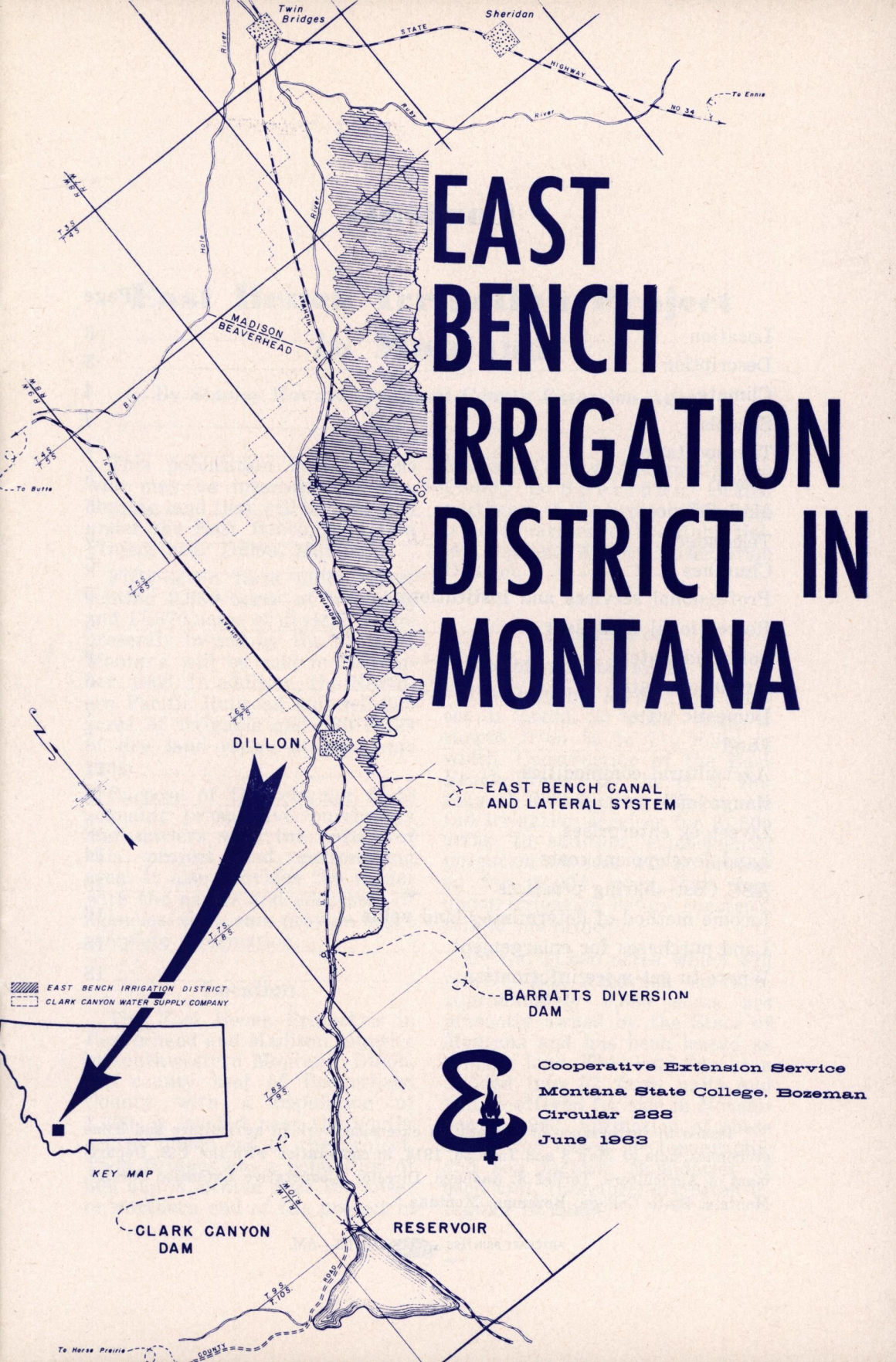

EAST BENCH IRRIGATION DISTRICT IN MONTANA

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Contents

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East Bench Irrigation Project in Montana

By Stanley Howard, Assistant County Extension Agent

This publication is for those who may be interested in purchasing land that will be irrigated under the East Bench Irrigation Project near Dillon, Montana.

Fifty-seven farm units representing 9,830 acres of irrigable, and 11,870 acres of dryland range presently owned by the State of Montana will be sold in November, 1963. In addition, the Northern Pacific Railroad will sell 225 acres of irrigable and 180 acres of dry land range at the same time.

Purpose of this circular is to acquaint prospective purchasers and settlers with the nature of this project and surrounding area. It also provides the reader with the names and addresses of agencies that can provide more complete information.

Location

The East Bench Project is in Beaverhead and Madison counties in southwestern Montana. Dillon, the county seat of Beaverhead County with a population of 3,690, is located near the southern or upper end of the project. Twin Bridges has a population of 509 and is located near the lower or northern end of the project in Madison County. Also in Madison County is Sheridan, located northeast of the project. Sheridan is headquarters for the Ruby Valley Soil and Water Conservation District.

Description

Size of irrigable areas.

The irrigable area of the project is about 30 miles long. It ranges from ½ to 7½ miles in width. Construction of the East Bench Project by the U. S. Bureau of Reclamation will provide full irrigation services for 21,800 acres. In addition, supplemental irrigation services will be provided for 28,004 acres that were under irrigation before construction of the project.

Of the 21,800 acres which will receive full irrigation services, approximately 9,830 acres are presently owned by the State of Montana and has been leased as grazing land. This land has been divided into 57 farm units and will be offered for sale in November of 1963. Formation of these units was based on topographic and soil factors. Boundaries of each unit, therefore, are often irregular in shape.

Each unit includes some dryland range in addition to the irrigable land. The irrigable acreage portion of the units varies from 26 to 220 acres with a total for each unit, including range land, ranging from 35 to 634 acres.

Climate

Precipitation: The average annual precipitation is estimated at 8 to 11 inches with over 60 percent occurring during the May to September period. Approximately 30 percent of the growing season precipitation comes in storms of ¼ inch or less. The precipitation pattern over the project is described as undependable and variable.

Frost-Free Period: The average annual frost-free period is 99 days at Dillon. However, there have been frosts every month at some time during the period of record.

Wind: This area is subject to persistent southwesterly winds. Since chinook winds seldom occur, a snow cover may remain most of the winter. However, there is very little snowfall during some winters.

Temperature: Temperature is characterized by marked fluctuations. Temperatures as high as 100 degrees and as low as -40 degrees Fahrenheit have occurred. The average temperature from May to September is 58 degrees. The average for July is 66 degrees and for January, 22 degrees. Short periods during the summer are moderately hot. Winters are usually cold with periods of exceedingly low temperatures.

Elevation: Dillon has an elevation of 5,228 feet at its weather reporting station. The elevation of the project varies from 4,700 to 5,450 feet. Length of growing season is greatly influenced by differences in elevation. No weather data is available to show how much the differences in elevation influences the length of growing season from that reported at Dillon.

Schools

Principal schools nearest the project are located at Dillon and Twin Bridges. Each location has a grade and high school. Enrollments in 1963 are shown in Table 1.

Transportation

The area is served by the Union Pacific Railroad that runs from Butte southward through Dillon and on to Salt Lake City and Los Angeles. The Northern Pacific Railroad runs a spur freight line from Whitehall through Sheridan, Twin Bridges and to Alder. U. S. Highway 91 parallels the Union Pacific Railroad from where it enters the state, through Dillon and north to Butte. State Highway 41 parallels the Beaverhead River and extends northeast from Dillon through Twin Bridges to

Table 1. School Enrollments

Location	Grade	High School
Dillon	980	400
Twin Bridges	182	116

U. S. Highway 10 at Whitehall. Dillon is served by Intermountain Bus Lines.

Butte, which is 60 miles northwest of the project, is the closest city served by scheduled commercial airline service. It is served by Western and Northwest airlines.

Project roads: County road rights-of-way have been established to each farm unit. Provision has been made for road development as settlement takes place.

Power

The Montana Power Company and the Vigilante Electrical Cooperative serve all the power needs in the area. As the project develops it is anticipated that adequate service will be provided to meet the requirements of new settlers.

Mail Service

There are post offices in Dillon and Twin Bridges. Rural carriers serve outlying areas. As the project is settled, Rural Free Delivery service may be petitioned by settlers.

Telephone

In 1959, there were telephones in 76 percent of the farms in Beaverhead County compared with 66 percent for the entire state. With settlement of the East Bench it is expected that phone service will be expanded.

Churches

Churches in Twin Bridges include Catholic, Jehovah's Witnesses, Methodist, and Church of Christ.

Sheridan is served by the Catholic, Episcopal, Baptist, Latter-Day Saints and Bethel Methodist churches.

Dillon is served by eight churches. These include the Latter-Day Saints, Catholic, Episcopal, Baptist, Presbyterian, Assembly of God, Methodist and Lutheran. (Christian Science and Jehovah's Witnesses meet but do not have churches).

Professional Services and Institutions

The area is served with adequate professional services. There are four physicians and surgeons, three dentists and one hospital in Dillon. Sheridan has one doctor and one dentist. The legal profession is represented by seven lawyers at Dillon. Veterinary hospitals are at Dillon and Twin Bridges. An excellent teacher training school, the Western Montana College of Education, is located at Dillon. Bids were opened in 1963 for a new nine-bed hospital to be constructed in Sheridan.

Recreational Facilities

The East Bench Project is located in one of the most scenic intermountain valleys of western Montana. This area is widely noted for its excellent hunting, fishing, and skiing.

Soils and Water

Soils: The majority of the soils have been derived and developed from old lakebed sediments which have been highly modified through the action of wind and deposition from tributary streams. Water flowing from the mountains on the east has deposited considerable amounts of sand and gravel and some cobble over the lakebed sediments. Evi-

dence of old stream channels are deep cuts, coulees, and bench breaks.

The soils are medium to light textured, overlying deep, permeable, light textured or gravelly subsoils.

Predominant surface texture varies from sandy loam to loam. Generally there is little or no development of a true surface soil. (A—horizon). However, the soil material generally varies in depth from 12 to 30 inches with some areas as deep as 5 feet. Subsoil textures are extremely variable and often are spotted with sand lenses.

The light sandy soils of the benchland are very susceptible to water erosion and will require careful management. Slopes range from 1 to 3 percent and greater. Positive water control structures and small heads will be necessary to keep water erosion at a minimum.

These soils are generally low in organic matter and are expected to be low in nitrogen and phosphorus.

Alkalinity and salinity are not expected to be problems except in small local areas on the bench.

Irrigation Water: Irrigation storage for the lands of the East Bench Project is provided by the construction of Clark Canyon Dam on the Beaverhead River, just below the junction of Red Rock River and Horse Prairie Creek. Clark Canyon Reservoir will have a capacity of 261,000-acre feet. Beginning at the new Barratts Diversion Dam 11 miles below Clark Canyon Dam will be the 46-mile East Bench Canal. It will parallel Canyon Canal for several miles and then will cross the East Bench in a northeasterly direction paralleling the Beaverhead River. A system of 24 laterals ranging in length from 170 feet to 7 miles and having a capacity of 5 to 125 cubic feet per second will fully serve 17,200 acres of land. Turnouts in the East Bench Canal will serve the remaining 4,600 acres.

Present construction schedules call for the first water to be delivered to the new lands on the East Bench Project in the spring of 1965. However, it is doubtful that there will be a full supply of water available for the irrigable land at that time. During that year or until a full supply is available, water can be delivered under an interim water service contract, for a nominal charge, to those farmers planning on bringing part of their land under irrigation.

It is anticipated that there will be a full supply of water in the spring of 1966 or 1967, if weather conditions are favorable. The Secretary of the Department of Intetrior will announce when there will be a full water supply. This will signify the beginning of the development period after which assessments will be made to cover operation and maintenance expenses. It is estimated that these charges will be $2.85 an irrigable acre; however, they will be subject to minor changes as based on actual costs of operating and maintaining the irrigation features of the project.

During this development period there will be an additional assessment of not more than 50 cents per irrigable acre per year to provide for a reserve fund of not less than $50,000 by the end of the period. The project will be operated by the Bureau of Reclamation during the fixed 10-year period of development. At the end of this period the project will be turned over to the water users to operate and maintain. At that time the water users will begin paying an additional charge of $2.25 per acre per year for their share of the construction costs. This will make a total assessment of approximately $5.00 to $5.50 per irrigable acre per year for construction, and operation and maintenance.

The new land on the East Bench Project has a water right, by contract, of 3.1 acre-feet per irrigable acre at Barratts Diversion Dam. The Bureau of Reclamation estimates there will be two acre-feet per irrigable acre delivered to the farmer at his farm turnout. There are no provisions for extra or excess water.

Funds have been provided in the estimated project cost for the construction of drains if they are needed to maintain production on land classified as irrigable. The drains will be constructed when needed.

Domestic Water: The town of Dillon and the valley area have an ample supply of water of excellent quality. Existing wells are shallow and produce water of excellent quantity and quality. Although little well development has taken place on the bench, deeper wells probably will be required. Some difficulty may be encountered in obtaining water in some places.

Table 2. Present Ownership Pattern of Land to be Irrigated For the First Time

Owner	Beaverhead County	Madison County	Total
	Acres	Acres	Acres
State Land	713	9,117	9,830
Private Land	9,400	2,345	11,745
N. P. RR Land	0	225	225
			21,800

Land

Of the 21,800 acres that will be irrigated for the first time under the East Bench Canal the present ownership pattern is given in Table 2.

The State and Railroad land will be auctioned to prospective buyers in November, 1963. Table 3 shows the irrigable and dryland acreages that will be sold in each county.

A total of 22,105 acres of State and Northern Pacific Railroad land will be offered for sale. Of this amount 12,050 acres will be dry land and 10,055 will be irrigable.

This land will be sold at public auction.

Land located in Beaverhead County will be sold at the county seat town of Dillon, November 20, 1963. Land located in Madison County will be sold at the county seat town of Virginia City on No-

Table 3. State and Railroad Land to be Sold

Owner	Beaverhead County	Madison County	Total
	Acres	Acres	Acres
State Land (irrigable)	713	9,117	9,830
State Land (dryland	732	11,138	11,870
State total	1,445	20,255	21,700
N. P. RR (irrigable		225	225
N. P. RR (dryland		180	180
N. P. RR total		405	405
Grand total irrigable and dry land			22,105

vember 21, 1963. Terms on the State land will be 10 percent down, 5 percent interest and a 33-year repayment period. A representative of the State Department of Land and Investments will be located in Dillon after September 15, 1963 to advise interested purchasers on the tracts in question and sale requirements.

Table 4 lists the land classification acreages and the appraised value of each of the 57 farm units of state land to be sold. Bids must equal or exceed the appraised figure. The map on page 10 shows the number, location and irrigable and dryland acreage of each unit.

Table 4. Land Classification Acreages and Appraisals, State Lands, East Bench Project

Unit No.	Class 1	Class 2	Class 3	Class 6*	Acres	Appraisals
6	1.7	42.0	102.2	14.7	160.60	$ 4,900.00
13		6.7	18.1	96.37	121.17	2,700.00
62		155.1	8.2	376.77	540.07	13,200.00
66	20.6	118.8	7.3	9.56	156.26	5,500.00
68	19.4	17.9		2.44	39.74	1,550.00
76		88.9	94.1	243.14	426.14	10,800.00
86		96.6	56.3	469.92	622.82	14,450.00
88		160.0		475.02	635.02	15,100.00
91		123.3	46.9	42.52	212.72	6,600.00
92		124.1	49.2	448.53	621.83	14,800.00
94		138.6	26.4	23.15	188.15	6,100.00
95		141.6	26.5	11.25	179.35	6,000.00
96		160.0		455.49	615.49	14,700.00

Table 4 — (Continued)

Unit No.	Class 1	Class 2	Class 3	Class 6*	Acres	Appraisals
97		106.1	72.1	423.66	601.86	14,350.00
98		131.1	29.3	202.74	363.14	9,500.00
99		121.2	6.1	372.69	499.99	11,900.00
101		76.4	3.5	405.80	485.70	10,900.00
106		122.3	48.1	458.48	628.88	14,900.00
107		136.0	3.5	499.13	638.63	14,850.00
108		136.9	25.1	85.60	247.60	$ 7,250.00
109		110.1	67.6	22.65	200.35	6,350.00
111		52.9	143.0	91.35	287.25	7,950.00
112		97.1	86.5	47.05	230.65	6,950.00
113		144.9	20.6	121.53	287.03	8,100.00
114		137.4	31.0	163.97	332.37	9,000.00
115		137.4	11.8	56.92	206.12	6,300.00
116		111.3	37.9	62.65	211.85	6,300.00
122		141.4	21.4	456.32	619.12	14,700.00
123		31.4	172.4	405.00	608.80	14,350.00
124			211.5	420.17	631.67	14,750.00
125		110.9	64.4	461.53	636.83	15,050.00
126		51.7	31.8	516.45	599.95	13,100.00
127		43.7	154.7	190.16	388.56	10,000.00
128			220.0	219.58	439.58	11,000.00
129		134.5	29.7	113.06	277.26	7,850.00
130		103.1	73.0	160.79	336.89	9,000.00
131			219.3	170.58	389.88	10,000.00
132		19.8	186.0	360.38	566.18	13,500.00
133			205.1	120.85	325.95	$ 8,550.00
134			219.4	61.00	280.40	7,800.00
135			211.9	106.57	318.47	8,500.00
136			144.7	79.12	223.82	5,900.00
137			160.4	152.97	313.37	7,900.00
138			218.2	281.36	499.56	12,200.00
139			217.5	70.38	287.88	7,950.00
141		160.0		258.08	418.08	10,750.00
142		160.0		258.60	418.60	10,750.00
143		62.8	133.7	295.51	492.01	12,100.00
144			175.2	284.59	459.79	10,950.00

Table 4 — (Continued)

Unit No.	Class 1	Class 2	Class 3	Class 6*	Acres	Appraisals
145			220.00	150.08	370.08	9,600.00
146			179.8	23.24	203.04	5,850.00
147			217.3	8.74	226.04	6,700.00
148		132.0	27.6	432.68	592.28	14,100.00
149			214.4	3.53	217.93	6,500.00
150			216.8	8.83	225.63	6,700.00
151			206.5	27.33	233.83	6,750.00
152			219.6	142.71	362.31	9,450.00

*Includes Canal, Lateral and County Road rights of way.

Sale terms on the Northern Pacific Railroad land are 10 percent down, 6 percent interest and a 10-year repayment period. Table 5 shows the land classification acreages and appraisals of the railroad land that is a part of nine farm units that will be offered for sale. The cross-hatched areas of the map below show the location of the railroad land.

Agricultural Commodities

Crops: There are few cash crops that can be grown. In the short growing season on the East Bench. Irrigated land adjacent to the East Bench is used almost entirely to produce grain, hay and irrigated pasture. Major cash crops are grain and hay with some potatoes. Beef cattle, sheep and wool, cream or milk, some hogs, poultry and eggs are marketed from the livestock enterprises.

The importance of the livestock industry in Beaverhead and Madison counties is illustrated by the cash receipts of crops and livestock and livestock products as reported for 1961 in "Montana Agricultural Statistics." These data are presented in Table 6.

Farm Units, Acreages, and Boundary of Irrigation District

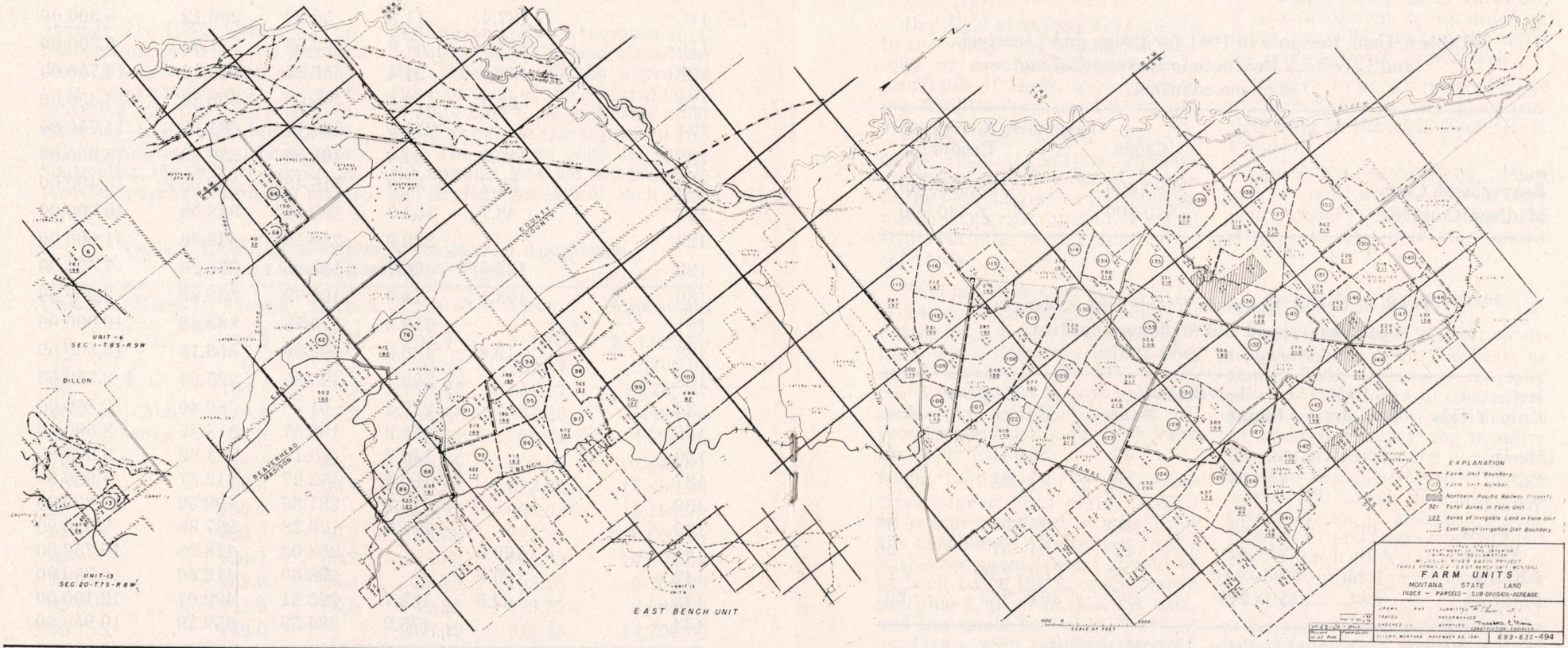

Table 5. Land Classification Acreages and Appraisals
Northern Pacific Railroad Land, East Bench Project

Unit No.	Class 1	Class 2	Class 3	Class 6*	Acres	Appraisals
135			8.10	4.40	12.50	$ 331.00
136			61.90	14.11	76.01	2,139.20
137			59.60	2.75	62.35	1,843.00
138				11.49	11.49	229.80
142				40.43	40.43	808.60
143				40.50	40.50	810.00
144			39.40	41.91	81.31	2,020.20
146			40.19		40.19	1,205.70
148				40.63	40.63	812.60

*Includes canal, lateral and county road rights of way.

Table 6. Cash Receipts in 1961 for Crops and Livestock and Livestock Products in Beaverhead and Madison counties.

	Crops	Livestock & Livestock Products
Beaverhead County	$889,600	$8,948,600
Madison County	910,300	6,440,900

Table 7. Crops, Range in Yields and Averages for Beaverhead and Madison Counties
Average of 1954-1961*

Irrigated Crop Yields	Unit Per Acre	Beaverhead Range	Beaverhead Ave.	Madison Range	Madison Ave.
Barley	bu.	32 - 49	42	36 - 51	41
Oats	bu.	44 - 63	55	44 - 61	51
Wheat:					
Spring	bu.	25 - 45	36	26 - 39	33
Winter	bu.	25 - 31	27	24 - 37	30
Alfalfa	tons	1.30 - 2.10	1.83	1.80 - 2.30	2.15
Potatoes	cwt.	180 - 210	195	164 - 230	201

*Source: Montana Agricultural Statistics, 1954-1961 inclusive.

There is one certified seed potato grower in the valley area near Dillon. Experience has demonstrated that potato yields are often reduced because of the short growing season and the variations from this average which often bring damaging frosts in late spring and early fall.

Successful potato production requires a large enough volume to support mechanization of growing, processing and packaging for market. Good management that will produce a quality product requires careful attention to all phases of potato operations that are peculiar to this area. Market outlets need to be developed.

Dry field peas have been grown in the valley. Green peas for canning or seed possibly would be profitable if there were processing facilities and market outlets.

Short, cool season vegetable crops such as lettuce, cabbage and beets probably can be grown in the area subject to the development of market outlets. Present fruit varieties aren't adapted to this area.

Production of corn silage is increasing in Montana. Although it hasn't been grown in this area, it may be a satisfactory forage crop under irrigation on the bench. Some grass seed is now produced under dryland conditions. It offers possibilities as a cash crop under irrigation.

The limitation of crop alternatives suggest that grain, irrigated pasture, and hay are best for the benchland. Alfalfa hay yields, with good management should be at least twice the average shown in Table 7, page 12. Barley, oats, and hay could be fed to livestock on farms with irrigated pasture and such nonirrigated grazing land being utilized in cattle feeding or cow-calf operations as may be available.

Range Land

Range land to be sold has an average grazing yield of five acres per animal unit month. An alternative use for this land might be the production of range grasses for reseeding purposes.

Allotment Programs: (Applicable 1963)

Wheat: Present laws allow any farm unit to raise up to 15 acres of wheat penalty free. However, if any allotment is exceeded or there is no allotment on the farm, no price support is available.

Barley: Price supports are available for barley on farms participating in the 1963 Feed Grain Program.

Oats: No restrictions. Price support is available. (Check with your County ASCS Office for changes in 1964 and later years.)

Livestock Enterprises

Dairy and Hogs: These two enterprises have been the basis of family farm operations in many areas of the county in past years. Improved sanitation and modern technology now call for a major investment in modern equipment and the trend is toward 100-cow dairies and larger. The milk marketing system in Montana is such that small producers starting out may find it difficult to find a market outlet, particularly for fluid milk.

Hog production is following the same tendencies toward an as-

sembly line type of production. There is profit on small 12-20 sow-hog operations if well managed. This size is most practical when it will use labor for which there is no other valuable demand.

Sheep (farm flocks): This enterprise may be well adapted to this area. The initial investment in getting into the business is low. The labor requirement can be fitted easily into the cropping pattern. Sheep can graze adjacent dry land area, ditch banks and other waste land effectively. The rate of turnover in sheep is relatively fast so that the returns are rapid and fairly reliable. Wool pool marketing centers are located at Dillon and Whitehall.

Beef Cattle: Beef breeding that could be supported on one of these units would be too small to be efficient and profitable.

A growing practice in some irrigated areas of the state is to buy light weight (350-400 pound) calves in the fall, rough them through the winter with a 1-1.5 pounds daily gain and sell them in the spring as stockers. This is a short-term operation.

The calf fattening enterprise is another operation that is growing in some areas. Calves are bought in the fall and fed through the winter so that they will gain at least a pound per day. They are then run on irrigated pasture and self fed concentrates and sold during the late summer as grass fat cattle. Both operations require considerable capital to buy calves each fall. The dry atmosphere found in this area is ideal for winter feeding operations.

Poultry: Poultry production is another enterprise that is moving toward large scale production units.

Summary: It is suggested that farm flocks of sheep or moderate size hog setups may offer the best opportunities for livestock enterprises to people getting started and where capital is short. Contract feeding or the purchasing of cattle to utilize hay and irrigated pasture also appears promising.

Dairying, large scale hog production, poultry and feedlot fattening have high capital requirements and are tending to become separate firms that provide local markets for feed. This area historically has been a feed grain importing area.

Land Development Costs

Buildings: Most of the East Bench is an unfenced dryland range area and units that are being established on the state land are without buildings. The 1960 U.S. Department of Commerce Census of Housing reported that the median value of owner-occupied homes in Beaverhead County was $10.200. Livestock housing need not be elaborate because of the dry atmosphere. Shelter from the wind needs to be provided. Building layouts should be planned to provide for farm shelterbelts.

Domestic Water: In some areas of the East Bench little is known about the nature of the source of well water. Existing wells vary in depth from 150-250 feet. Drilling costs vary from $7.00-$8.00 per foot of depth for a well with a six inch casing.

Fencing: Amount of fencing will vary depending upon the nature of the farm operation. Fencing costs are estimated between $750-$800 per mile.

Land Leveling: Estimated costs for land leveling are $50-$60 per acre. Limited soil depth and rough topography will limit the amount of leveling for efficient irrigation in some areas.

Sprinkler Irrigation: Because of a limited water supply and uneven topography, sprinkler irrigation may be the only efficient method of irrigating some lands. The estimated cost of any 160-acre hand-move sprinkler system is $80-$90 per acre.

Farm Ditches and Water Control Structures: Some of the steeper lands will require many drop structures to assure positive water control and to reduce soil erosion. Costs of constructing ditches and water control structures such as drops, turnouts and checks are estimated at $5-$15 per acre.

Fertilizers: Statements about fertilizer requirements of crops cannot be positive because of the limited information available. Some evidence can be obtained from experiences with similar soils on the West Bench which have been under irrigation.

The soils of the project are generally low in organic matter which indicates that they probably will be low in nitrogen for crop growth. It can be assumed that nitrogen fertilizer requirements will be high for non-legumes with rates for grain crops, for example, ranging up to 60-80 lbs. of N. per acre. These requirements will be less if cropping systems include legumes or the application of manure.

It is expected that most soils on the Project will be low to very low in phosphorus. Rates of phosphate required to produce maximum yields of alfalfa will probably range from 150-250 lbs. P_2O_5 per acre at the time of seeding, followed with maintenance applications. Small grains probably will respond economically to 30-50 lbs P_2O_5 per acre.

Irrigation Water: Operational and maintenance charges are estimated at $2.85 per acre, plus 50c per acre for an operational reserve fund.

Construction charges allocated to irrigation at the end of the ten-year development period are $2.25 per acre.

Agricultural Conservation Program cost sharing practices available that may apply to East Bench Lands.

Range Management Practices on non-crop land.

1. Deferred grazing
2. Cross-fencing of pastures
3. Sage brush control
4. Range reseeding
5. Livestock wells
6. Livestock spring developments
7. Livestock water pipe lines

Irrigation practices — after the land has been irrigated for two years.

1. Irrigation structures
2. Ditches
3. Permanent sprinkler (buried main lines only)
4. Drainage
5. Ditch lining

Land leveling—No federal cost sharing will be allowed for leveling land if the primary purpose is to bring into agricultural production land which was not devoted to the production of cultivated crops; crops normally seeded for hay or pasture in the area, or mountain meadows at least two of the last five years.

Erosion control practices are available immediately. ACP cost sharing may be allowed for the following:

1. Seeding of ditch banks
2. Establishment of a stand of trees to prevent soil and water erosion. (Land must be summer fallowed or otherwise adequately prepared in the year prior to planting the trees.)
3. Establishment of a stand of permanent vegetative cover (grasses and/or legumes)

Income Method for Determining Land Value[1]

It is commonly said that "farm land is worth no more than it will produce." This is simply recognition of the income approach to determining land value. If you can estimate the productivity of land, you have the basis for determining what it is "worth" and consequently how much you can pay for it.

The following budget is an example of the "income approach" applied to a 175-acre irrigated farm. It assumes that the land will be used for a feed base to support an enterprise of purchasing calves in the fall, wintering, pasturing during the summer, and selling feeder yearlings the following fall.

The assumed land use pattern is 78 acres of irrigated pasture, 70 acres of alfalfa hay, and 24 acres of grain to be included in rotation with the hay. Three acres are set aside for a farmstead.

By assuming a carrying capacity of 1.5 animal units per acre, a yield of 2.5 tons of alfalfa hay per acre, and 1.5 tons of hay per animal unit for wintering, it is calculated that this unit will support 120 animal units or 171 yearlings. Some other important considerations include: Production costs, prices, gain during the winter and on pasture, and the length of the pasture season.

Production costs were obtained from published bulletins.[2] Prices were assumed to be $25/cwt. for calves and $20/cwt. for feeder yearlings. Gain during the winter feeding period was estimated at 1 lb. per day, and 1.5 lbs. per day for a 130-day pasture season. By using these prices and production rates the following budget was worked out.

[1]The procedure for determining land value as used in this report is taken from the bulletin, **How Much Is Land Worth,** Bul. 319, published by the Cooperative Extension Service, Montana State College, Bozeman, Mont. For more complete treatment of the subject you are referred to this bulletin.

[2]S. J. Tietema, **Indians in Agriculture Alternatives in Irrigation Farming for the Blackfeet and Crow Indian Reservations,** Bul. 542, Mont. Agri. Exp. Sta., MSC, Bozeman, Mont., and R. O. Wheeler & R. J. McConnen, **Organization, Costs, and Returns for Commercial Family-Operated Cattle Ranches in the Northern Great Plains,** Bul. 557, Mont. Agri. Exp. Sta., MSC, Bozeman, Mont.

Table 8. An Example of the Income Approach Used to Evaluate a Hypothetical Irrigated Ranch

1. 167-815-lb. feeders sold @ $20/cwt.		$27,221.00
1,008 bu. of barley @ $0.80/bu.		806.00
		28,027.00
2. Nonreal estate costs		
Purchased calves—171 @ $25/cwt.	$18,169.00	
Interest on lvstk. & mach. @ 6%	1,410.00	
Custom hire	329.00	
Hired labor, haying	500.00	
Repairs, fuel and oil	851.00	
Veterinary	150.00	
Operation and maintenance	499.00	
Personal property taxes	442.00	
Depreciation on machinery and improvements	765.00	
Return to labor and management	3,000.00	
		26,115.00
Balance to pay all real estate costs		1,912.00
Real estate taxes, depreciation and maintenance on improvements		590.00
Balance to pay on real estate capital		1,322.00
Real estate value (capitalized at 4%)		33,050.00
Value per animal unit		275.00
Value per acre		188.00

An examination of the budget reveals several arbitrary points that have major influence on capital value. Two of these considerations will be discussed. The first is "return to labor and management" and the second is the "rate" of capitalization.

The example budget assumes that the buyer can hire someone or is willing to accept $3,000 per year for his labor and management. Suppose he wants $4,000 or $5,000. In this case there will be less income to allocate to land and the capital value will be correspondingly less.

The "proper" rate of return is largely an individual matter. However, many farm appraisers use the going interest rate on farm mortgages as an appropriate capitalization rate. Some believe that farm ownership carries with it more risk than mortgage lending and the capitalization rate, therefore, should be higher.

If you are an investor, keep in mind the rate of return you can get for alternative investments of equal risk.

Land Purchases for Farm and Ranch Enlargement

Farm land is often purchased for the purpose of enlarging present holdings. Evaluating land for this purpose presents a special problem.

A common procedure for evaluating land to be added to an existing farm or ranch involves the following steps.

1. Estimate and capitalize the annual earnings from the base unit.
2. Estimate and capitalize the annual earnings from the combined base unit and the added property.
3. The difference between the capital value of **base unit** and the capital value of the **combined unit** is the capital value that the additional property will support.
4. Make appropriate discount for increased risk.

The ever increasing requirement for capital in developing a successful irrigated farming enterprise suggests the importance of determining credit needs and sources before purchasing one of these farm units.

Where to Get Further Information

Main Source for General Information and Clearing House for Specific Information.
Beaverhead County Extension Agent, Federal Bldg., Dillon, Montana.

Land—Sale of land—Plats showing location of units.
Department of State Lands and Investment, State Capitol Building, Helena.
Bureau of Reclamation Project Office, Dillon.

Soils
Soil Conservation Service, U.S. Department of Agriculture offices: Dillon and Sheridan, Montana.

Credit and Financing
Farmers Home Administration, Whitehall.
Production Credit Association, 40 North Bozeman, Bozeman.
Production Credit Association, Field Office, Sheridan.
Federal Land Bank, 40 North Bozeman, Bozeman.
First National Bank of Dillon, Dillon.
State Bank and Trust, Dillon.
First National Bank of Twin Bridges, Twin Bridges.

Agriculture and Home Economics
Beaverhead County Extension Office, Dillon.
Madison County Extension Office, Whitehall.

Technical Assistance — Land Development.
Beaverhead Soil and Water Conservation District in cooperation with the Soil Conservation Service, Dillon.
Ruby Valley Soil and Water Conservation District in cooperation with the Soil Conservation Service, Sheridan.

ACP Cost Sharing Assistance
Beaverhead County ASCS Office, Dillon.
Madison County ASCS Office, Whitehall.

County Government
Beaverhead County Courthouse, Dillon.
Madison County Courthouse, Virginia City.

Water—Costs, Method of Delivery, Development Period, Irrigable Land Classification.
Bureau of Reclamation Project Office, Dillon.

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