 1908, re-incorporation articles were filed extending the term of existence for forty years from the original filing date of June 3, 1897. The amount of capital stock was increased from $10,000. to $50,000. divided into 100 shares at a par value of $500 each. On February 24, 1937, the term of existence was again extended for forty years. Directors in the first incorporation were: F. F. Daacke, O. Lindseth, L. J. Otness, Joachin Peterson and Ole Wagnild.

PRESENT STATISTICS

Location: Lands irrigated under this canal company are situated in sections 1 and 12, T. 25N, R. 6W; sections 3-7, inclusive, 13, 20, 22-26, incl., 28, 29, 33 and 34, T. 25N, R. 5W; sections 14, 20-23, incl., and 26-30, incl., T. 25N, R. 4W; sections 33 and 34, T. 26N, R. 5W; sections 2, 11 and 12, T. 24N, R. 5W.

Reservoirs: There are two storage reservoirs used in connection with this irrigation project, namely: Harvey Lake (a natural lake) with a capacity of 2100 acre feet and Farmers Lake (constructed) having a capacity of 2400 acre feet. A feeder canal from the Teton River supplies water for storage in both lakes; flowing first into Harvey Lake, thence, to Farmers Lake from where water is supplied to the main canal for irrigation of the project lands.

Length and Capacity of Canals: (1) The feeder canal from the Teton River has a capacity of 200 cfs and a length of 4.5 miles. Its point of diversion is from the left bank of the Teton River near the center of the NE¼ of section 35, T. 25N, R. 7W. (2) The canal between Harvey Lake (upper) and Farmers Lake (lower) is 1¼ miles long, with a capacity of more than 250 cfs and follows a southeasterly course from the upper to the lower lake. (3) The main canal diverting from the lower end of Farmers Lake has a capacity of 200 cfs and follows an easterly direction for a distance of 22 miles to its point of termination.

There are three laterals branching off the main canal with varying capacities: one lateral

flows generally in a southeasterly direction for a distance of 7.75 miles, the second lateral follows a northerly route for a distance of 6.25 miles and the third follows a course north and northwest 3.5 miles.

Operation and Maintenance: Charges for operation and maintenance are $40. per share of stock owned in the company. One share of stock entitles the stockholder to 40 miner's inches of water.

Present Users: The Farmers Co-operative Canal Company in 1961 listed 96 shares of stock, divided among 36 stockholders in the company. The other four shares of 100 are retained by the canal company.

Acreage Irrigated: During the year of 1961, there were 5,560 acres irrigated and 1,626 acres potentially irrigable, making a total of 7,186 irrigable acres under the canal.

WATER RIGHT DATA

Some shortage of water exists under this project during drought years when maximum storage is not obtained. Last year, 1961, the water storage supply in both lakes was exhausted as early as July 18th.

The water rights pertaining to the Farmers Co-operative Canal Company consist of two decreed rights as follows: (1) A decree to the Farmers Co-operative Canal Company from the Teton River for 4,000 miner's inches dated August 1, 1897 (Ref: Teton River Decree, Case #371, dated March 28, 1908, Judgement Book Volume I, Page 425). (2) A decree to the Farmers Co-operative Canal Company to have the exclusive right to Harvey Lake as a reservoir site and the exclusive right to the use of water in the lake (Ref: Harvey Lake Decree, Case #712, dated September 19, 1912, Judgement Record, Volume IV, Page 140-142). (Decrees are located in the Clerk of the District Court Office, Choteau, Montana).

Other filings for the Canal Company are: An appropriation by the Teton Co-operative Canal Company from Ralston Slough and Springs for 1,000 miner's inches, dated April 12, 1937 (Ref: Book VII, Miscellaneous Records, Page 454), and an appropriation for the Farmers Co-operative Canal Company by Carl Hanson, President, from a drainage canal for 200 miner's inches dated April 18, 1925 (Ref: Book IX-C, Water Right Records, Page 398). (Filings are located in the Clerk and Recorders Office, Choteau, Montana).

(See Maps in Part II, Pages 30, 31, 36)

SUN RIVER PROJECT, U. S. BUREAU OF RECLAMATION
GREENFIELDS IRRIGATION DISTRICT

HISTORY

This District is located north of the Sun River and extends from the Choteau-Augusta Highway eastward to Muddy Creek. It lies in both Teton and Cascade counties. The total

irrigated acreage in the District in 1960 was 78,600 acres. Of this total 64,610 acres lie in the southeast part of Teton County.

In 1884, a ditch was started to divert water from the North Fork of the Sun River in section 28, T. 22 N., R. 7 W. to carry water to the Greenfields Bench, but difficulty was encountered and this ditch was abandoned. In 1889, engineers of the United States Geological Survey began preliminary surveys for the canal line. In 1902, Desert Claims were filed on the Greenfields Bench and the Kilraven Co-operative Canal Company attempted to take water to the lands, but they were not successful in doing so.

On October 17, 1903, the newly organized Reclamation Service withdrew Public Lands to incorporate them into the Sun River Project and public notices of lands opened for irrigation settlement were made on March 26, 1908; November 18, 1910; March 28, 1911; March 2, 1912; and July 13, 1912. The Desert Claims were included in this plan.

The initial irrigation system provided for the storage of Sun River water at Gibson Dam, the Willow Creek Reservoir on Willow Creek, the Pishkun Reservoir north of the Sun River, Muddy Creek Reservoir on Muddy Creek near Power and Benton Lake Reservoir eight miles north of Great Falls. The lands to be irrigated, in addition to the present Greenfields District, were east of the District along the Sun River and the Teton River area to the north. Later opposition developed from the homesteaders on dry-land farms and all of the plan, except the Greenfields District, was given up. The withdrawn lands were restored to public entry. With the reduction in acreage, the use of Muddy Creek Reservoir and Benton Lake Reservoir was abandoned.

The entire enterprise was under the Reclamation Act. Investigations of reservoir sites and preliminary lines for the canal system were started in 1904. Surveys were continued in 1905 and carried on as long as funds permitted. By 1910, the surveys for the North Side Main Canal were completed, and land classification, topographic surveys, and farm unit subdivisions were made so that Greenfields District was ready for construction. Early in 1913 plans and specifications were drawn up for the Pishkun Supply Canal and the Sun River Slope Canal. In 1915, work was begun on the distribution system at Fairfield and extensions and additions finally brought the construction of lateral systems to a close in 1936. To operate and maintain the system, the Greenfields Irrigation District was formed under State Law in 1926.

Fortunately for the District, funds were made available from the construction money for the building of the drainage system and this work was carried forward under the Bureau of Reclamation's supervision until July 1, 1958 ,the close of the construction period.The total amount expended for the construction of the Greenfields Irrigation District was $9,700,000.

PRESENT STATISTICS

Location: Since the Greenfields Irrigation District lies in both Teton and Cascade counties, this outline deals only with that portion of the Greenfields District lying in Teton

County. This area of the Greenfields Division has equal joint use of the reservoir system and the main supply canals used for diversion and distribution. The land area of the Greenfields Division under irrigation in Teton County is located in sections 1, 11, and 12, T. 20 N., R. 3 W.; sections 1-8 inclusive, 11, 12, 18, 21, and 35, T. 21 N., R. 3 W.; sections 1, 2, 5-12 inclusive, and 14-23 inclusive, T. 21 N., R. 4 W.; sections 1, 2, 7, 8, 12, 13-24 inclusive, 28, and 29, T. 21 N., R. 5 W.; sections 2, 3, 4, 9-15 inclusive, 22-26 inclusive, T. 21 N., R. 6 W.; all of T. 22 N., R. 1 W. except sections 1, 12, 13, and 24; all of T. 22 N., R. 2 W.; all of T. 22 N., R. 3 W. except sections 6, 7, 18, 19, and 30; sections 31 and 36, T. 22 N., R. 4 W.; sections 35 and 36, T. 22 N., R. 5 W.; sections 23, 24, 25, and 26, T. 22N., R. 7 W.; sections 31, 32, 33, and 34, T. 23 N., R. 1 W.; sections 23-27 inclusive, 34, 35, and 36, T. 23 N., R. 2 W.

Reservoirs: Gibson Reservoir, located on the North Fork of the Sun River 25 miles west of Augusta, Montana, has a capacity of 105,000 acre-feet. Water is taken at the Diversion Dam from the Sun River, 12 miles through the Supply Canal to Pishkun Reservoir which has a capacity of 32,000 acre-feet. Willow Creek Reservoir, below the diversion dam in Lewis and Clark County has a capacity of 30,000 acre-feet and maintains a stream flow below which allows greater diversion from the Sun River in low water months into the Supply Canal. The combined storage capacity of the three reservoirs is 167,000 acre-feet.

Length and Capacity of Canals: The Teton County area is supplied by the Sun River Slope Canal which extends east from Pishkun Reservoir Outlet east to Fairfield, a distance of 44 miles. At the Outlet it has a capacity of 1,650 cubic feet per second. East of Fairfield there are 86 miles of canal over the District. The area is served by 377 miles of laterals.

Operation and Maintenance: The water charge for the Greenfields Irrigation District in 1961 was $1.95 per acre for operation and maintenance, which entitled the farmers to two acre-feet of water per acre. Additional water can be secured as needed by the payment of $1.50 per acre. The irrigation system is in good operating condition and satisfactory water delivery has been made each year. District headquarters are located at Fairfield, Montana.

Present Users: The approximate number of water users under the Greenfields Irrigation District in 1961, total 315.

Acreage Irrigated: In 1961, there were 63,648.35 acres irrigated, with 962 acres potentially irrigable, under the District in Teton County.

WATER RIGHT DATA

The water rights that apply to the Sun River Project are recorded and filed in the counties of Cascade, Lewis and Clark, and Teton. They include both decreed rights by adjudication and appropriative water right filings.

THE FOLLOWING ARE THE DECREED WATER RIGHT FILINGS

From the Sun River: *Decreed to Florence C. Blossom, dated 6-1-80 for 92 miner's inches; *decreed to Frank W. Bull, dated 1880 for 84 miner's inches; *decreed to the Hepler Ditch

Company, dated 7-9-91 for 160 miner's inches; *decreed to William Ish, dated 1880 for 16 miner's inches; *decreed to the United States of America (Indian land), dated 1870 for 498 miner's inches and dated 1888 for 362 miner's inches.

From Willow Creek: *Decreed to the United States of America, dated 7-1-83 for 84 miner's inches. (Ref. The above decreed water rights from the Sun River and Willow Creek may be found in the Sun River Decree, dated June 13, 1911, Case No. 4742, Judgement Book 6, Pages 1-232 in the County Clerk of the Court's Office, Great Falls).

THE FOLLOWING ARE APPROPRIATIVE WATER RIGHT FILINGS

From Sun River: All of the following appropriations from the Sun River may be found in the County Clerk and Recorder's Office, Great Falls, Montana.

An appropriation by the United States of America (by J. B. Bond), dated 6-21-11 for 20,000 miner's inches (Ref. Book 61-D, Water Right Records, Page 558); an appropriation by the United States of America (by J. B. Bond), dated 7-21-11 for 20,000 miner's inches (Ref. Book 61-D, Water Right Records, Page 556); an appropriation by the United States of America, dated 11-25-19 for 20,000 miner's inches (Ref. Book 104-D, Water Right Records, Page 214); an appropriation by the United States of America, dated 11-25-19 for 20,000 miner's inches (Ref. Book 104-D, Water Right Records, Page 216; an appropriation by the United States of America, dated 11-21-22 for 20,000 miner's inches (Ref. Book 113-D, Water Right Records, Page 352); and an appropriation by the United States of America, dated 11-21-22 for 20,000 miner's inches (Ref. Book 113-D, Water Right Records, Page 354).

The following appropriations may be found in the County Clerk and Recorder's Office, Choteau, Montana.

An appropriation by the United States of America (by George O. Sanford), from Francis Creek, dated 9-23-19 for 1,000 miner's inches (Ref. Book 5-0, Misc. Records, Page 383); an appropriation by the United States of America (by George O. Sanford), from Green Timber Gulch, dated 9-23-19 for 2,000 miner's inches (Ref. Book 5-0, Misc. Records, Page 386); an appropriation by the United States of America (by George O. Sanford), from Pishkun Reservoir, dated 3-8-22 for 60,000 miner's inches (Ref. Book 5-P, Misc. Records, Page 269); an appropriation by the United States of America (by George O. Sanford), from Pishkun Reservoir, dated 3-8-22 for 60,000 miner's inches (Ref. Book 5-P, Misc. Records, Page 271); an appropriation by the United States of America (by George O. Sanford), from Pishkun Reservoir, dated 11-4-25 for 60,000 miner's inches (Ref. Book 5-Q, Misc. Records, Page 88); an appropriation by the United States of America (by George O. Sanford), from Richardson Creek, dated 9-23-19 for 1,000 miner's inches (Ref. Book 5-0, Misc. Records, Page 384); an appropriation by the United States of America from the North Fork of the Sun River, dated 5-25-05 for 140,000 miner's inches (Ref. Book 5-A, Misc. Records, Page 190); an appropriation by the United States of America from North Fork Sun River, dated 11-6-17 for 1,200,000 miner's inches (Ref. Book 5-A, Misc. Records, Page 411); an appropriation by the United States of America from the North Fork Sun River, dated 6-30-11 for 140,000 miner's inches (Ref. Book 5-A, Misc. Records, Page 462).

All of the following water right filings may be found in the County Clerk and Recorder's Office, Helena, Montana.

An appropriation by the United States of America (by J. B. Bond), from the North Fork of Sun River, dated 8-1-11 for 400,000 miner's inches (Ref. Book L, Water Right Records, Page 623); an appropriation by the United States of America (by J. B. Bond), from the South Fork of the North Fork of Sun River, dated 8-1-11 for 100,000 miner's inches (Ref. Book L, Water Right Records, Page 621);* an appropriation by the United States of America (by J. B. Bond), from Sun River, dated 7-2-11 for 20,000 miner's inches (Ref. Book L, Water Right Records, Page 608); an appropriation by the United States of America (by J. B. Bond), from the North Fork of Sun River, dated 6-30-11 for 80,000 miner's inches (Ref. Book L, Water Right Records, Page 612); an appropriation by the United States of America (by J. B. Bond), from Willow Creek, dated 6-30-11 for 60,000 miner's inches (Ref. Book L, Water Right Records, Page 610); an appropriation by the United States of America (by S. B. Robbins), from the North Fork of Sun River, dated 5-25-05 for 80,000 miner's inches (Ref. Book M, Water Right Records, Page 10); an appropriation by the United States of America (by S. B. Robbins), from Willow Creek, dated 4-10-06 for 8,000 miner's inches (Ref. Book M, Water Right Records, Page 42).

NOTE: Correction

In our Cascade County Water Resources Survey Report, all of the above water rights were listed as being appurtenant to the Fort Shaw and Greenfields Division of the Sun River Project.

The water rights as noted with (*) are used by the Fort Shaw Irrigation District in Cascade County.

The Greenfields Division water rights are from reservoir storage and river flow during flood stages, while the rights of the Fort Shaw Division would be considered from live or regular stream flow.

(See Maps in Part II, Pages 1, 2, 3, 4, 5, 6, 7, 8, 9, 11, 13, 14)

TETON CO-OPERATIVE CANAL COMPANY

HISTORY

The early history of the Teton Co-operative Canal Company began in the year of 1890, when Z. T. Burton settled in the area north and east of Choteau. Mr. Burton was a promoter and colonizer who constructed an irrigation ditch from the Teton River to a land area known as the Burton Bench.

The original ditch was named after Burton and supplied water for irrigation of about 4,000 acres. Later, a corporation was formed under the name of the Eureka Reservoir Canal and Irrigation Company, to enlarge the ditch (commonly known as the Burton Canal) to supply water for the irrigation of 30,000 acres. The Eureka Reservoir Canal and Irrigation Com-

pany soon accumulated such an indebtedness that refinancing was necessary to complete the project. The refinancing of the project was accomplished by the formation of a new corporation called the Montana Land and Water Company, which agreed to acquire all debts and obligations of the former Eureka Reservoir Canal and Irrigation Company.

Under the new corporation Z. T. Burton assumed the role as its president and sole owner. A series of bonds were issued in the amount of $500,000 with the loan obtained through the Kansas City Loan and Trust Company of Topeka, as trustee. Within a short time the financial operations of the Montana Land and Water Company soon came under the suspicion of the settlers on the project and Mr. Burton disappeared never to be heard of again.

The Burton Canal, however, has continued to function with the addition of Eureka Lake, a reservoir that was constructed in 1936 for storage purposes to supply water for the Burton Bench area under the name of the Teton Co-operative Canal Company.

Incorporation articles were filed for the Teton Co-operative Canal Company July 14, 1903 and its term of existence extended for another 20 year period June 4, 1923. On July 12, 1943, the canal company again extended its corporate existence for a period of continual succession. Capital stock of the corporation is $30,000 divided into sixty (60) shares having a par value of $500.00 each. The stock in this company is assessable.

PRESENT STATISTICS

Location: The main canal of the Teton Co-operative Canal Company diverts from the left bank of the Teton River in the NE¼NE¼ of section 35, T. 25 N., R. 6 W. and follows a northeasterly direction for one fourth mile, where it spills into Eureka Lake Reservoir. From the outlet gate of the reservoir, the canal continues easterly for the irrigation of lands in sections 25, 26, 27, 32, 34, 35, and 36, T. 25 N., R. 5 W.; sections 31-35 inclusive, T. 25 N., R. 4 W., sections 1-6 inclusive and sections 9-14 inclusive, T. 24N., R. 4 W.; sections 5 and 8, T. 24 N., R. 3 W.

Reservoir: Water is stored in Eureka Lake (also known as Burton Bench Reservoir) to a capacity of 5,500 acre-feet for use during the later part of the irrigation season when the available flow of the Teton River becomes depleted by water users having prior rights.

Length and Capacity of Canal: The initial capacity of the Teton Co-operative Canal is 100 cfs, with a gradual reduction in size along its length to the point of termination. The canal is 16½ miles in length with approximately 15 miles of lateral ditches contained in the distribution system.

Operation and Maintenance: Water users under this canal company pay operation and maintenance charges in proportion to the number of shares they own in the company. These charges have averaged about $2,700 per year or $45.00 per each share of stock. The cost includes the maintenance on the reservoir as well as the canal system.

Present Users: There are 31 stockholders owning the 60 shares of stock in the company.

One of these shares is retained by the company. Each share has a water equivalent of 50 miner's inches.

Acreage Irrigated: In 1961, the Teton Co-operative Canal supplied water for the irrigation of 4,711 acres with 3,023 acres potentially irrigable from present ditch facilities. The maximum irrigable acreage totals 7,734 acres.

WATER RIGHT DATA

On March 28, 1908, the Teton River was adjudicated by a district court decree. Under this decree ,the Teton Co-operative Canal Company was given the following decreed water right: Decreed to the Teton Co-operative Canal Company from the Teton River, 3,000 miner's inches of the priority date April 18, 1890. In addition to this decreed right the Teton Co-operative Canal Company filed an appropriation from the Teton River dated October 11, 1921 for 100 cfs or 4,000 miner's inches. Reference to the decreed right may be found in Judgement Book 1, Case #371, Page 425 and Orders and Decrees Book 18, Page 94, Clerk of the District Court, Teton County, Choteau, Montana. Reference to the appropriative right is recorded in Book 9C, Water Right Records, Page 392, Clerk and Recorder's Office, Teton County, Choteau, Montana.

(See Maps in Part II, Pages 20, 21, 29, 30)

TETON CO-OPERATIVE RESERVOIR COMPANY

(BYNUM RESERVOIR)

HISTORY

The original intended purpose of the Teton Co-operative Reservoir Company was to furnish a supplemental irrigation water supply to the "Burton" or "Farmington" Bench, and for lands adjacent to Muddy Creek.

In 1908, the owners of the majority of stock in the reservoir company conceived the idea of using the water in the reservoir to reclaim lands under the Carey Land Act Project in the vicinity of Brady, which lands were withdrawn from settlement under the Carey Land Act. A disagreement arose between the majority and minority stockholders in the company, in that the minority wanted water for their own lands, the result of which ended in a court action. During the period of litigation, some water was used in the Muddy Creek area by the minority stockholders. After a thorough investigation, it was decided that the proposed irrigation of the Carey Act Lands, consisting of some 55,000 acres, would be abandoned in favor of 15,000 acres that could be irrigated from the storage water supply of the project. This was the beginning of the promotion by the majority stockholders to create the Bynum Irrigation District and dispose of their stock in the company. The water right appurtenant

to the reservoir company is an appropriation made by Donald Bradford in 1902 on the Bynum Reservoir site, and filed in the United States Land Office for 120,000 miner's inches of water from the Teton River. Other appropriative water filings listed for the reservoir company are from Muddy Creek, Blackleaf Creek and tributaries. (See Water Right Data).

In the year of 1908, construction work began on the earth dam, closing the reservoir to a completed elevation of 4,178 feet above sea level (See Bynum Irrigation District). The original diversion canal to the reservoir, constructed in 1910, was later rebuilt and the headworks replaced with a concrete diversion dam and headworks on the Teton River. Although there was some use of water from the Bynum Reservoir prior to 1915, the majority of use from the reservoir began after that date.

Articles of Incorporation of the Teton Co-operative Reservoir Company were filed for record on May 26, 1906, with the term of existence forty years. The capital stock of the corporation was $150,000., divided into one thousand shares having a par value of $150. each. The number of trustees in the corporation total five, and were named as follows: Edward J. Hershberg, Thomas O. Larson, Nicholas O. Tuttle, Ole Wagnild and Carlos Warfield. In addition to the five trustees listed as stockholders, other subscribers to stock were: Martin Larson, Christopher O. Lindseth, Lars L. Nasset, Lauris J. Otness, Lewis A. Savik, James Sulgrove and Lewis Tellefson. The amount of stock subscribed totaled 82 shares, valued at $12,300.

On the 21st of July, 1925, a Certificate of Amendment to the Articles of Incorporation was filed as follows: "NOTICE is hereby given that a special meeting of stockholders of Teton Co-operative Reservoir Company (a Montana Corporation) will be held Friday, August 21, 1925 at 11:00 o'clock A.M., at the office of Phil I. Cole at Choteau, Teton County, Montana for the purpose of amending its Articles of Incorporation by extending the term of corporate existence of said company to, and including, September 1, 1965."

/s/ A. K. Prescott, President

At said meeting, the changes as suggested in the above notice were adopted.

PRESENT STATISTICS

Location: Lands furnished a water supply under the Teton Co-operative Reservoir Company are located in section 36, T. 26N., R. 6W. and sections 23, 26, 27 and 31, T. 26N., R. 5W. Water is also supplied to the Brady Irrigation Company and the Bynum Irrigation District, each having 156 and 704 shares, respectively. (See the Brady Irrigation Company and Bynum Irrigation District for descriptions of land included in this report).

Reservoir: The Bynum Reservoir has a maximum capacity of 90,000 acre feet and covers a land area of 3,080 acres. Average annual storage is about 75,000 acre feet with a drawdown of about 35,000 to 40,000 acre feet of the water used during the irrigation season. The Teton River drainage area above the diversion canal supplying water to the reservoir is

approximately 170 square miles. One share of stock in the company represents the equivalent of thirty to forty acre feet, depending on the seasonal water requirements.

Length and Capacity of Canals: The diversion canal from the Teton River to the Bynum Reservoir is five miles long and diverts from the left bank of the river at a point in the SE¼NW¼, section 34, T. 25N., R. 7W. The initial capacity of the canal is 1,000 cfs.

Directly below the dam at the Bynum Reservoir, the "Outlet" or "A" canal, having a capacity of 350 cfs., follows a course one and eight-tenths miles to Muddy Creek for irrigation in that area.

Operation and Maintenance: The average yearly charges for operation and maintenance are $7.50 for each share of stock owned in the company.

Present Users: The 1,000 shares of stock of this Reservoir Company are owned by the Brady Irrigation Company, Bynum Irrigation District and eight individual users.

Acreage Irrigated: In addition to the land irrigated in the Bynum Irrigation District and the Brady Irrigation Company, there were 810 acres irrigated by other stockholders of the Teton Co-operative Reservoir Company. There is also another 195 acres potentially irrigable. The Eldorado Co-operative Canal Co. and the Teton Co-operative Reservoir Co. irrigate an additional 1,285 acres by mingled waters from both systems.

WATER RIGHT DATA

The water right filing from the Teton River, used by the Teton Co-operative Reservoir Company, is an amended appropriation from Donald Bradford, grantor, to the Teton Co-operative Reservoir Company in the amount of 120,000 miner's inches dated July 3, 1902 (Ref. Book V-M, Page 354 of Miscellaneous Transcribed Records).*

Other water rights claimed by the Teton Co-operative Reservoir Company are: An amended appropriation to the Teton Co-operative Reservoir Company from Ole Wagnild, grantor, in the amount of 100,000 miner's inches, from the Teton River dated April 17, 1906 (Ref. Book V-M, Page 355 of Miscellaneous Transcribed Records)*; An appropriation by the Teton Co-operative Reservoir Company for 120,000 miner's inches from Muddy Creek dated August 26, 1909 (Ref. Book V-M, Page 356 of Miscellaneous Transcribed Records)*; An appropriation by the Teton Co-operative Reservoir Company for 100,000 miner's inches from Blackleaf Creek, also known as the North Fork of Muddy Creek, dated August 26, 1909 (Ref. Book V-M, Page 357 of Miscellaneous Transcribed Records)*; An appropriation by the Teton Co-operative Reservoir Company for 60,000 miner's inches from Chicken Coulee and branches dated September 25, 1909 (Ref. Book VIX-B, Page 384 of Water Right Records)*; An appropriation by the Teton Co-operative Reservoir Company for 60,000 miner's inches from Coopers Coulee and all branches, dated September 25, 1909 (Ref. Book VIX-B, Page 383 of Water Right Records)*.

The appropriation used by the Teton Co-operative Reservoir Company from the Teton River, dated July 3, 1902 for 120,000 miner's inches was not considered in the adjudication

of the Teton River. All of the decreed water rights and amounts of water defined in the Teton River Decree will have a priority over the appropriation used by the Teton Co-operative Reservoir Company.

* (The above references to water right filings are located in the Clerk and Recorders Office, Teton County, Choteau, Montana).

(See Maps in Part II, pages 36, 37)

(Also see Maps Part II, page 35, mingled water of Eldorado Co-operative Canal Co. and Teton Co-operative Reservoir Co.)

WATER RIGHT DATA — TETON COUNTY

APPROPRIATIONS AND DECREES BY STREAMS

STREAM	APPROPRIATIONS (Filings of Record) No. of Filings	Miner's Inches	Cu. Ft. Per Sec.	DECREED RIGHTS Case No.	No. of Decrees	Miner's Inches	Cu. Ft. Per Sec.
COLUMBIA RIVER BASIN							
Clark Fork Columbia (Hellgate) (Missoula) River	0	0	0				
Flathead River	0	0	0				
Middle Fork Flathead (Big) River	1	12,000.00	300.00				
Bowl Creek	3	96,000.00	2,400.00				
Basin Creek	3	144,000.00	3,600.00				
Total Columbia River Basin and Tributaries	**7**	**252,000.00**	**6,300.00**				
MISSOURI RIVER BASIN							
*Missouri River	0	0	0				
Sun River	2	15,000.00	375.00	4742	2	9,961.00	249.03
North Fork Sun River	11	2,211,000.00	55,275.00	4742	1	75.00	1.88
South Fork of North Fork of Sun River	1	100,000.00	2,500.00				
White Sulphur Springs	1	0	0				
Mortimer Gulch	0	0	0				
A Spring	1	10.00	.25				
Blacktail Gulch	0	0	0				
A Spring	2	30.00	.75				
Hannon Gulch Spring	1	40.00	1.00				
Wagner Creek	2	10,100.00	252.50				
A Spring	1	5.00	.13				
Castle Creek	1	160.00	4.00				
Frances Creek	6	1,910.00	47.75	4742	1	75.00	1.88
Richardson Creek	2	1,100.00	27.50	4742	1	50.00	1.25
Creeks	1	120.00	3.00				
Falls (Green Timber Gulch) (Green Gulch) (Trail) Creek	7	5,300.00	132.50				
A Spring	1	All	All				
Arnold Coulee Creek	2	160.00	4.00				
Twin Lakes	1	100.00	2.50				
Meadow (Split Rock Coulee) Creek	2	360.00	9.00				
Oil Well Creek	1	120.00	3.00				
Seepage Creek	1	120.00	3.00				
Clemons Coulee	3	440.00	11.00				
Cutting Shed (Wood) Coulee	3	1,000.00	25.00				
South Fork Sun River	0	0	0				
Bear Creek	1	10,000.00	250.00				
A Certain Spring	1	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 — TETON COUNTY

APPROPRIATIONS AND DECREES BY STREAMS

STREAM	APPROPRIATIONS (Filings of Record) No. of Filings	Miner's Inches	Cu. Ft. Per Sec.	DECREED RIGHTS Case No.	No. of Decrees	Miner's Inches	Cu. Ft. Per Sec.
Elbow Coulee	1	400.00	10.00				
Unnamed Stream	1	160.00	4.00				
Unnamed Lake	1	400.00	10.00				
A Lake	1	600.00	15.00				
Certain Springs and Coulee	1	300.00	7.50				
A Coulee	1	320.00	8.00				
Spring Coulee	1	200.00	5.00				
A Spring and Creek	1	100.00	2.50				
Big (Spring Creek) Coulee	3	2,500.00	62.50				
Wade Coulee	1	100.00	2.50				
Certain Spring	1	80.00	2.00				
Springs	1	All	All				
Duck (Blackfoot) Creek	6	3,500.00	87.50				
Glastra Spring	1	120.00	3.00				
Rock Coulee	1	200.00	5.00				
Big Muddy Creek (Big Hole Basin)	14	142,300.00	3,557.50				
Three Certain Coulees	1	200.00	5.00				
Gap Coulee	1	800.00	20.00				
Three Certain Coulees	1	All	All				
Little Muddy Creek	0	0	0				
South Fork Little Muddy Creek	2	1,200.00	30.00				
Spring	2	0	0				
Freighter Lake	1	400.00	10.00				
A Coulee	1	All	All				
A Certain Coulee	1	200.00	5.00				
Unnamed (Muddy Creek) Stream	1	200.00	5.00				
Spring (Spring Branch) (Flat) Coulee	2	1,200.00	30.00				
Tank Coulee	1	200.00	5.00				
Cascade Coulee	1	400.00	10.00				
Spring	1	0	0				
Total Sun River and Tributaries	**107**	**2,513,355.00**	**62,833.88**				
Black Feet Gulch	0	0	0				
Benton Lake Cut	0	0	0				
Benton Lake	0	0	0				
Lake Creek	0	0	0				
A Coulee	1	80.00	2.00				
Marias River	0	0	0				
Two Medicine Creek	0	0	0				
Birch Creek	0	0	0				
Dupuyer Creek	9	54,200.00	1,355.00				