

Redlands Mesa Water Users Association Water Management Plan

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Prepared by:

**RHN Water Resources Consultants, LLC
1600 American Way
Montrose, Colorado**

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Many people contributed to this project. A Steering Committee was formed from shareholders in the Redlands Mesa Water Users. The Steering Committee consisted of Lou Bridges, Reg Cridler, and Dave Whittlesey. The ditch rider for the Redlands Mesa Water Users, Steve Widener, also contributed his time and valuable knowledge. Phillip Ceriani from the Overland Ditch and Reservoir Company also sat on the Steering Committee.

John Milligan and Phil Ceriani conducted the GIS work for the Redlands Mesa distribution system.

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Chapter

1

Water Management Plans

Background

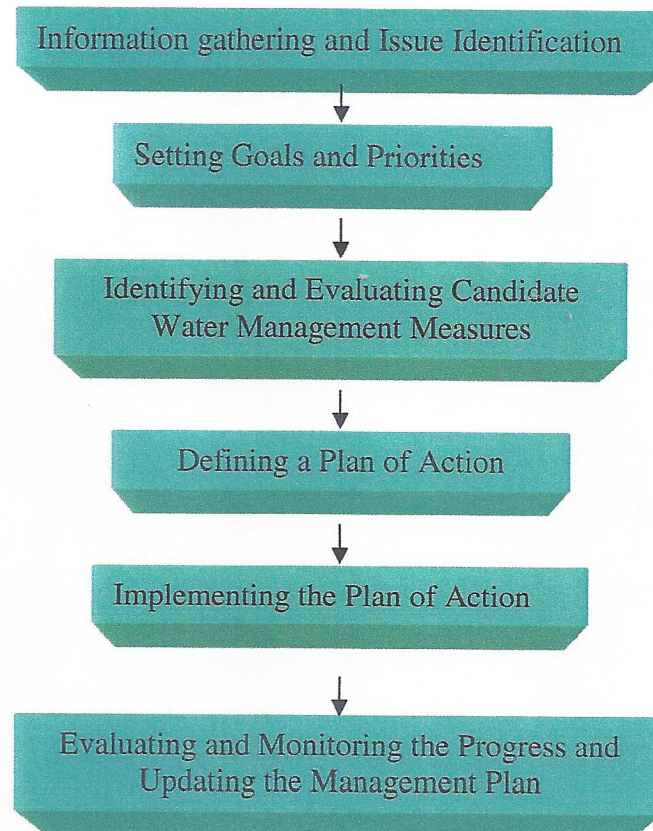
The Redlands Mesa Water Users Association (RMWUA) is a small irrigation company that provides irrigation water to farms and ranches on Redlands Mesa northwest of and adjacent to the Leroux Creek drainage near Hotchkiss Colorado. Over the years the conveyance system has been repaired on an as needed basis, however, the RMWUA now wishes to conduct an overall plan for repairs and upgrades of the entire conveyance system. In an effort to obtain funding for the repairs and upgrades of the infrastructure of the conveyance system, the RMWUA Board of Directors decided to develop a Water Management Plan to facilitate requests for future funding. The RMWUA has obtained financial assistance from the U.S. Bureau of Reclamation's Water Conservation Field Services Program to develop this Water Management Plan.

Water Management Plans

The purpose of the Water Management and Conservation Plan is to facilitate irrigation water providers in the improvement of their overall water management by addressing issues and problem areas and providing a defined method of solving problems and dealing with issues. The goal of the Water Management and Conservation Plan is to achieve long-term and lasting improvements in water use efficiency. A planning process is outlined in the publication *Achieving Efficient Water Management: A Guidebook for Preparing Agricultural Water Conservation Plans* (Hydrosphere, 2nd Ed. September 2000). Figure 1-1 illustrates the steps involved in the development of a Water Management Plan. Additional benefits of the Water Management and Conservation Plan is the collection of important documents such as articles of incorporation and bylaws for the company, water court decrees, contracts, maps, and most importantly a description of the general operating procedures. Other important information that is included in the plan is historical water diversions and general water administration.

The Development Process of a Plan

A Steering Committee was formed to provide guidance and to set goals and priorities for the Water Management Plan. The Steering Committee members includes : Reg Cridler, Pete Klaseen, Lou Bridges, Dave Whittlesey, Lance Hanson, Steve Widner, and Phil Ceriani from the Overland Ditch and Reservoir Company.

Figure 1-1**The Development of a Water Management Plan****Step 1. Information Gathering and Issue Identification**

Background information was gathered and documented in this plan to assist with identifying and analyzing water management concerns and opportunities. Information collected included company articles of incorporation and bylaws, water rights, contracts, general operating procedures of the facilities. Also included was the historical development of the Redlands Mesa Water Users and the relationship with the Leroux Creek Water Users and the Leroux Creek Exchange. Also collected and analyzed were the diversion records for 10 years, cropping patterns and irrigated acreage, conveyance losses and the water delivery efficiencies. This information is summarized in later chapters. Interviewing ditch riders, water commissioners, and major shareholders in the company helped identify water management problems or opportunities.

Step 2. Setting Goals and Identifying and Evaluating Candidate Water Management Measures

Water Management goals and measures were set based on the criteria of:

- Anticipated benefits to the water users
- Expected costs
- Feasibility, both financial and physical

Step 3. Defining a Plan of Action

Water Management plans of action were determined by evaluating proposed alternatives. The Plan of Action that best met the criteria was selected for implementation.

Step 4. Implementation of the Plan of Action

Each Plan of Action was prioritized for implementation based on its relative importance as determined by the Steering Committee. A planning-level budget and schedule was developed as well as prospective funding sources for each action.

Step 5. Evaluating and Monitoring the Progress and Updating the Management Plan

The Water Management Plan will be updated every five years.

Chapter

2

The Redlands Mesa Water Users

Climate and Topography

The RMWUA provides primary and supplemental irrigation water to irrigate approximately 4000 acres in Delta County, Colorado. The altitude of the area irrigated averages 6000 feet above sea level.

The climate of the acreage irrigated on Redlands Mesa is that of moderate winters and summers. The annual average precipitation ranges from 12-15 inches with half of the precipitation occurring as rainstorms from in the spring and fall months (Paonia Station).

Soils on Redlands Mesa consist of sandy loam of 0-60 inches with subsoil of clay loam and light clay, stony loam from 0-2 inches with subsoil of light and heavy clay from 2-24 inches underlain with cobbly or stony loam, and sandy loam that are well drained with a depth of up to 60 inches.

History of the Redlands Mesa Water Users

The Redlands Mesa Water Users (RMWUAA) were organized in 1951 but did not file for incorporation with the State of Colorado until 1969. Bylaws for the RMWUAA were revised in 1962 and again in 1974. The object for the organization was and is for "the purpose of acquiring water rights, ditch rights, reservoir rights and to distribute water to its stockholders; to acquire water rights for exchange purposes and to negotiate and enter into agreements for exchange of water rights...by proper agreements with the North Fork Water Conservancy District...for the purpose of providing additional irrigation water and domestic water for the use of the stockholders...and to accept water owned by the Overland Ditch and Reservoir Company". The original components of the RMWUA ditch system were the Stull Irrigation Ditch Enlargement and Extension, the Lawhead Irrigation Ditch, the Clark Draw Irrigation Ditch, and the Cedar Gulch Irrigation Ditch, all of which irrigate Redlands Mesa. The company currently has 69 shareholders with 5685 outstanding shares. Appendix A contains a copy of the Articles of Incorporation and the Company Bylaws.

The Redlands Mesa Water Users Organization Structure

The Board of Directors of the Redlands Mesa Water Users is elected annually by the shareholders and is made up of 5 members that serve for two years. The President and Vice-President are elected by the Board of Directors as well as the Secretary-Treasurer, however, the Secretary-Treasurer may not be a member of the RMWUA. The duty of the Board of Directors is to carry out the normal business function of the corporation including but not limited to hiring employees, issuing stock certificates and levying and collecting ditch assessments. Three Board of Directors constitute a quorum in order to conduct business at any meeting.

Annual Budget

The RMWUA receives monies through annual assessments and shareholders are invoiced as the Board deems necessary. For the 2007 irrigation year, assessments were billed at \$6.50 per share for the RMWUA water. The Leroux Creek Water Users bill the exchange water at \$0.75 per share for B-2 shares and between \$30 and \$35 per share for the B-1 shares.

The 2007 receipts from the assessments totaled \$73,593.00 and \$835.00 for miscellaneous income of interest income, late payment assessments and transfer fees. The RMWUA also had a cash reserve on December 31, 2006 of \$6,716.00. The RMWUA budget outlays of \$66,227.00 support one seasonal ditch rider, the annual operation and maintenance of the RMWUA distribution system, administrative costs and professional services and fees as well as water purchases of \$43,810.00. Figure 2-1 illustrates the 2007 income and cash assets for the Redlands Mesa Water Users and Figure 2-2 illustrates the 2007 budget distribution.

Figure 2-1

Redlands Mesa Water Users Income and Cash Assets for 2007

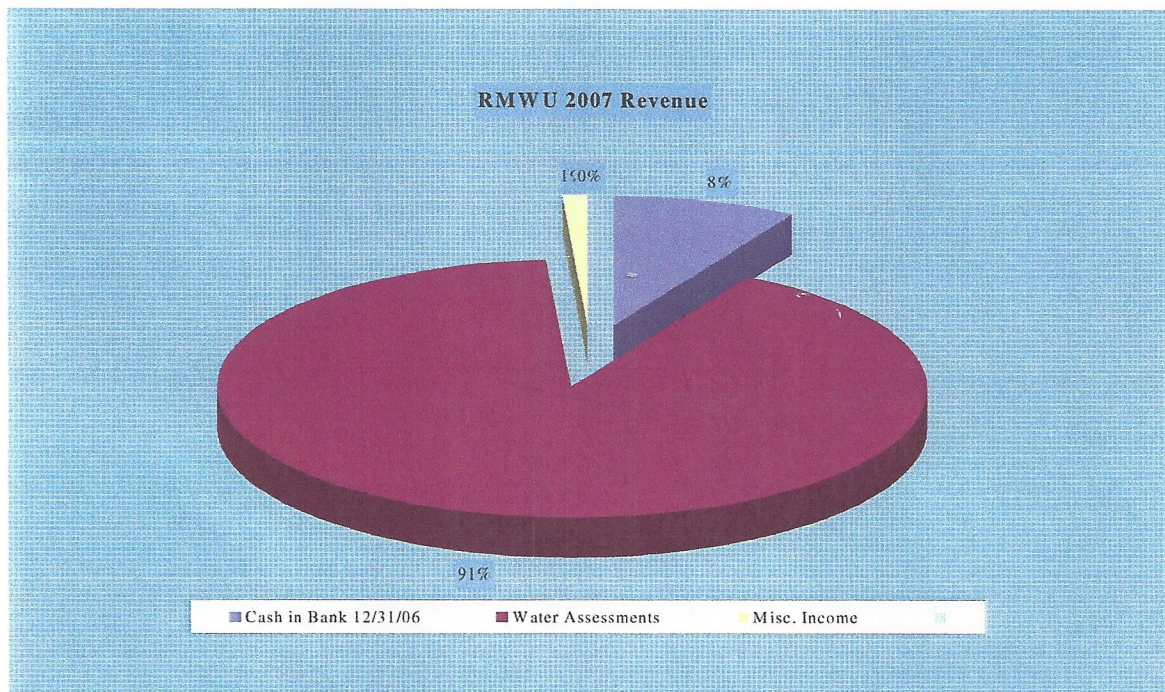
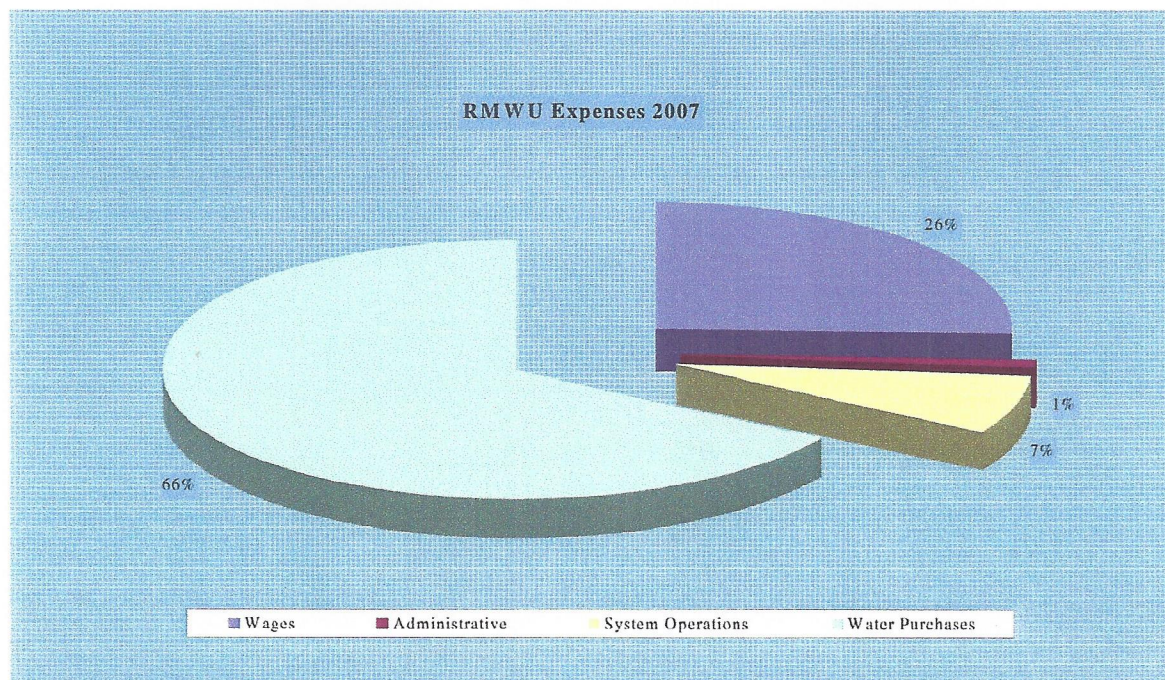


Figure 2-2

Redlands Mesa Water Users Distributions for 2007



Water Resources Inventory**Redlands Mesa Water Users and the Leroux Creek Exchange**

When the North Fork Water Conservancy District was formed and the Paonia Project came on line, the Leroux Creek Water Users was formed in order to administer the Leroux Creek Exchange, a component of the Paonia Project. The object of the exchange was to provide more reliable flows to both the upper ditches and lower ditches that diverted from Leroux Creek. The Leroux Creek Exchange essentially divided the Leroux Creek waters between those water rights holders above the Fire Mountain Canal and those water rights holders below the Fire Mountain Canal. The water rights holders below the Fire Mountain Canal received shares in the Fire Mountain Canal and Paonia Reservoir and in turn deeded their water rights in Leroux Creek above the Fire Mountain Canal to the Leroux Creek Water Users.

With the inception of the LCWU and the Leroux Creek Exchange, the RMWUA committed to purchase 4300 shares of LCWU direct flow water (identified as B-2 shares) or approximately 30% of the B-2 shares and 1338 shares of Leroux Creek Water Users storage decrees (identified as B-1 shares). The RMWUA also receive approximately 67% of water diverted into the Overland Ditch which constitutes most of the mid and late-season water that irrigates Redlands Mesa. Appendix B contains a map of the distribution system.

Water Administration

The Redlands Mesa Water Users receive approximately 30% of the run-off water or B-2 water in Leroux Creek. Once the flows in Leroux Creek drop to 60 cfs, then the B-2 water is considered gone and all upper ditches in Leroux Creek are administered by their relative priority and the reservoir water or B-1 water that is ordered. Concurrently, Overland Ditch and Reservoir (ODRC) water is delivered to the Redlands Mesa Water Users and is administered by the RMWUA ditch rider once the water reaches the "Moore Box".

Prior to the Paonia Project and the Leroux Creek Exchange, ditch diversions were administered by priority and all calculations were done by hand. After the Paonia Project and the Leroux Creek Exchange came into existence, all diversions from the Leroux Creek Exchange were taken at the headgate of the Stull Ditch that had been reconstructed to accommodate the

exchange waters as well as the Stull Ditch decree water. The RMWUA refer to the reconstructed headgate and ditch as the Project Ditch. The Stull Ditch continues diverts under its priority and by virtue of the Leroux Creek Exchange through the Project Ditch headgate and diverts its water through a second headgate shortly down ditch of the Project Ditch headgate. All diversion records, including the water diverted by exchange, are recorded under the Stull Ditch. Appendix C contains an historical description of the Stull Ditch.

During 1990 Dan Hawkins wrote a computer program to facilitate the water distribution of the Redlands Mesa Water Users irrigation water. The program was originally DOS based but has been revised and migrated to an Excel platform. The program is used daily by the Operations Manager (aka the Ditch Rider) to determine the distribution of irrigation water for the Redlands Mesa Water Users. The program also lists all of the shareholders and their respective shares of the B-1 and/or the B-2 water as well as tracking the "Prorate" water or storage water that cannot be stored due to lack of reservoir space. Appendix D contains a description of the Redlands Mesa Water Distribution Program and reports that are calculated by the program.

Irrigation Deliveries

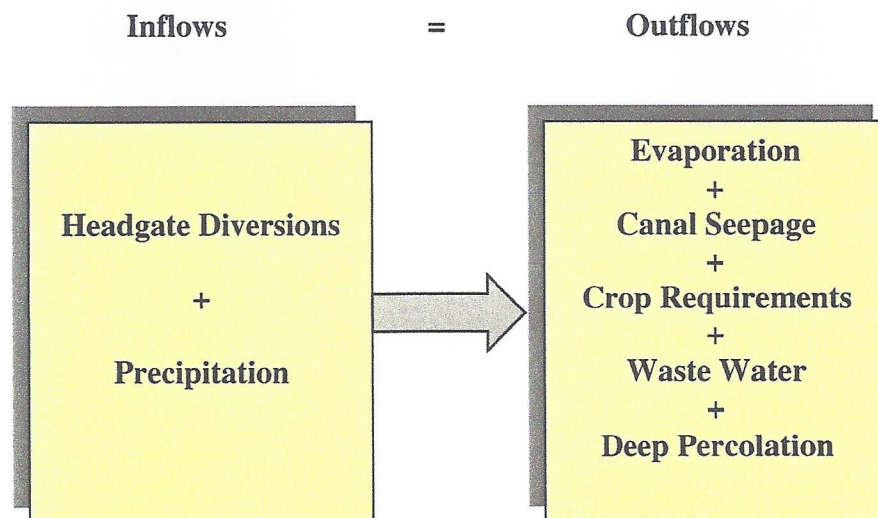
The RMWUA is a supply system for all direct-flow and Overland Reservoir water with 66 diversions and 18 miles of canals and laterals. Each shareholder essentially gets his portion of the flows according to his shares in the RMWUA and the ODRC. The B-1 shares, or late-season reservoir water, are ordered and are owned by the LCWUA. The B-2 shares are diverted by virtue of the Leroux Creek Exchange, and the ODRC water is run from the first part of May until the Overland Reservoir is empty.

Once the ditches are turned on in spring, the ditch rider determines the amount of water coming into the Project Ditch headgate from Leroux Creek and reads the Overland flows from the satellite station at the Leroux Creek crossing. The total of these two numbers is the water coming onto Redlands Mesa for distribution. This number is entered into the Distribution Computer Program and the program prints cards that show the amount each shareholder is allowed. The Project water is carried by the Main Lateral off of which water is distributed into the Cedar Gulch (CG) lateral, the Lawhead Gulch (LH) lateral, the Clark draw (CD) lateral, and carried to the Durkee Ditch. The computer program converts RMWUA shares to equivalent Overland Ditch shares in order to compute the values for each lateral into the respective drainage. A computer print-out is posted at the drainage lateral when the Ditch Rider sets the lateral headgate. Figure 3-1 is a line diagram of the RMWUAA water distribution system.

Water Budget

The water budget concept is a comparison of water inflows to water outflows (Figure 4-1). Water inflows consist of all sources of water supplied to the system by way of diversions and precipitation and outflows consist of water taken out of the system through evaporation, seepage, crop use, runoff, and deep percolation. The Water Budget provides a mechanism to examine operational efficiencies of an irrigation system.

Figure 4-1
A Water Budget



A water budget was developed for the Redlands Mesa Water Users using two scenarios. The first scenario examined conditions for an average water year of 2001 and the other examined the drought year of 2002. Water budget results are summarized at the end of this chapter. The following sections describe the elements used to develop the water budget.

Diversions 1996-2006

The total minimum diversions occurred in the water year 2002 in the amount of 6,435.7 acre-feet and the total maximum diversions occurred in the water year 2005 in the amount of 19,155.4 acre-feet. Over the ten-year period, total diversions averaged 14,303.8 acre-feet from both storage and direct diversions.

Table 4-1 and Figure 4-2 and Figure 4-3 are summaries of the averaged diversions for the years 1996 through 2006. Figure 4-4 shows the percentage of irrigation water to Redlands Mesa from each source.

Figure 4-2

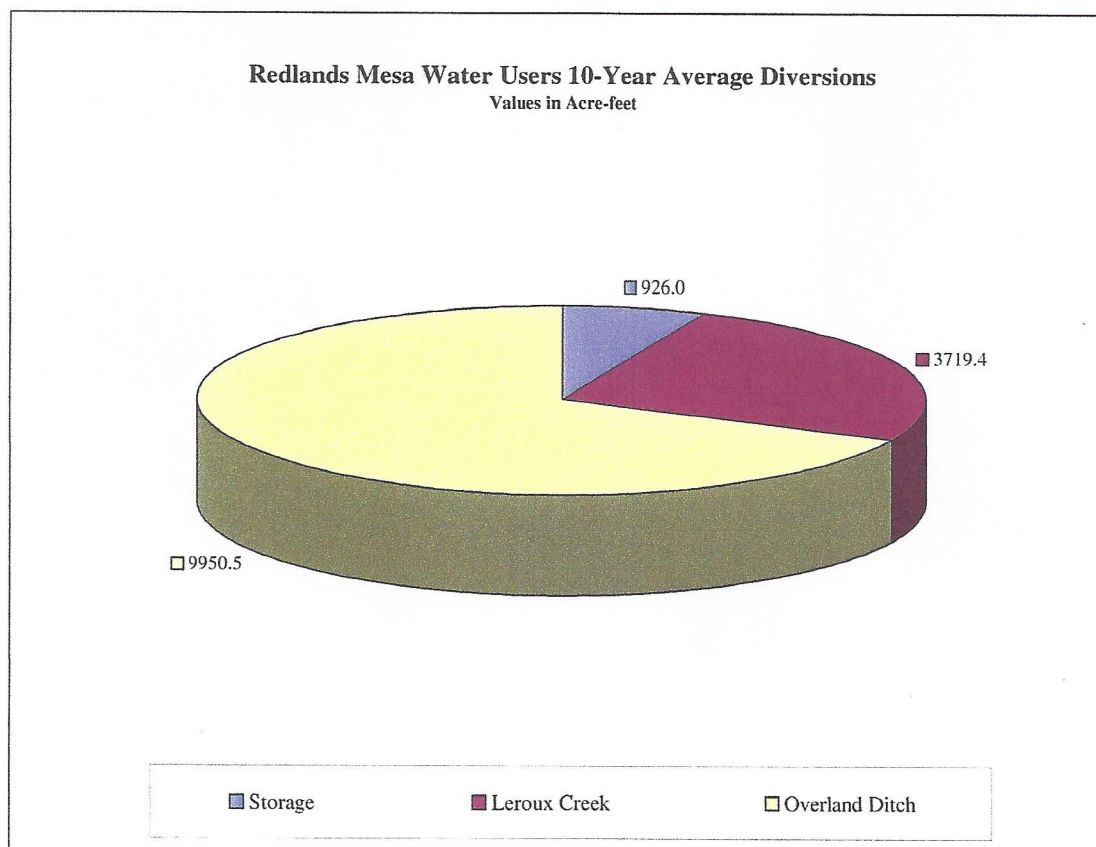


Figure 4-3

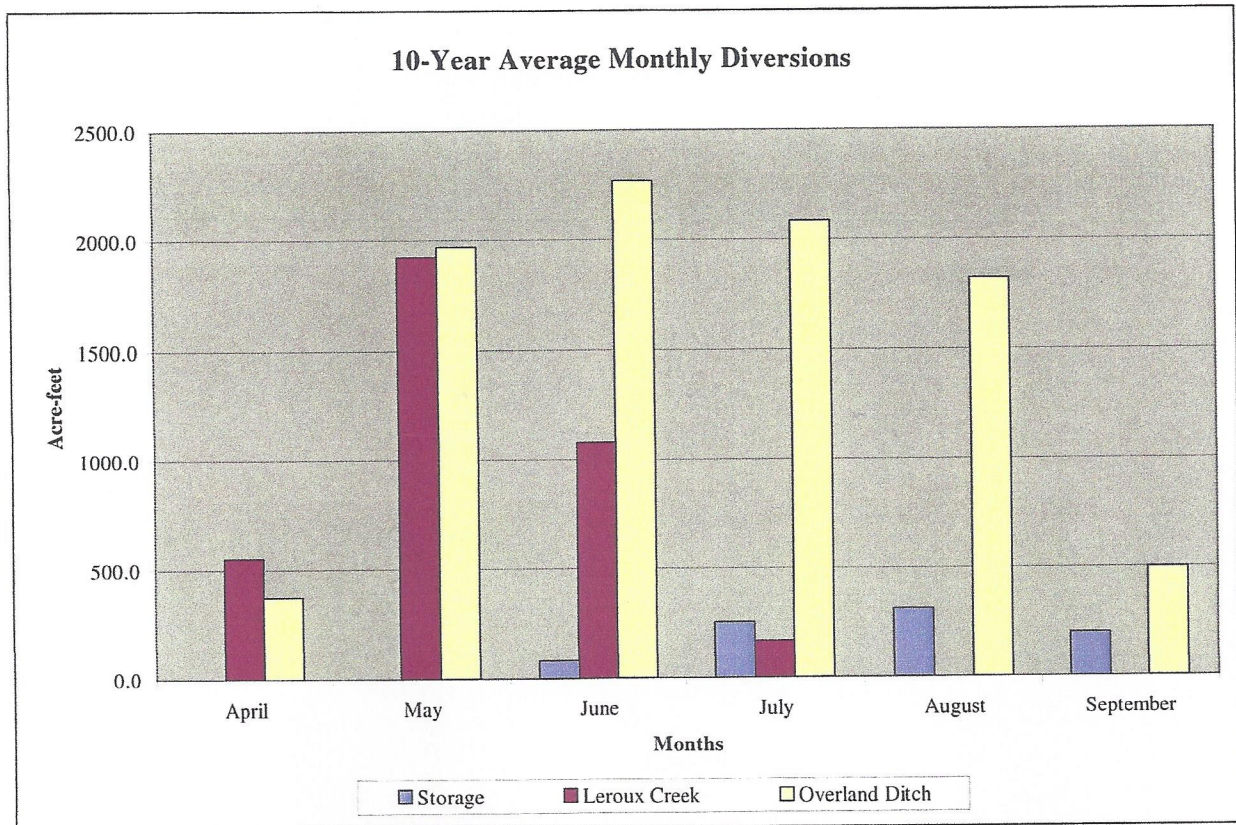


Figure 4-4

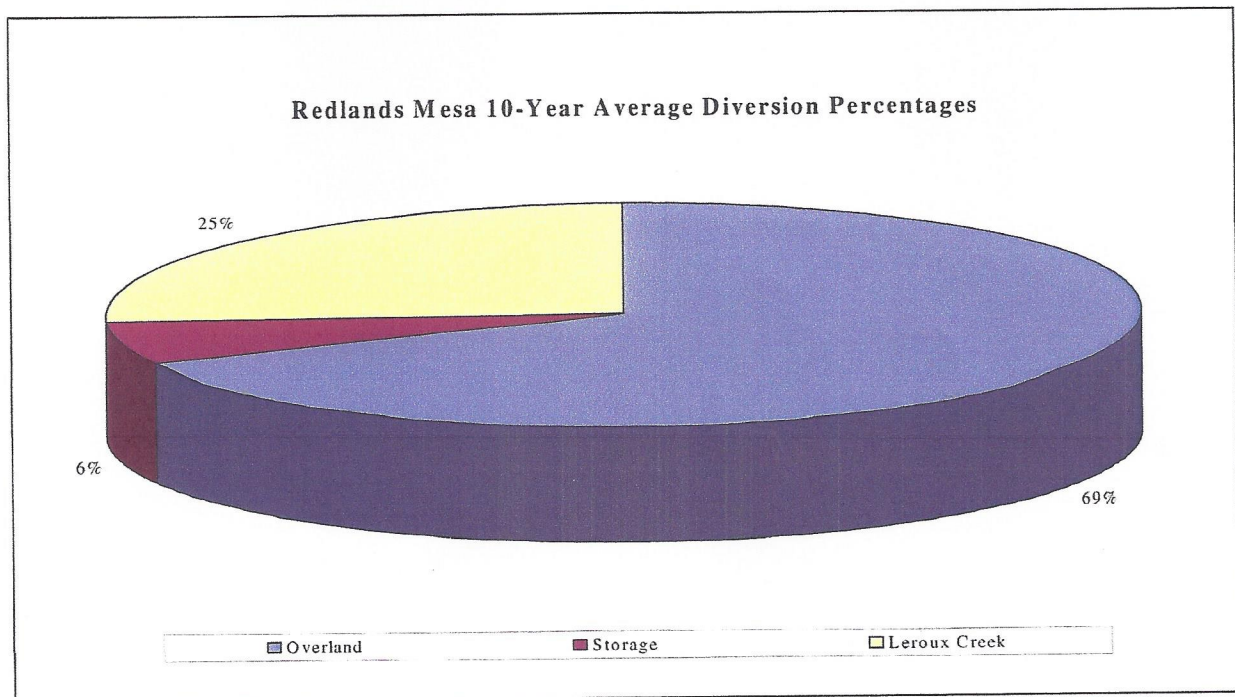


Table 4-1

**Redlands Mesa
Diversions 1996-2006**

Year:		April	May	June	July	August	September	October	Total
2006	Storage	0.0	0.0	35.7	264.8	365.4	250.9	33.7	950.5
	Leroux Crk	192.8	642.7	0.0	0.0	0.0	0.0	109.6	945.0
	Overland Ditch	599.0	3230.7	2301.4	2319.5	1143.8	0.0	0.0	10792.3
	Total	791.8	3873.4	2337.1	2584.3	1509.2	250.9	143.3	12687.8
2005	Storage	0.0	0.0	0.0	158.2	334.2	330.3	149.3	971.9
	Leroux Creek	819.2	2333.6	1937.9	1013.2	0.0	0.0	0.0	6103.8
	Overland Ditch	31.4	2311.3	3964.3	2339.2	2641.8	791.7	0.0	12079.7
	Total	850.6	4644.9	5902.2	3510.5	2976.0	1121.9	149.3	19155.4
2004	Storage	0.0	0.0	79.3	221.2	297.5	247.4	117.5	963.0
	Leroux Creek	889.6	2529.0	1108.4	0.0	0.0	0.0	0.0	4526.9
	Overland Ditch	0.0	678.5	3981.8	1836.5	1871.8	110.0	0.0	8478.5
	Total	889.6	3207.4	5169.5	2057.7	2169.3	357.4	117.5	13968.4
2003	Storage	0.0	0.0	69.2	307.9	372.4	321.3	0.0	1070.9
	Leroux Creek	1386.5	2158.8	1201.7	0.0	0.0	0.0	0.0	4747.0
	Overland Ditch	499.6	2252.6	3296.7	2211.0	1508.8	0.0	0.0	10767.9
	Total	1886.1	4411.4	4567.6	2518.9	1881.2	321.3	0.0	16585.8
2002	Storage	0.0	10.4	231.6	391.7	281.2	0.0	0.0	914.9
	Leroux Creek	558.0	513.6	0.0	0.0	0.0	0.0	0.0	1071.6
	Overland Ditch	553.1	767.3	1530.3	492.2	0.0	0.0	0.0	4449.3
	Total	1111.1	1291.3	1761.9	884.0	281.2	0.0	0.0	6435.7
2001	Storage	0.0	0.0	149.3	246.5	280.1	314.4	27.8	1018.1
	Leroux Creek	696.2	2649.4	459.8	0.0	0.0	0.0	0.0	3805.4
	Overland Ditch	405.2	1258.0	1492.1	3172.6	2472.9	882.4	0.0	10493.7
	Total	1101.5	3907.3	2101.2	3419.1	2753.0	1196.7	27.8	15317.1
2000	Storage	0.0	0.0	198.2	210.3	470.6	123.0	12.9	1014.9
	Leroux Creek	277.7	2202.7	125.0	0.0	0.0	0.0	0.0	2605.3
	Overland Ditch	571.6	2368.2	1857.6	1894.3	648.0	124.3	0.0	8607.1
	Total	849.3	4570.9	2180.7	2104.5	1118.6	247.3	12.9	12227.3

Table 4-1

**Redlands Mesa
Diversions 1996-2006**

Year:		April	May	June	July	August	September	October	Total
1999	Storage	0.0	0.0	0.0	241.0	113.0	120.0	281.2	755.2
	Leroux Creek	976.5	2223.1	1936.7	25.3	0.0	0.0	0.0	5161.6
	Overland Ditch	622.6	2913.7	1791.9	2516.1	2434.9	1063.0	0.0	12587.4
	Total	1599.1	5136.8	3728.6	2782.4	2547.9	1183.0	281.2	18504.1
1998	Storage	0.0	0.0	0.0	128.9	339.6	170.1	102.7	741.3
	Leroux Creek	37.9	2180.9	2619.1	697.6	0.0	0.0	0.0	5535.5
	Overland Ditch	31.4	1805.1	1010.5	1574.9	3151.6	1341.8	0.0	8978.1
	Total	69.3	3986.0	3629.6	2272.5	3151.6	1341.8	0.0	14513.6
1997	Storage	0.0	0.0	0.0	238.6	320.3	113.6	172.1	844.5
	Leroux Creek	80.9	1482.1	1469.0	107.0	0.0	0.0	248.4	3387.4
	Overland Ditch	491.7	2079.7	3074.1	2510.2	2340.7	1167.7	0.0	12647.5
	Total	572.6	3561.7	4543.1	2855.8	2661.0	1281.3	420.5	16879.4
1996	Storage	0.0	0.0	148.6	360.5	245.0	187.0	0.0	941.0
	Leroux Creek	162.7	2213.6	1005.7	0.0	0.0	0.0	0.0	3382.0
	Overland Ditch	277.9	2006.4	608.7	2024.6	1826.2	0.0	0.0	6743.7
	Total	440.5	4220.0	1763.0	2385.1	2071.2	187.0	0.0	11066.7
10-Year Average									
	Storage	0.0	0.9	82.9	251.8	310.8	198.0	81.5	926.0
	Leroux Creek	552.5	1920.9	1078.5	167.5	0.0	0.0	0.0	3719.4
	Overland Ditch	371.2	1970.1	2264.5	2081.0	1821.9	498.3	0.0	9950.5
	Total	923.8	3891.9	3425.9	2488.6	2101.8	680.8	104.8	14303.8

Note: The Leroux Creek water includes the Stull Ditch Enlargement and Extension for 10.8 cfs, and the 4300 shares of B-2 water from the Leroux Creek Water Users.

Delivery Losses

Losses to Redlands Mesa include reservoir evaporation, delivery losses that include canal evaporation and seepage, and water consumed by vegetation along the canal. Delivery losses were calculated for the Overland Ditch using diversion records from the 2006 water year which were comparable to the 2001 irrigation year. Delivery losses for the Overland Ditch to the Moore Box were calculated to average 25% of diversions for the irrigation season. Delivery losses for the Redlands Mesa distribution system was estimated in part and calculated in part.

Farm Headgate Delivery

Water delivered to the Farm Headgates is the water diverted less delivery losses. Monthly calculations of water delivered to farms are displayed in Table 4-2 for an average year and drought year scenario.

Crop Requirements

It is estimated that the Redlands Mesa distribution system delivers irrigation water to approximately 4000 acres with a crop mix of 87% alfalfa and grass hay and 13% grains and orchards. Crop water requirements were calculated using the Cedaredge climate data and the Natural Resources Conservation Services computer program for calculating crop consumption. The program was developed by J. Dalton in 2000 and is based on the Blaney-Criddle method of calculating crop consumption. Results are presented below in Table 4-2. Overall, an average water requirement of 2.6 acre-foot per acre was estimated for the average irrigation year but only 0.83 acre-feet of water per acre was delivered for the drought year of 2002.

Table 4-2

Crop Requirements

values in acre-feet

Average Year										
Crop	Acres	April	May	June	July	August	September	October	Total	
Grass Hay	2400	204.00	654.00	1096.00	1348.00	1102.00	630.00	244.00	5278.0	
Alfalfa	1100	57.75	372.17	621.50	751.67	600.42	338.25	76.08	2817.8	
Grains	300	9.8	90.8	191.5	128.0	3.3	0.0	0.0	423.3	
Orchards	200	10.5	68.0	113.0	136.7	109.2	61.5	24.8	523.7	
Total	4000	282.0	1184.9	2022.0	2364.3	1814.8	1029.8	344.9	9042.8	
Drought Year										
Crop	Acres	April	May	June	July	August	September	October	Total	
Grass Hay	2400	290.0	800.0	1204.0	1496.0	1276.0	804.0	400.0	6270.0	
Alfalfa	1100	69.7	441.8	674.7	825.0	684.8	420.8	105.4	3222.1	
Grains	300	20.0	109.3	206.5	144.8	10.0	0.0	0.0	490.5	
Orchards	200	12.7	80.7	122.7	150.0	124.5	76.5	38.0	605.0	
Total	4000	379.7	1351.1	2085.2	2465.8	1970.8	1224.8	505.4	9982.6	

Notes: Grass hay includes pasture grass

On Farm Water Demand

On Farm water demand is the amount of water that should be delivered to the Farm Headgate in order to adequately irrigate a crop. Standard On Farm water demand assumes a 50% irrigation efficiency which assumes that half of the water delivered to the farm is consumed by the crop and the remaining half of the water delivered to the farm is wasted back to the system through deep percolation and evaporation and tailwater. Since irrigation practices have improved over time to include gated pipe and sprinkler irrigation by side-roll and center pivot methods, it was estimated that overall irrigation efficiency has improved from 50% to 60%. On Farm water demand was calculated at 100% of the crop demand plus 40% of the crop demand for on-farm delivery loss. Figures 4-4 and 4-5 show the disparity between the water delivered, the base crop demand and the on farm demand.

Figure 4-5

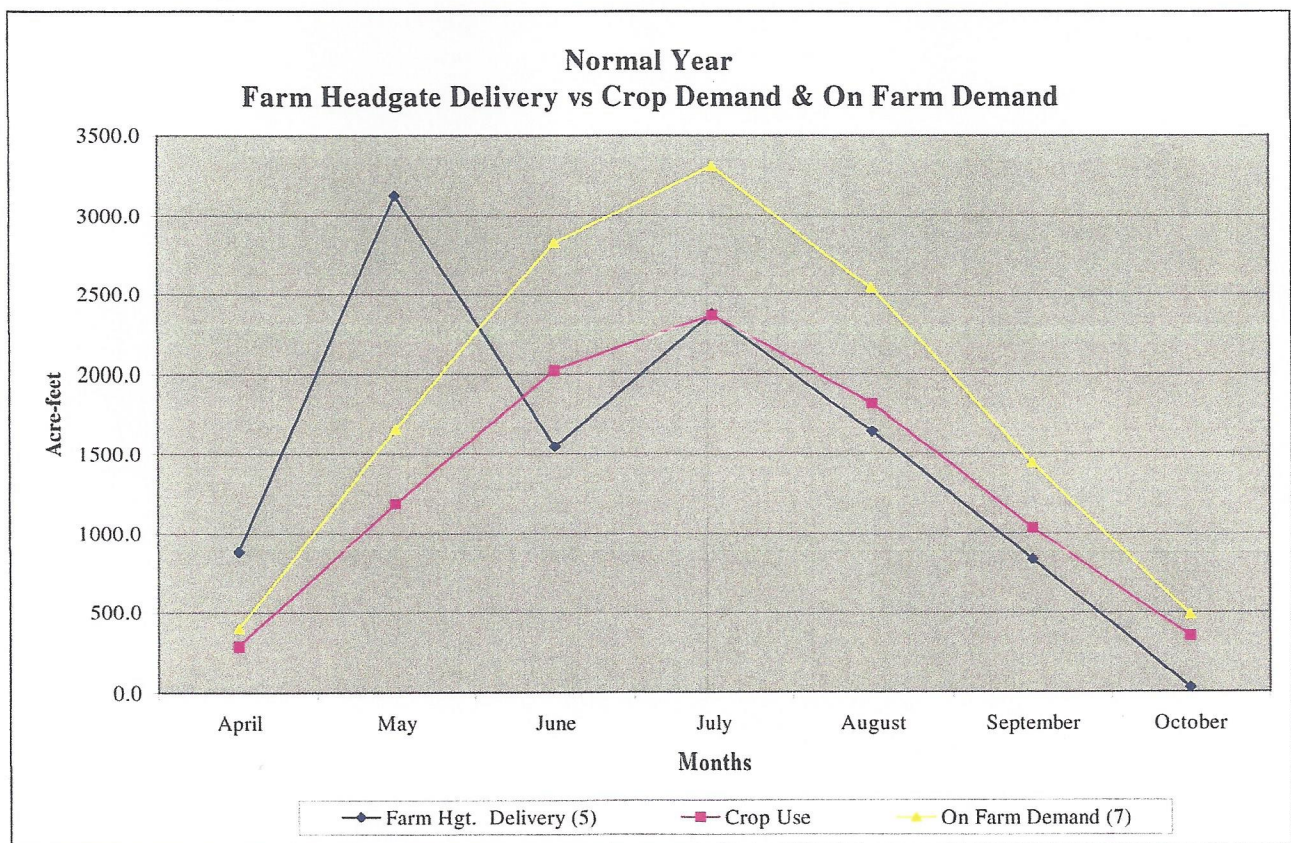
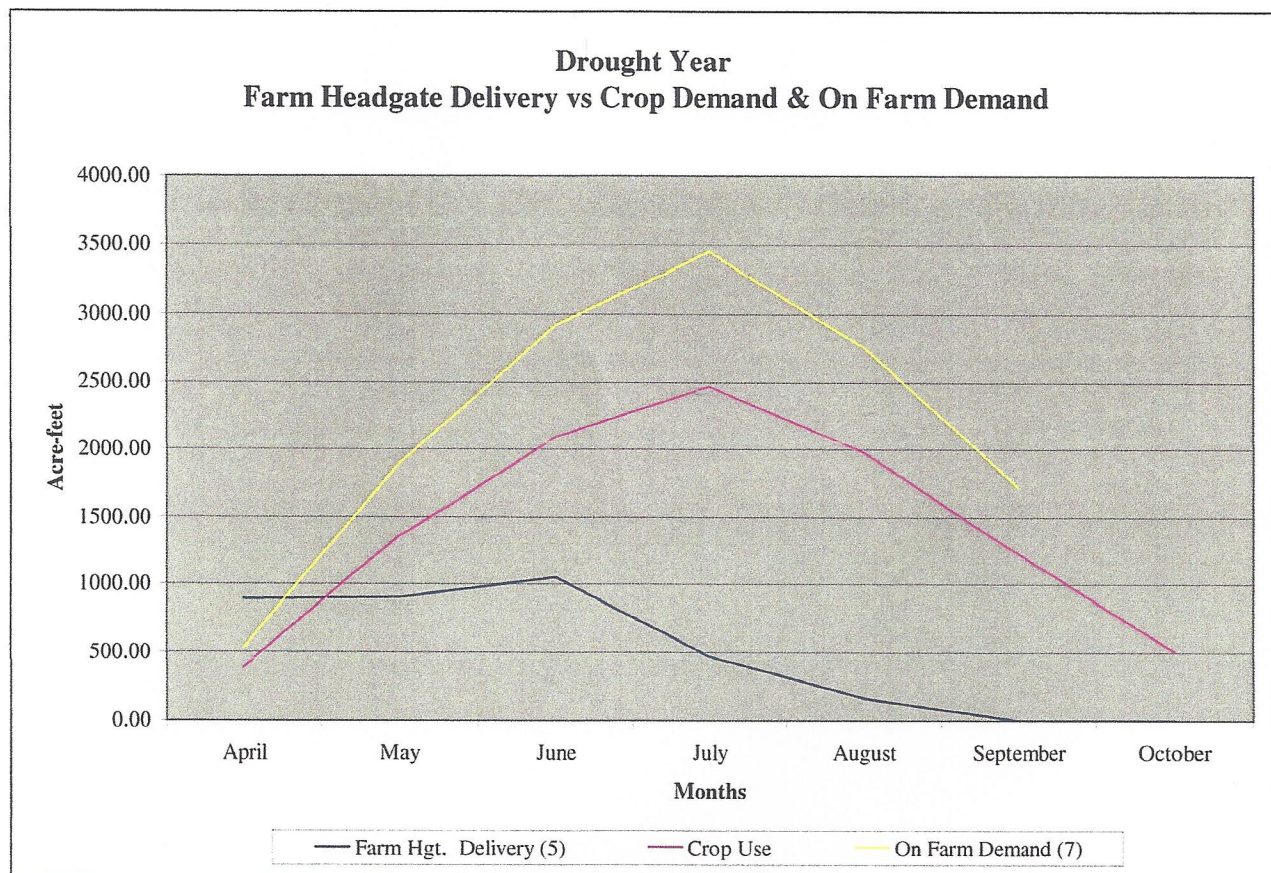


Figure 4-6



Efficiencies

One valuable aspect of the water budget is that it provides a means to calculate efficiencies. Estimating efficiencies helps identify potential areas for irrigation improvements. Efficiencies were calculated as follows:

- Overall Efficiency = Crop Use / Total diversions
- Delivery Efficiency = Farm deliveries / Total diversions
- Farm Efficiency = Crop requirements / Farm deliveries

The Overall Efficiency is a gross calculation that doesn't include delivery losses. The Delivery Efficiency is a more refined calculation that includes delivery losses and the Farm Efficiency shows the efficiency of the water delivered to the farm. Table 4-3 is a calculation of average efficiencies for RMWUA for 2001, an average water year, and efficiencies for the drought year of 2002. **Note:** When headgate deliveries were less than the estimated crop requirement or crop use, efficiencies were not calculated.

Table 4-3

Water Budget for Redlands Mesa Average Diversions Irrigation Year 2001

values in acre feet

Month	Diversions (3)			Carriage		Delivery Loss (4)		Farm Hgt. Delivery (5)	Crop Use (6)	On Farm Demand (7)	Overall Efficiency (8)	Delivery Efficiency (9)	Farm Irrigation Efficiency (10)
	Overland	Storage	Leroux Crk	Loss %	Total	Evaporation	Carriage	Total DL					
(1) April	405.2	0.0	696.2	1101.4	20%	0.0	220.3	220.3	881.1	282.0	394.80	26%	32%
May	1258.0	0.0	2649.4	3907.4	20%	0.0	781.5	781.5	3125.9	1184.9	1658.86	30%	38%
June	1492.1	149.3	459.8	2101.2	25%	30.0	525.3	555.3	1545.9	2022.0	2830.80	96%	*
July	3172.6	246.5	0.0	3419.1	30%	20.0	1025.7	1045.7	2373.4	2364.3	3310.02	69%	100%
August	2472.9	280.1	0.0	2753.0	40%	10.0	1101.2	1111.2	1641.8	1814.8	2540.72	66%	*
September	882.4	314.4	0.0	1196.8	30%	5.0	359.0	364.0	832.8	1029.8	1441.72	86%	*
October	0.0	27.8	0.0	27.8	0%	0.0	0.0	0.0	27.8	344.9	482.86	*	*
Acres	4000				0.24				10400.9				
AF/AC	2.60											57%	57%
Average Efficiencies:											57%	72%	

Water Budget for Redlands Mesa Diversions for Drought Year of 2002

values in acre feet

Month	Diversions (3)			Transit		Transit Loss (4)		Farm Hgt. Delivery (5)	Crop Use (6)	On Farm Demand (7)	Overall Efficiency (8)	Delivery Efficiency (9)	Farm Irrigation Efficiency (10)
	Overland	Storage	Leroux Crk	Loss %	Total	Evaporation	Carriage	Total TL					
(1) April	553.10	0.00	558.00	1111.10	20%	0.00	222.2	222.2	888.88	379.7	531.58	34%	43%
May	767.30	10.40	513.60	1291.30	30%	0.00	387.4	387.4	903.91	1351.1	1891.54	*	*
June	1530.00	231.60	0.00	1761.60	40%	10.00	704.6	714.6	1046.96	2085.2	2919.28	*	*
July	492.20	391.70	0.00	883.90	45%	20.00	397.8	417.8	466.15	2465.8	3452.12	*	*
August	0.00	281.00	0.00	281.00	40%	7.00	112.4	119.4	161.60	1970.8	2759.12	*	*
September	0.00	0.00	0.00	0.00	0%	0.00	0.0	0.0	0.00	1224.8	1714.72	*	*
October	0.00	0.00	0.00	0.00	0%	0.00	0.0	0.0	0.00	505.4	707.56	*	*
Acres	4000								3467.50				
AF/AC	0.87											66%	*
Average Efficiencies											*		

(1) Start date Apr 1 (2) End date Sep 15 (3) From Diversions Records (4) Average transit loss estimated to be 25% of diversions (5) Diversions minus Transit Loss (6) Blaney Criddle calculations

(7) Crop Use plus 40% of crop use for ET & transit loss (8) Crop Use divided by Total Diversions (9) Farm Headgate Delivery divided by Total Diversions

(10) Crop Use divided by Farm Headgate Delivery * indicates crop demand exceeded farm headgate delivery and efficiency exceeded 100%

Water Budget Results

Upon review of the Water Budget, Table 4-3, the following observations can be made:

1. In general, excess diversions occur during the run-off season and water shortages occur during times of high crop consumption. More efficient water delivery and irrigation could be obtained if additional storage was built in the lower watershed to store the excess run-off. Shortages will continue to occur until conveyance losses are reduced, water delivery scheduling is improved, and/or less water consumptive crops are planted and/or less acreage is irrigated.
2. Water budget results are sensitive to delivery loss estimates. Since some of the delivery losses were estimated due to lack of data, a new water budget should be developed after measuring devices are reset and/or new measuring devices installed on the main canal and the canal laterals.
3. The greatest efficiency improvements would be obtained by upgrading on-farm irrigation systems to more efficient methods such as surge or sprinkler irrigation and by improving delivery scheduling.

Chapter

5

The Redlands Mesa Water Users Water Management Plan

Water Management Issues and Opportunities

Several methods were used to identify management issues and opportunities. The Steering Committee for the RMWUA Water Management Plan provided information and identified issues that have been at the forefront of concerns and discussion.

Based on the information developed by the Steering, several water management issues were identified and placed into general categories:

1. Conveyance System
 - Water measurement
 - Delivery losses
 - Repair of laterals
2. Education of Shareholders
3. RMWUA Management:
 - Communication between RMWUA and the Overland Ditch & Reservoir Company
 - Billing of water that is delivered by the Redlands Mesa system to others not a part of the RMWUA

Existing Water Management Measures that RMWUA has implemented within the past five years are:

- Installation of new measuring devices on main canal

Water Management Goals and Objectives

The following goals for the RMWUA were developed after identifying the water management issues that the RMWUA faces:

Goal 1: Upgrade Water Distribution System

Objective: Provide more accurate water measurement

Objective: Reduce seepage and leakage of canal and laterals

Goal 2: Develop a Water Education Program

Objective: Provide information on the operation of the RMWUA system

Objective: Educate shareholders about the information on the water order cards

Goal 3: Improvement of the RMWUA Management

Objective: Better communication with the Overland Ditch & Reservoir Company

Objective: Develop billing guidelines for water recipients that are not members of the RMWUA

Water Management Measures

Table 5-1 summarizes and prioritizes the actions selected for implementation. Each action is briefly described below. RMWUA will actively work to make progress on high priority actions identified in this plan. As more detailed information becomes available, priorities may be modified and completion dates may be changed. Before commencement of each action, compliance reviews will be conducted to ensure all applicable federal, state, and local laws are followed. Specifically, any water management action deemed to be a federal action will comply with the National Environmental Policy Act and the National Historic Preservation Act before commencement.

Upgrade Water Distribution System

The RMWUA ditch system has been in operation since the early 1900s and is experiencing deterioration of the infrastructure. Although continued maintenance is expected in a water distribution system, there are laterals and portions of the canal that were identified by the Steering Committee that are in need of repair and rehabilitation and/or upgrading and are beyond the District's budget. The following actions were identified as high priority projects:

- Installation of a Satellite Monitoring Station at the Project Ditch measuring device to provide real-time data for the distribution calculations.
- Control seepage losses by piping approximately 100 feet of the main distribution canal.
- Develop a priority list of laterals and farm headgates that are in need of repair.
- Install two new measuring devices at the bottom of Cedar Gulch and Lawhead Gulch.

Develop a Water Education Program

- Develop an informational brochure that describes the operation of the RMWUA water system including a detailed description of the meaning and importance of the information written on the water order cards.
- Provide cross-training of ditch riders

Improvement of the RMWUAA Management

- Work toward cost sharing for ditch improvements and upgrades with the ODRC.
- Develop a policy for billing water recipients that are not a part of the RMWUA
- Write an operation manual for the computer program so that operational information is not lost with any change of personnel.

Expected Results and Monitoring

The RMWUA Board of Directors has not designated a Water Management Coordinator but will annually review the progress of this Water Management Plan. The plan will be up-dated on a five-year cycle. The RMWUA will continue to collect information from water users, personnel, and coordinating organizations. Future updated plans will reflect new water management information as it becomes available.

on Water Management Measures

Project Leader	Project Assistants	Start Date / Completion Date	Budget	Potential Funding Sources
RMWUA	Consultants	November 2008	\$7,500 ea	CRWCD, USBOR
RMWUA	Consultants	As funds become available	\$5,000	USBOR, NFWCD
RMWUA	CDWR	ASAP		
		As funds become available	\$7,000	CRWCD, USBOR
RMWUA	Consultants	ASAP	\$750	NFWCD
RMWUA		ASAP	\$250	USBOR, NFWCD
RMWUA	ODRC	ASAP		
RMWUA		ASAP		
RMWUA	Dan Hawkins, Steve Widener	ASAP	\$500	USBOR, NFWCD

ODRC = Overland Ditch & Reservoir Company

References

CDWR (Colorado Division of Water Resources), 2006. Water rights decrees obtained from the Colorado Division of Water Resources, Division 4, Montrose, Colorado.

CDWR (Colorado Division of Water Resources), 2006. Water diversion records obtained from the Colorado Division of Water Resources, Division 4, Montrose, Colorado. 1996-2006.

Dalton, J.C., 1998. Irrigation Water Requirements Computer Program, Beta 3.0 version. Powell, Wyoming, December 1, 1998.

Hydrosphere, 1996. Achieving Efficient Water Management- A Guidebook for Preparing Agricultural Water Conservation Plans. Second Edition, September 2000.

Schmucker, Paul. Personal communication with Paul Schmucker, Water Commissioner for the Leroux Creek drainage.

Appendix A

Articles of Incorporation and Bylaws

FEB 20, 1969

1191

ARTICLES OF AMENDMENT
TO THE
ARTICLES OF INCORPORATION
of

REDLANDS MESA WATER USERS INCORPORATED

Pursuant to the provisions of the Colorado Corporation Act, the undersigned corporation adopts the following Articles of Amendment to its Articles of Incorporation:

FIRST: The name of the corporation is REDLANDS MESA WATER USERS INCORPORATED.

SECOND: The following amendment of the Articles of Incorporation was adopted by the shareholders of the corporation at the regular annual meeting of the stockholders of said corporation held on Redlands Mesa, Delta County, Colorado, on the 31st day of January, 1969, in the manner prescribed by the Colorado Corporation Act:

Article IV of the Articles of Incorporation, as amended by prior action of the shareholders on the 29th day of January, 1962, is now amended to read as follows:

ARTICLE IV
Capital Stock

The capital stock of said corporation shall be divided into two classes, to-wit:

Section 1
Class A Stock

One share of Class A stock shall be issued to, or owned by, each member of the corporation owning land in the area of Redlands Mesa, and where land to be irrigated is owned in joint tenancy in common by two or more persons, only one share of Class A stock shall be issued to, or owned by, such land owners. The application for such stock shall be first approved by a majority of a quorum of the board of directors present at a directors' meeting held as provided in the by-laws, whereupon such stock shall be issued over the signature of the President and attested by the Secretary, with the seal of the corporation attached. Class A stock issued shall determine the voting

rights in this corporation, with each owner entitled to one vote. It shall be sold for such consideration per share as the board of directors may determine, shall be non-assessable, and the proceeds thereof shall be used only for corporate purposes.

Section 2
Class B. Stock

- (a) Class B stock shall be of two sub-classes, to-wit: Class B-1 and Class B-2, and shall be issued over the signature of the President or the Vice President and attested by the Secretary with the seal thereof to Class A stockholders only. The selling price of such Class B stock shall be in such sum and amount as may be determined by the Board of Directors, with due consideration given to the capital needs of the corporation for corporate purposes. Assessments shall be made on Class B stock for corporate purposes as the Board of Directors may determine from time to time, subject to the approval of the proper representative of the Department of Interior, Bureau of Reclamation as may be required in relation to "Project Water".
- (b) Class B-1 stock shall be issued for not to exceed 1,338 shares, and shall represent ownership of fractional interests in water derived from water stored in the reservoirs owned and belonging to the Leroux Creek Water Users Association and which waters have been sold to and purchased by this corporation for the use and benefit of its stockholders.
- (c) Class B-2 stock shall be issued for not to exceed 4,300 shares, and shall represent ownership of fractional interests in water diverted from Leroux Creek under and by virtue of decrees for diversion from the said stream and owned by the Leroux Creek Water Users Association and which waters have been sold to and purchased by this corporation for the use and benefit of its stockholders.
- (d) Annual assessments shall be made by the Board of Directors upon the Class B-1 and Class B-2 stock in proportion to its value for irrigation purposes, first for operation and maintenance, and second in a sufficient amount to cover and

pay the proper portion and share of the annual payments to be paid by the Leroux Creek Water Users Association under and by virtue of the contract now in existence, or as it may hereafter be amended, between the United States of America and the Leroux Creek Water Users Association during the full period of the repayment program as set forth and provided under the said contract.

- (e) The water represented by Classes B-1 and B-2 Stock of this corporation shall be used only in the irrigation of land located upon Redlands Mesa, and it shall never be issued to or owned by any person, firm, or corporation, who or which does not own irrigable land in the area of Redlands Mesa and under the canals or ditches owned or controlled by this corporation, except that such stock may be hypothecated or pledged or assigned as collateral security for loans made to a qualified landowner or landowners. When land in the area together with Class A Stock and Class B-1 and Class B-2 Stock is the subject of a contract of sale and purchase and (or) an escrow agreement, the certificates for such stock, properly endorsed, shall be held in escrow by the escrowee and shall not be delivered to the purchaser until payment in full. When any such stock is the subject matter of any such contract and (or) escrow agreement, the secretary of this corporation shall be notified in writing of the name and address of the purchaser or purchasers described in the said contract and (or) escrow agreement.

Section 3

All assessments for operation and maintenance and for the annual purchase or repayment installments as aforesaid shall be due and payable upon the making of such assessments and the giving of notice to the stockholders, with such notice mailed by United States mail, postage prepaid, to the last known address of each stockholder as furnished to and possessed by the secretary. The mailing of such notice shall constitute delivery thereof. In the event the said assessments, or any part thereof, shall not be paid within thirty days from and after the mailing of the said notice, the person or persons liable for the payment of the same, including the owner of

record, the purchaser under contract, and any lien holder under a mortgage or deed of trust, where notice of such purchase or lien rights have been filed with the secretary shall be subject to default for non-payment and the said Class A and Class B-1 and B-2 Stock of such owner may be by the secretary by the order of the Board of Directors, advertised for sale by four (4) weekly publications of said notice in a weekly or bi-weekly newspaper printed and published in whole or in part in Delta County, Colorado for four successive issues, giving notice that the aforesaid stock, or so much thereof as may be necessary, will be sold on a date and at a time certain to pay the amount of such assessment, together with interest thereon at 6% per annum from the date due to the date of sale, and costs of publication. Upon the sale of such stock or any part thereof, the certificates therefore held by the person, firm or corporation in default shall be cancelled and shall be void and of no further force and effect in law or equity, and the new certificates of stock issued by virtue of said sale shall be in full force and effect and not subject to question in any action of law or equity.

THIRD: The following amendment of the Articles of Incorporation entitled "Article XI" was adopted by the shareholders of the corporation as an amendment:

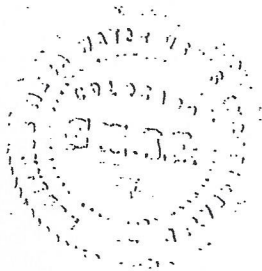
ARTICLE XI

Quorum

A quorum of the membership for the transaction of any business at any regular or special meeting shall be not less than one-third of the outstanding Class A Stock of the corporation, and where such stock is held in joint tenancy, or tenancy in common, one or more of said tenants being present either in person or by proxy shall be counted as the entire representation of such share of such stock being present; but should a controversy arise between one or more of such tenants as to the casting of the vote, such vote shall

be cast in fractions as indicated by the ownership thereof.

DATED February 29, 1969.



REDLANDS MESA WATER USERS INCORPORATED
 BY Harold J. Paulson
 Its President
 and Ward Holder
 Its Secretary

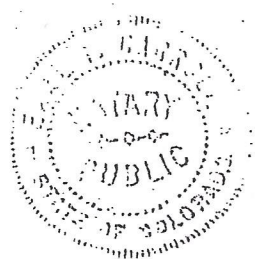
STATE OF COLORADO)
 COUNTY OF DELTA) SS

Before me, Earl T. Larrall, a Notary Public in and for the said County and State, personally appeared Harold Paulson and Ward Holder, who acknowledged before me that they are respectively the President and Secretary of REDLANDS MESA WATER USERS INCORPORATED, a Colorado corporation, and that they signed the foregoing Articles of Amendment as their free and voluntary act and deed for the uses and purposes therein set forth.

IN WITNESS WHEREOF I have hereunto set my hand and seal this 7th day of March, 1969.

My commission expires My commission expires Oct. 14, 1972.

Earl T. Larrall
 Notary Public



ARTICLES OF AMENDMENT
TO THE
ARTICLES OF INCORPORATION
of
REDLANDS MESA WATER USERS INCORPORATED

Pursuant to the provisions of the Colorado Corporation Act, the undersigned corporation adopts the following Articles of Amendment to its Articles of Incorporation:

FIRST: The name of the corporation is REDLANDS MESA WATER USERS INCORPORATED.

SECOND: The following amendment of the Articles of Incorporation was adopted by the shareholders of the corporation at the regular annual meeting of the stockholders of said corporation held on Redlands Mesa, Delta County, Colorado, on the 31st day of January, 1969, in the manner prescribed by the Colorado Corporation Act:

Article IV of the Articles of Incorporation, as amended by prior action of the shareholders on the 29th day of January, 1962, is now amended to read as follows:

ARTICLE IV
Capital Stock

The capital stock of said corporation shall be divided into two classes, to-wit:

Section 1
Class A Stock

One share of Class A stock shall be issued to, or owned by, each member of the corporation owning land in the area of Redlands Mesa, and where land to be irrigated is owned in joint tenancy in common by two or more persons, only one share of Class A stock shall be issued to, or owned by, such land owners. The application for such stock shall be first approved by a majority of a quorum of the board of directors present at a directors' meeting held as provided in the by-laws, whereupon such stock shall be issued over the signature of the President and attested by the Secretary, with the seal of the corporation attached. Class A stock issued shall determine the voting

rights in this corporation, with each owner entitled to one vote. It shall be sold for such consideration per share as the board of directors may determine, shall be non-assessable, and the proceeds thereof shall be used only for corporate purposes.

Section 2
Class B. Stock

- (a) Class B stock shall be of two sub-classes, to-wit: Class B-1 and Class B-2, and shall be issued over the signature of the President or the Vice President and attested by the Secretary with the seal thereof to Class A stockholders only. The selling price of such Class B stock shall be in such sum and amount as may be determined by the Board of Directors, with due consideration given to the capital needs of the corporation for corporate purposes. Assessments shall be made on Class B stock for corporate purposes as the Board of Directors may determine from time to time, subject to the approval of the proper representative of the Department of Interior, Bureau of Reclamation as may be required in relation to "Project Water".
- (b) Class B-1 stock shall be issued for not to exceed 1,338 shares, and shall represent ownership of fractional interests in water derived from water stored in the reservoirs owned and belonging to the Leroux Creek Water Users Association and which waters have been sold to and purchased by this corporation for the use and benefit of its stockholders.
- (c) Class B-2 stock shall be issued for not to exceed 4,300 shares, and shall represent ownership of fractional interests in water diverted from Leroux Creek under and by virtue of decrees for diversion from the said stream and owned by the Leroux Creek Water Users Association and which waters have been sold to and purchased by this corporation for the use and benefit of its stockholders.
- (d) Annual assessments shall be made by the Board of Directors upon the Class B-1 and Class B-2 stock in proportion to its value for irrigation purposes, first for operation and maintenance, and second in a sufficient amount to cover and
- 2

pay the proper portion and share of the annual payments to be paid by the Leroux Creek Water Users Association under and by virtue of the contract now in existence, or as it may hereafter be amended, between the United States of America and the Leroux Creek Water Users Association during the full period of the repayment program as set forth and provided under the said contract.

- (e) The water represented by Classes B-1 and B-2 Stock of this corporation shall be used only in the irrigation of land located upon Redlands Mesa, and it shall never be issued to or owned by any person, firm, or corporation, who or which does not own irrigable land in the area of Redlands Mesa and under the canals or ditches owned or controlled by this corporation, except that such stock may be hypothecated or pledged or assigned as collateral security for loans made to a qualified landowner or landowners. When land in the area together with Class A Stock and Class B-1 and Class B-2 Stock is the subject of a contract of sale and purchase and (or) an escrow agreement, the certificates for such stock, properly endorsed, shall be held in escrow by the escrowee and shall not be delivered to the purchaser until payment in full. When any such stock is the subject matter of any such contract and (or) escrow agreement, the secretary of this corporation shall be notified in writing of the name and address of the purchaser or purchasers described in the said contract and (or) escrow agreement.

Section 3

All assessments for operation and maintenance and for the annual purchase or repayment installments as aforesaid shall be due and payable upon the making of such assessments and the giving of notice to the stockholders, with such notice mailed by United States mail, postage prepaid, to the last known address of each stockholder as furnished to and possessed by the secretary. The mailing of such notice shall constitute delivery thereof. In the event the said assessments, or any part thereof, shall not be paid within thirty days from and after the mailing of the said notice, the person or persons liable for the payment of the same, including the owner of

record, the purchaser under contract, and any lien holder under a mortgage or deed of trust, where notice of such purchase or lien rights have been filed with the secretary shall be subject to default for non-payment and the said Class A and Class B-1 and B-2 Stock of such owner may be by the secretary by the order of the Board of Directors, advertised for sale by four (4) weekly publications of said notice in a weekly or bi-weekly newspaper printed and published in whole or in part in Delta County, Colorado for four successive issues, giving notice that the aforesaid stock, or so much thereof as may be necessary, will be sold on a date and at a time certain to pay the amount of such assessment, together with interest thereon at 6% per annum from the date due to the date of sale, and costs of publication. Upon the sale of such stock or any part thereof, the certificates therefore held by the person, firm or corporation in default shall be cancelled and shall be void and of no further force and effect in law or equity, and the new certificates of stock issued by virtue of said sale shall be in full force and effect and not subject to question in any action of law or equity.

THIRD: The following amendment of the Articles of Incorporation entitled "Article XI" was adopted by the shareholders of the corporation as an amendment:

ARTICLE XI

Quorum

A quorum of the membership for the transaction of any business at any regular or special meeting shall be not less than one-third of the outstanding Class A Stock of the corporation, and where such stock is held in joint tenancy, or tenancy in common, one or more of said tenants being present either in person or by proxy shall be counted as the entire representation of such share of such stock being present; but should a controversy arise between one or more of such tenants as to the casting of the vote, such vote shall

be cast in fractions as indicated by the ownership thereof.

DATED February 20, 1969.

REDLANDS MESA WATER USERS INCORPORATED

BY Harold J. Paulson
Its President
and Ernest W. Holder
Its Secretary

STATE OF COLORADO)
COUNTY OF DELTA) SS

Before me, Earl T. Carrell, a Notary Public in and for the said County and State, personally appeared Harold Paulson and Ward Holder, who acknowledged before me that they are respectively the President and Secretary of REDLANDS MESA WATER USERS INCORPORATED, a Colorado corporation, and that they signed the foregoing Articles of Amendment as their free and voluntary act and deed for the uses and purposes therein set forth.

IN WITNESS WHEREOF I have hereunto set my hand and seal this 17th day of March, 1969.

My commission expires Oct. 14, 1972

Earl T. Carrell
Notary Public

SS: Form D-4
(Rev. 5/73)

ARTICLES OF AMENDMENT

JAN 31 1974

to the

ARTICLES OF INCORPORATION

Pursuant to the provisions of the
the undersigned corporation adopts the following Articles of
Amendment to its Articles of Incorporation:

FIRST: The name of the corporation is

REDLANDS MESA WATER USERS INCORPORATED

SECOND: The following amendment was adopted by the share-
holders of the corporation on January 25, 1974, in the manner
prescribed by the Colorado Corporation Act:

ARTICLE II

Object and Purposes

The object for which said company is organized is for the
purpose of acquiring water rights, ditch rights, reservoir rights
and to distribute water to its stockholders; to acquire water
rights for exchange purposes and to negotiate and enter into agree-
ments for exchange of water rights of whatsoever kind owned or
leased by its stockholders, or owned or leased by this company,
by proper agreements with the North Fork Water Conservancy District,
a quasi-municipal corporation, the United States of America, and
any and all other owners of water rights, ditch rights and reservoir
rights for the purpose of providing additional irrigation water
and domestic water for the use of the stockholders of this company;
to accept water owned by the Overland Ditch and Reservoir Company
or its stockholders and to deliver the same to its rightful owners
or users within the service area; to acquire, enlarge and maintain
canal and ditch systems and laterals; install measuring and regulat-
ing devices for the measuring and regulating of irrigation water;

Mon. 10/1

to receive water from Leroux Creek and to divert it into ditch or ditches which are a part of this Corporation, a general description of which is as follows:

That portion of STULL IRRIGATION DITCH ENLARGEMENT AND EXTENSION described as commencing at the head gate and diversion for said Stull Ditch on the right bank of Leroux Creek at a point where the quarter section corner between Sections 16 and 21, Township 13 South, Range 93 West of the 6th P.M., bears South $31^{\circ} 30'$ East 31.5 chains, from the head gate said ditch runs in a general Southwesterly direction crossing over and through Sections 16, 20, and 29, in Township 13 South, Range 93 West to the point where water from said Stull Ditch is diverted to the Lawhead Irrigation Ditch and the Cedar Gulch Irrigation Ditch; and that part of the old Stull Ditch that runs in a Southwesterly direction through Section 32, Township 13 South, Range 93 West of the 6th P.M., and Section 6, Township 14 South, Range 93 West and Sections 1, 12, and 11, Township 14 South, Range 94 West of the 6th P.M., to its confluence with Lawhead Irrigation Ditch.

All of LAWHEAD IRRIGATION DITCH. The head gate is at the end of the Overland Ditch and commences in the Northeast Quarter, Section 32, Township 13 South, Range 93 West of the 6th P.M.

From the head gate said ditch runs in a general Southwesterly direction crossing over and through Sections 32 and 31, Township 13 South, Range 93 West and also Section 6, Township 14 South, Range 93 West, and Sections 1, 12, 11, and 14, Township 14 South, Range 94 West of the 6th P.M.

All of CLARK DRAW IRRIGATION DITCH, the Sublateral coming off of Lawhead with its head gate in the Northwest Quarter, Section 6, Township 14 South, Range 93 West of the 6th P.M.

From the head gate said ditch runs in a general Southwesterly direction crossing over and through Section 6, Township 14 South, Range 93 West of the 6th P.M., and also Sections 1, 2, and 11, Township 14 South, Range 94 West of the 6th P.M.

All of CEDAR GULCH IRRIGATION DITCH. The head gate is at the end of the Overland Ditch and commences in the Northeast Quarter of Section 32, Township 13 South, Range 93 West of the 6th P.M.

From the head gate said ditch runs in a general Southwesterly direction crossing over and through Section 32, Township 13 South, Range 93 West, and also Sections 5, 6, and 7, Township 14 South, Range 93 West, 6th P.M.

The ABOVE NAMED AND DESCRIBED IRRIGATION DITCHES to serve the agricultural area of Redlands Mesa, all located in Townships 13 and 14 South, Ranges 93 and 94 West of the 6th P.M.

To employ employees to supervise, operate and maintain all of said systems, and including the distributions of irrigation water of whatsoever kind or nature and domestic water; to acquire by purchase, donation, lease, or otherwise such land and chattels as may be determined by the board of directors to be necessary or expedient for the uses and purposes of the said company, and to sell and convey, for the best price obtainable, such real and personal property as it may find to be no longer needed for the purposes of said company, and including the sale, trade or exchange of real and personal property for other real and personal property more suited for the purposes of said corporation; and to borrow money for corporate purposes and to issue the obligation of the corporation therefor; to levy and collect pro-rata such assessments on Class B stock as may be determined by the board of directors from time to time to be necessary for corporate purposes, and such assessments shall be pro-rated equally upon each and every share of Class B stock outstanding, but no assessment shall ever be made on the Class A stock of said corporation outstanding; assessments or charges may be levied for distribution and delivery to the stockholders or non-stockholders of the Corporation, water that is not owned by the Corporation or its stockholders. Said assessments or charges to be used for corporate purposes only.

THIRD: The number of shares of the corporation outstanding at the time of such adoption was 5,685; and the number of shares entitled to vote thereon was 48.

FOURTH: The designation and number of outstanding shares of each class entitled to vote thereon as a class were as follows:

CLASS

NUMBER OF SHARES

A

48

FIFTH: The number of shares voted for such amendment was 42; and the number of shares voted against such amendment was None.

SIXTH: The number of shares of each class entitled to vote thereon as a class voted for and against such amendment, respectively, was:

CLASS	NUMBER OF SHARES VOTED	
	For	Against
A	<u>42</u>	<u>None</u>

SEVENTH: The manner, if not set forth in such amendment, in which any exchange, reclassification, or cancellation of issued shares provided for in the amendment shall be effected, is as follows:

"No change"

EIGHTH: The manner in which such amendment effects a change in the amount of stated capital, and the amount of stated capital as changed by such amendment, are as follows:

"No change"

REDLANDS MESA WATER USERS,
INCORPORATED

By: Lud. M. Burnett
(Its President

and Ernest A. W. Halder
(Its Secretary

BY-LAWS
OF THE
REDLANDS MESA WATER USERS INCORPORATED

ARTICLE I.

Corporate Name

Section 1. The corporate name of said company shall be Redlands Mesa Water Users Incorporated.

ARTICLE II.

Principal Place of Business

Section 1. The principal office and place of business of said company shall be on Redlands Mesa, Delta County, State of Colorado.

ARTICLE III.

Capital Stock

Section 1. The capital stock of said company shall consist of two classes, to-wit: Class A stock and Class B stock.

(a) Class A stock shall be issued one (1) share only to each member, and a member may be an individual, a partnership, a corporation and two or more persons who own farms in joint tenancy or in tenancy in common. Where a farm is owned in joint tenancy or tenancy in common there shall be one (1) share of stock and one (1) vote only, which vote may be divided in fractions among the individuals owning said stock. Class A stock shall be issued to the members upon written or oral application made to the President or Vice President and Secretary, and upon the payment of the sum of \$ 15.00, and the cash proceeds of such stock shall be for organizational and other corporate purposes. When an owner of Class A stock shall sell his farm, he shall, as a part of the said transaction, assign his Class A stock to the purchaser, and a new share of Class A stock shall be issued to the purchaser upon the payment of \$ 1.00 transfer fee. Where an owner of Class A stock sells only a part of his farm to a person who does not own Class A stock, such purchaser may acquire one share of Class A stock upon making application and paying the same sum of money as provided for the original issuance of said stock. In the event an owner of Class A stock shall sell all of his irrigable land in the area served by this corporation, he shall no longer be entitled to vote in any corporate matters, but he may, if he has not assigned the stock to a purchaser of a part or all of his land, be entitled to surrender the said stock and be reimbursed by the corporation for the original cost thereof.

(b) Each owner of Class A stock shall be entitled to purchase non-voting Class B stock, with the number of shares to be so purchased to be determined by the board of directors and shall be based on the water needed and available to such purchaser, or on the basis of distribution service rendered, with the purchase price of such stock to be uniform per share and for an amount to be fixed by the board of directors. No Class B stock shall ever be owned or used by any person for the purpose of speculation, but an owner of Class B stock may rent the water it represents on a temporary basis but not for a period of more than one year, subject to the approval of the board of directors. The Class B stock shall not be issued or sold immediately for the reason that it is contemplated that there

will be a development period of approximately three years (the years of 1962, 1963 and 1964) and during said period water may be sold by the board of directors or they may render water distribution service, charging and assessing the owners of Class A stock for their respective portions of water and water distribution service delivered or rendered.

(c) Other than above provided for the collection of assessments during the development period, there shall never be any assessment made on Class A stock, but the board of directors shall have the power to make assessments annually and special assessments in any year to raise funds for administrative, water rental, operation and maintenance costs and may provide for the method of paying the same. For the year of 1962 the said directors may make the first assessment as soon as basic information is available to them for the making of such assessment, and if it appears later in the year of 1962 that sufficient funds have not been raised, the said directors may at any time make an additional assessment for the purpose of meeting the above mentioned necessary expenses. [Beginning in the year of 1963 and thereafter,] the board of directors, or some person designated by them, shall prepare a budget of estimated expenses for the year, and the same shall be read to the members present at the annual meeting to be held on the 4th last Friday in January of each year, and the members shall have the right by proper motion made and adopted to amend the same, but if a budget be not adopted at such meeting, the board of directors may adopt a budget and make an assessment based upon the amount of water used, or service rendered, [against all Class A stockholders until Class B stock is issued, and thereafter to be assessed] against the Class B stock.

18% All assessments shall be considered due as soon as notices thereof are mailed and all assessments shall be delinquent thirty (30) days thereafter, and the board of directors shall have power to withhold the delivery of water and the rendering of other services from any delinquent stockholder until the assessment be fully paid. In addition thereto, the board of directors may recover any delinquent assessment by selling so much of the stock of the delinquent stockholder as may be necessary to meet the delinquency, plus interest at 6% per annum on the amount of delinquency and plus all costs of such sale. Such sale shall be made as provided by law, and the board of directors in the name of the corporation may purchase same in the name of the corporation and may thereafter sell and reissue such stock to qualified holders of Class A stock.

ARTICLE IV.

Seal

Section 1. The seal of this corporation shall have inscribed thereon the name of the company and the words "Corporate Seal" and "State of Colorado".

ARTICLE V

Objects, Purposes and Powers

Section 1. The corporation shall have all of the objects, purposes and powers set forth in Article II of the Amended Articles of Incorporation and all powers provided by the laws of the State of Colorado, and the said powers shall be exercised by the board of directors in the name of this corporation.

ARTICLE VI.

Stockholders' Meetings

Such location designated by the stockholders but written

Section 1. Annual Meetings. The annual meeting of the stockholders for the election of directors and for any and all other business which may properly come before said meeting shall be held at [the East Schoolhouse on Redlands Mesa,] County of Delta, State of Colorado, on the last Friday ^{4th} in January of each year hereafter. Proper notice of the time and place of said meeting shall be given by the secretary by publication in one or more newspapers published in Delta County, Colorado. Such notice to be published at least once not more than fifteen (15) days and not less than five (5) days prior to the date fixed for said meeting, and also by giving at least fifteen (15) days written notice of the said meeting to each owner of Class A stock by depositing a copy of said notice in the Post Office, addressed to each stockholder at his place of residence as the same appears in the records of this corporation, or by delivering such notice personally to each stockholder. A stockholder may in writing waive the giving of such notice to him.

Section 2. Special Meetings. Special meetings of the stockholders may be called at any time as provided in Article X of the Amended Articles of Incorporation, and only such business may be transacted at a special meeting as is mentioned or described in the call of such notice. The notice of a special meeting shall be given substantially as provided in Section 1 of this Article.

not less than one-third of the stockholders

Section 3. Quorum. A quorum at any regular or special stockholders meeting shall be [a majority of the] Class A stock represented in person or by proxy. If such quorum is not present, the meeting shall be adjourned from time to time by a majority of those present, provided that such meeting shall not be adjourned for a period to exceed sixty (60) days for any one adjournment, and notice of the adjourned meeting may be given in such manner as the board of directors may decide.

Section 4. Order of business. All meetings of the stockholders of this corporation shall be governed by Robert's Rules of Order (revised) insofar as possible, and the order of business at all such meetings shall include the following:

1. Reading of call of the meeting.
2. Roll call of Class A stockholders.
3. Proof of due notice and determination of quorum.
4. Reading and disposal of any unapproved minutes.
5. Nominations for vacancies on board of directors.
6. Report of board of directors by president, vice president or secretary.
7. Report of secretary.
8. Report of treasurer.
9. Unfinished business.
10. New business.
11. Election of directors.
12. Adjournment.

ARTICLE VII.

Directors

Section 1. The number of the board of directors shall be five (5) in number, selected and elected as provided in Article VI of the Amended Articles of Incorporation, and their duties shall consist of all and sundry the carrying out of the powers and purposes of the corporation as set forth in the Amended Articles of Incorporation and such additional powers as is given by the laws of the State of Colorado, and in addition, but not,

limited to, its functions and duties shall include:

- (a) Selection of, and delegation of authority to, management;
- (b) Employment of necessary employees;
- (c) Determination of policies for guidance of management
- (d) Control of expenditures by authorizing budgets;
- (e) Keeping the members fully informed of the business of the corporation;
- (f) Causing audits to be made at least once each year and making reports thereof directly to the board, and thereafter by the board to the stockholders;
- (g) Studying the requirements of members and the promoting of good membership relations;
- (h) Prescribing the form of stock certificates;
- (i) To levy and collect assessments and to enforce the collection thereof in accordance with the laws of the State of Colorado, the Amended Articles of Incorporation and these By-Laws; and to prescribe uniform measuring devices for the measurement of water to all users.

Section 2. Election and Term of Board Members. The board of directors elected on January 26, 1962 shall serve two for one year and three for two years and until their successors are appointed, elected and qualified. Thereafter directors shall be elected or appointed as provided in Article VI of the Amended Articles of Incorporation.

Section 3. Election of Officers. The board of directors shall immediately after each annual meeting elect by ballot one of its members to be president, one of its members to be vice president and one also elected to be secretary-treasurer, who may be, but need not be, a member of the board of directors or a stockholder in this corporation.

Section 4. The Compensation of Directors and Officers. The board of directors and officers, with the exception of the secretary-treasurer, shall serve without compensation, provided, however, the secretary-treasurer shall be paid a reasonable compensation for services rendered, and directors may be paid the necessary and proper expenses of travel on the business of said corporation.

Section 5. Meetings of the Board of Directors. Meetings of the board of directors shall be held as soon as may be following the meeting of the stockholders, at which time it shall elect officers as hereinabove provided. Said board of directors may have other meetings as they may from time to time decide, provided that all members thereof have written notice of such meeting or waive notice thereof in writing.

Section 6. Vacancies and Removal of Directors and Officers. Vacancies in the board of directors which occur may be filled as provided in Article VI of the Amended Articles of Incorporation. In the event charges of dereliction of duty is filed against a director, he shall within five (5) days of the service of notice thereof, file his demand for an open hearing of the charges, and failing to so file such demand, such hearing will be waived by him, but it shall not prevent the remaining directors to conduct such hearing. At the hearing on such charges, the director shall be entitled to hear under oath all testimony submitted against him and may present witnesses to testify in his behalf.

Section 7. Quorum. Three (3) members of the board of directors shall constitute a quorum for the transaction of business at any meeting of the board.

ARTICLE VIII.

Officers

Section 1. Duties of the President. The president shall preside at all meetings of the members of the board of directors; he shall execute stock certificates, notes, bonds, mortgages, contracts and all other instruments on behalf of the company; he shall be ex-officio a member of all standing committees; and he shall have such powers and perform such other duties as may be properly required by him by the board of directors.

Section 2. Duties of the Vice President. The vice president shall, in the absence or disability of the president, or in the event of his death, resignation, or removal from office, perform such duties and exercise the powers of the president, and shall have such other powers and perform such other duties as the board of directors may prescribe.

Section 3. Duties of the Secretary-Treasurer. The secretary-treasurer shall keep a record of the proceedings of the board of directors of the corporation and shall keep the books and records of said corporation and the seal of said corporation, and shall attest the signatures of the officials of the corporation executing documents on behalf of said corporation; shall collect all assessments and monies due the corporation and deposit the same in the depository designated by the board of directors, and shall make a report of the business transacted by him annually or oftener, if so requested by the board of directors or the president, and he shall do and perform such other duties and functions as may be required of him by the board of directors or the president.

Section 4. Appointment and Duties of Superintendent. The board of directors may appoint, in addition to the officers above named, a superintendent of the irrigation system, who will be in charge of the work of construction, maintenance and repair of the distribution works of the company and of the distribution of the water; he shall make to the board of directors a monthly report showing the condition of the ditch and the amount and character of work done during the previous month, and shall certify to the secretary-treasurer, monthly, the time put in by himself and by each laborer in performing work in behalf of the corporation.

ARTICLE IX.

Stock Certificates

Section 1. Form. The board of directors shall determine the form of stock certificates, and when issued shall be signed by the president, or in his absence, by the vice president and his signature attested by the secretary, with the corporate seal affixed and shall express on its face the number, date of issuance, and the number of shares represented thereby.

Section 2. Stock Book. The books of stock certificates for the two classes of stock shall each contain a margin opposite to each certificate on which shall be noted the number of the certificate, the date, the number of shares and the name of the person to whom issued, corresponding to the certificate issued, and when a certificate is surrendered, whether it be for reissue or otherwise, the disposition of the stock thereby represented shall be noted.

Section 3. Transfer of Stock. Certificates of stock may be transferred and the transfer shall be noted on the books of the corporation to such transferee, upon the surrender of the

certificate properly endorsed, provided that no transfer of stock shall be valid or made until all of the indebtedness owed thereon to the corporation is paid or adjusted to the satisfaction of the board of directors.

ARTICLE X.

Amendments to By-Laws

Section 1. These By-Laws, or any Article or any Section thereof may be amended by a majority vote of the board of directors, and when such amendment, or amendments, has or have been so made, they shall at the next regular meeting of the members, or at a special meeting of the members called for the purpose, be presented for discussion and advice, and should any section or sections be disapproved by a majority vote of the outstanding Class A stock, the said amendment or amendments shall be disapproved and no longer in full force and effect, but in the event of such disapproval by a majority of the stockholders, a substitute amendment or amendments may then and there be proposed and if approved by a majority of the board of directors and a majority vote of the Class A stock outstanding, the said amendment or amendments shall be considered as adopted and be in full force and effect.

ARTICLE XI.

Rules and Adjustments

Section 1. The board of directors shall have rule making power for the administration of water and water rights under the supervision of this corporation, and they shall make prudential adjustments and assessments when it appears that the interest of justice and equity so demand.

CERTIFICATION

Witnessed
I, Alvin L. Davis, Secretary of Redlands Mesa Water Users Incorporated, do hereby certify that the above and foregoing is a true and correct copy of the by-laws adopted by the Redlands Mesa Water Users Incorporated, at a meeting of the Board duly held at the Sec. Home on Redlands Mesa, Delta County, Colorado on the 17th day of Feb 1962, 1962.

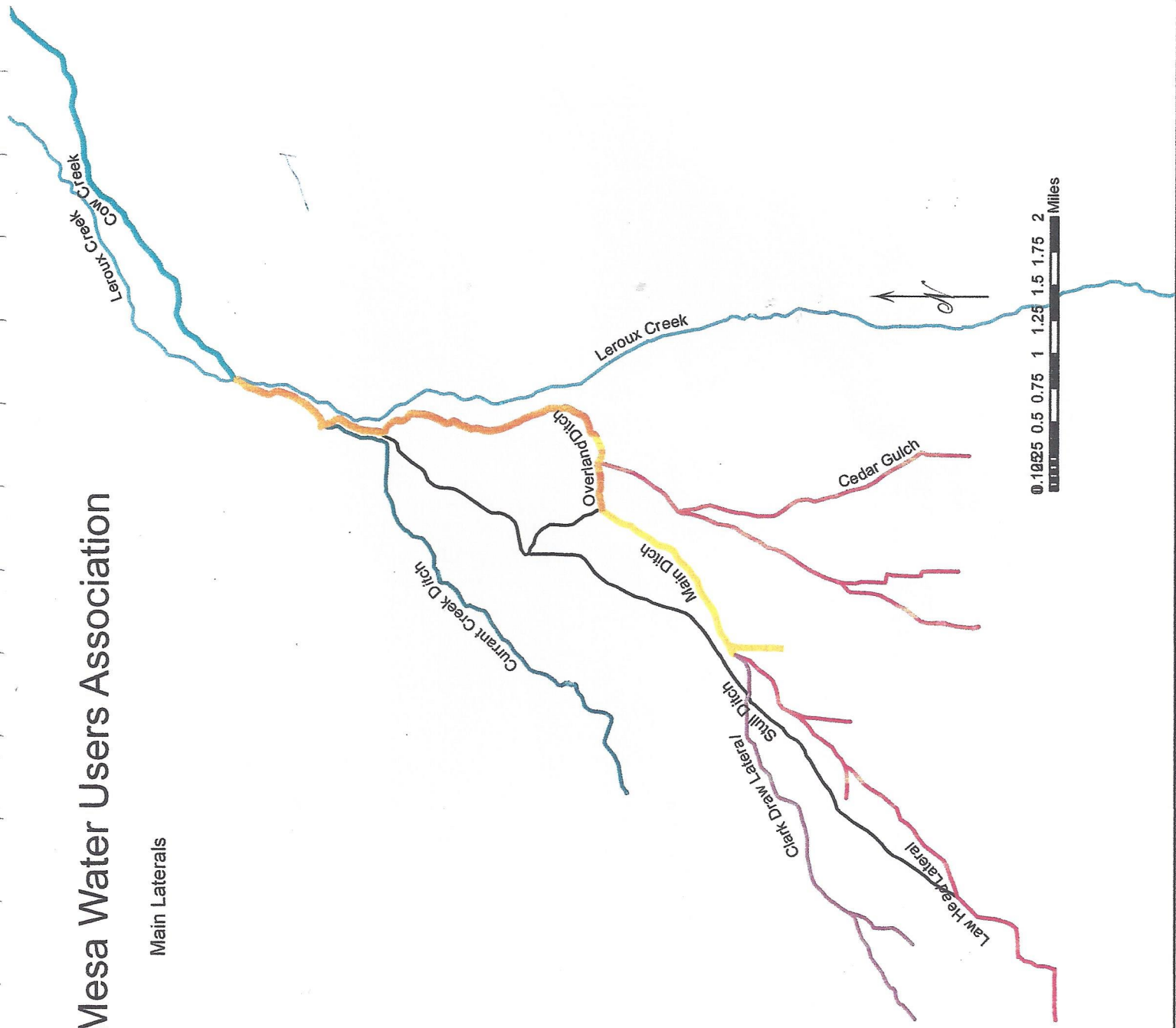
Alvin L. Davis
Secretary

Appendix B

Maps of the Redlands Mesa Water Distribution System

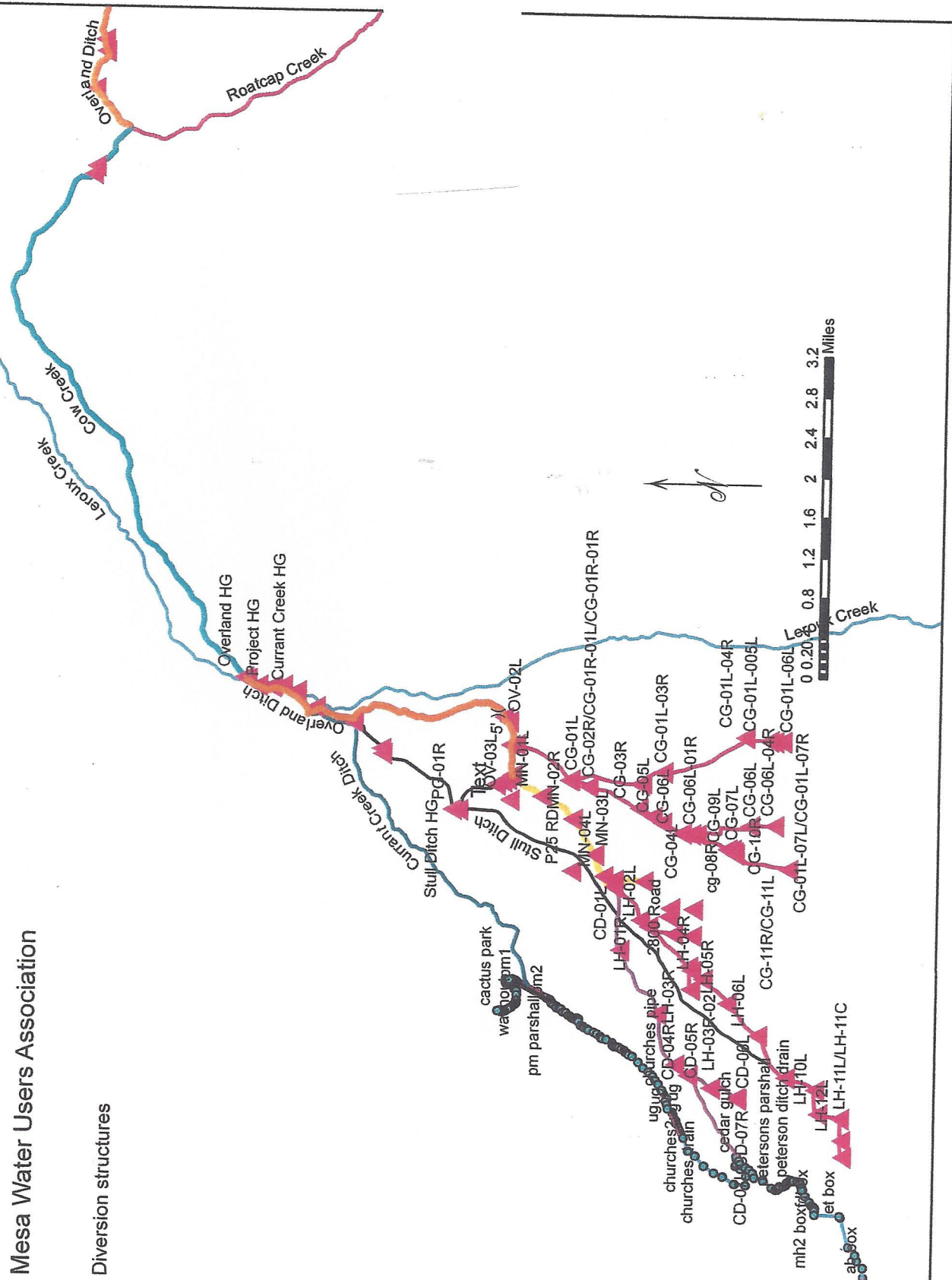
Redlands Mesa Water Users Association

Main Laterals



Redlands Mesa Water Users Association

Diversion structures



Appendix C

Description of the Stull Ditch

The Overland Ditch and Reservoir Company

***38638 Stucker Mesa Road
Hotchkiss, Colorado 81419
970-260-2057 pceriani@paonia.com***

Water Management Plan Committee

Stull Ditch

History: The Stull Ditch Company (SDC) was originally formed in the early 1900's as part of the Newton Ranch located on the lower east side of Redlands Mesa. Over the years ownership has changed as parts of the original ranch were divided or sold. The water court has authenticated a June 10, 1892 priority (#14) of 10.8 cfs of Leroux Creek (LC) water.

The Paonia Reservoir project in the early 60's significantly changed the diversion management of Leroux creek, and accordingly the Stull ditch diversion. As a result of various exchanges of LC water with the Fire Mountain Canal, new entities were formed to distribute and manage this water. An entity, The Redlands Mesa Water Users Incorporated (RMWU) had been formed in 1959 in an effort to smooth distribution problems among various ditch owners on the mesa. In March of 1962, the Stull ditch company was merged into the RMWU in an effort to provide one distribution company on the mesa to manage different water assets. All assets of the SDC were sold to the RMWU. In return, the RMWU made certain improvements to the Stull diversion structure, rebuilt the upper Stull ditch, and agreed to maintain the lower ditch at no added cost, and agreed to honor the call rights for those owners.

Current Ownership: Ownership consists of 180 shares. Given 10.8 cfs of right each share holds about 0.6 cfs of right.

Stover	120 shares	7.20 cfs
Mohan	16 shares	0.96 cfs
Klasseen	20 shares	1.20 cfs
Burritt	16 shares	0.96 cfs
Total	180 shares	10.8 cfs

Water Delivery: The water is generally diverted out of the Project ditch by utilizing the Raymond Ware diversion structure at the Moore box. This allows direct delivery to the above users if needed. It can also be blended with other water and delivered via the Law Head Lateral.

Appendix D

Description of the Redlands Mesa Water Distribution Program

Operations Description

Redlands Mesa Water Distribution Program

The Redlands Mesa Water Distribution Program was written by Dan Hawkins in 1990. The program was originally written in a DOS format but was later refined and migrated to an Excel platform. The components of the program are the program input where the calculations are run and the program reports which is the output.

Program Input

The Program Input is run from a main menu. This is where the canal flows are entered, the irrigation season (early, mid-season, late season, and prorated), Ditch flows (Overland flows at the satellite station and the Project Ditch flows which are headgate diversion minus the Stull Ditch flows).

Redlands Mesa project water can be used on the entire mesa and is often transferred from one box to another. The Edit User List and Assign Shares to Boxes is used to change water from one box to another or to split the shareholders water between several boxes.

After changes are made to boxes, the program can Calculate the input values. The end result are the reports.

Program Reports

The Box Run Status: The Box Run Status shows the total shares in each system, the in inflows, the season status, the cfs per share and the equivalency factor.

Box Assignments: The Box Assignments is a listing of all of the shares owned in the Overland Ditch, the Leroux Creek Exchange shares, and the LCWUA late season storage shares.

The Canal and Lateral Distributions: Based on the output in the Box Run Status and the Box Assignment information, the Canal and Lateral Distribution is a gross calculation for the main ditch, each lateral, and each box on each lateral. The program output shows:

- Water entering each box: Overland shares, Project shares, Overland equivalent, total shares and cfs;
- Water diverted left: Overland shares, Project shares, Overland equivalent, total shares and cfs;
- Water Diverted Right: Overland shares, Project Shares, Overland equivalent, Total Shares, percentage, cfs, and gage splitboard setting.

The Box Distribution Cards: The Box Cards are the settings for each individual box and the shareholders that receive their water through that box as well as the total cfs through the box and the individual shareholder cfs. The Box Card also shows the weir width, the percentage and the gage height or box open.