

ANIMAS-LAPLATA PROJECT

COLORADO - NEW MEXICO

ECONOMIC AND FINANCIAL UPDATE

FARM BUDGET ANALYSIS

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TABLE OF CONTENTS

CHAPTER 1 - PROJECT AREA DESCRIPTION	1
Purpose and Need for the Project	1
Authorizing Legislation	2
Colorado Ute Indian Water Rights Settlement	2
Related Water Right Claims and Waivers	3
Cost-Sharing and Project Phasing	4
General Characteristics of the Project Area	5
Sources of Data	6
Farm Management Survey	6
Enterprise Studies	7
Other Data Sources	7
Scope of Study	7
CHAPTER 2. - BASIC INPUT-OUTPUT DATA	9
Level of Management	9
Representative Farm	9
Type of Operation	10
Farm Size	11
Crop Distribution	11
Crop Yield	13
Price Received	14
Capital Investment	16
Land Value	17
Clearing	17
Leveling	18
On-Farm Distribution System	18
Fencing	18
Farm Buildings	19
Machinery and Equipment	20
Non-Power Machinery	20
Tractors and Self Propelled Machinery	22
Pickups and Trucks	22
Sprinkler Irrigation System	23
Interest Rates and Farm Indebtedness	23
Long Term Interest Rates	23
Short Term Interest Rates	24
Debt/Equity Ratio	24
Depreciation	24

Taxes	24
Insurance	26
Labor	27
Operator, Family, and Hired Labor	27
Wage Rates	28
Social Security Taxes and Worker's Compensation Rates	28
Crop Production Expenses	28
Custom Work	28
Fertilizer	29
Herbicide	29
Seed Cost	31
Miscellaneous Costs	32
Livestock Production, Death Loss, and Replacement Rates	33
Feed Requirements	34
Winter Feeding and Grazing Requirements	35
Livestock Equipment	35
Livestock Marketing Costs	36
Miscellaneous Livestock Costs	38
Other Farm Expenses	38
Electricity	38
Telephone	39
Adjustments to Farm Budgets for Benefit Analysis	39
Interest Rates for Benefit Analysis	40
Debt/Equity Ratio for Benefit Analysis	40
Fertilizer Rates for Benefit Analysis	40
CHAPTER 3. - IRRIGATION PAYMENT CAPACITY ANALYSIS	42
Method of Analysis	42
Net Farm Income	42
Return to Management	42
Return to Equity.	43
Return to Operator and Family Labor	43
Payment Capacity	43
CHAPTER 4: IRRIGATION BENEFIT ANALYSIS	45
Method of Analysis	45
Irrigation Benefits	45
APPENDIX A: HISTORICAL DATA FOR PRICES RECEIVED BY PRODUCERS ..	48
APPENDIX B: LIVESTOCK TURNOFF RATES FOR FARM BUDGETS	51
APPENDIX C: PAYMENT CAPACITY FARM BUDGET SUMMARIES	66
APPENDIX D: IRRIGATION BENEFIT FARM BUDGET SUMMARIES	75

List of Tables

Table 1. Irrigated Lands Under Phase I and Phase II.	6
Table 2. Areas Represented by Farm Budgets.	10
Table 3. Farm Size Projected for Farm Budgets.	12
Table 4. Cropping Pattern for Animas-LaPlata Farm Budgets. (acres)	13
Table 5. Crop Yields for Animas-LaPlata Farm Budgets.	15
Table 6. Price Received for Animas-LaPlata Farm Budgets.	16
Table 7. Land Investment Value and Development Costs for Farm Budgets.	19
Table 8. Farm Buildings Utilized in Farm Budgets.	20
Table 9. Investment Values and Operating Costs for Non-Power Machinery.	21
Table 10. Investment Values and Operating Costs for Self Propelled and Power Machinery.	22
Table 11. Assessed Valuation and Mill Levies Used For Calculating Tax Expenses. ...	25
Table 12. Insurance Costs for Animas LaPlata Farm Budgets.	26
Table 13. Fertilizer Rates and Prices Paid for Repayment Farm Budgets.	30
Table 14. Herbicide Rates and Prices Paid for Farm Budgets.	31
Table 15. Seed Rate and Prices Paid for Farm Budgets.	32
Table 16. Cattle Weights Utilized for Repayment and Benefit Farm Budgets.	34
Table 17. Price Received for Livestock for Repayment and Benefit Farm Budgets.	34
Table 18. Winter Feeding and Grazing Requirements for Farm Budgets.	36
Table 19. Investment Value and Operating Costs for Livestock Equipment.	37
Table 20. Livestock Marketing Costs per Head for Farm Budgets.	37
Table 21. Miscellaneous Livestock Costs per Head for Farm Budgets.	38
Table 22. Fertilizer Rates and Prices Paid for Benefit Farm Budgets.	41
Table 23. Calculation of Payment Capacity for Project Areas.	44
Table 24. Calculation of Irrigation Benefits for Project Areas.	46

CHAPTER 1 - PROJECT AREA DESCRIPTION

The proposed Animas-LaPlata Project (Project) is located in LaPlata and Montezuma Counties in southwestern Colorado and in San Juan County in northwestern New Mexico. The major Project features include two off-stream dams and reservoirs (Ridges Basin and Southern Ute Dams and Reservoirs); two major pumping plants (Durango and Ridges Basin Pumping Plants); three major water conveyance systems; and two diversion dams on the LaPlata River (the LaPlata and Southern Ute Diversion Dams). The Project would be constructed in two phases in accordance with Project cost-sharing, water rights settlement, and other agreements.

The proposed Project's total water supply would average 195,400 acre-feet for agricultural irrigation and municipal and industrial (M & I) use. About 115,300 acre-feet of project water would be delivered to 17,650 acres of American Indian (Indian) and non-Indian land presently being irrigated and 49,810 acres of Indian and non-Indian land now dry-farmed (or not under cultivation). An average annual M&I water supply of 40,000 acre-feet would be made available to non-Indian communities in Colorado and New Mexico. An average annual supply of 40,100 acre feet of industrial water would be provided to the Southern Ute Indian Tribe, Ute Mountain Ute Tribe and Navajo Nation.

Purpose and Need for the Project

The need to develop additional supplies of domestic and agricultural water was the impetus for the Project's authorizing legislation and planning. The proposed Project would divert flows of the Animas and LaPlata Rivers for Indian and non-Indian agricultural irrigation and M&I use. It would also provide a program for fish and wildlife habitat preservation and enhancement, development of recreation facilities, and cultural resources data recovery.

The general purposes of the Project, as a participating project of the Colorado River Basin Project Act, are to provide a program for comprehensive development of water resources and to provide additional and adequate water supplies for use in the Colorado River basin. The specific purposes are to: regulate the flow of the Colorado River; control floods; improve navigation; provide storage and delivery of the waters of the Animas and LaPlata Rivers (tributaries of the Colorado River); reclaim lands, including supplemental water supplies and for municipal, industrial and other beneficial purposes; improve water quality; provide basic outdoor recreation facilities; improve conditions for fish and wildlife; and generate and sell electrical power as an incident of the foregoing purposes.

The specific problems and needs addressed by the Project were identified during the planning activities for the 1979 Definite Plan Report (DPR)(pp. 16-24) and the 1980 Final Environmental Statement (INT FES 80-18)(1980 FES). The problems and needs addressed by the Project are:

1. An unreliable and inadequate water supply for irrigation results from the limited storage and river flow regulation available from either the Animas or LaPlata Rivers.
2. The available water supply for municipal and industrial use is inadequate.
3. Economic betterment is needed for local (project area) residents, particularly the Native American and Spanish-American populations.
4. Expanded and new recreation facilities would be required to meet present and future demand.
5. Local fishing opportunities are limited and should be enhanced.
6. Colorado Ute Indian water right claims in southeast Colorado awaited settlement.

Authorizing Legislation

The proposed Project was authorized for construction by the Colorado River Basin Project Act of September 30, 1968 (Public Law 90-537) as a participating project of the Colorado River Storage Project (CRSP) Act of April 11, 1956 (Public Law 84-485). Subsequent authorizations for the construction, operation and maintenance of the Project are in Title V of the Colorado River Basin Project Act and the Colorado Ute Indian Water Rights Settlement Act of 1988 (Public Law 100-585)(Settlement Act).

Colorado Ute Indian Water Rights Settlement

The design, construction, and operation of the present Project is related to issues concerning Indian water rights under the Winters Doctrine between the two Colorado Ute Indian Tribes and non-Indian water users in southwestern Colorado and northwestern New Mexico.

The Southern Ute Indian Tribe and the Ute Mountain Ute Tribe, headquartered in Ignacio and Towaoc, Colorado respectively, have reservations within the Animas and LaPlata River drainages, as well as in drainage basins of other streams tributary to the San Juan River in New Mexico. Because the Ute Reservations were created prior to non-Indian settlement in the San Juan River basin, the water rights of the tribes on local rivers would likely receive a higher priority than those of non-Indian water users under the Winters Doctrine. For a number of years, the Colorado Ute Tribes pursued an equitable settlement of their water rights claims in these river drainages.

The State Engineer of Colorado projected the potential effect of outstanding Ute Indian water right claims on non-Indian water rights and determined that, on those streams and rivers with high water use, tribal claims could have an adverse impact on non-Indian water users. For example, the State Engineer projected in the Mancos and LaPlata river drainages that all non-Indian irrigation could be eliminated if Tribal water rights claims were fully exercised. Tribal claims would still have been only partially satisfied under those circumstances.

The city of Durango's municipal water supply from the Florida River (the city's primary source) could have been significantly reduced if Tribal claims were exercised. Durango's water rights are even less reliable on the Animas River. During water shortage years, the Tribes could have exercised senior water rights to virtually all available water on numerous stream and rivers in the San Juan River basin. More than 34,000 acres of land irrigated by non-Indians could be adversely affected if a settlement of Indian Water rights claims had not been negotiated.

The Settlement Agreement specifies delivery of Project water to the Tribes by January 1, 2000, to avoid potential litigation or renegotiation of the Tribe's water right claims. Specifically, the Project reserved water rights (water allocated to the Tribes from the Animas-LaPlata Project) granted by the Settlement Agreement entitle the Tribes to receive and beneficially use water from the Animas-LaPlata Project, as measured at Ridges Basin Dam and Reservoir or at the point on the Animas River where diversions are made to the Durango Pumping Plant. The final settlement of the Tribes' reserved water rights claims on the Animas and LaPlata Rivers is subject to the following conditions as stated in the Settlement Agreement:

1. Ridges Basin Reservoir, Long Hollow Tunnel, and the Dry Side Canal to the turnout of the Dry Side Lateral are to be completed so as to enable delivery of water to the Tribe on or before January 1, 2000.
2. If those features are not completed by January 1, 2000, then by January 1, 2005 the tribes must elect either to retain the project reserved water right or commence litigation or renegotiation of its pending reserved water rights claims.

Related Water Right Claims and Waivers

On December 19, 1991, the final consent decree, which implemented certain provisions of the Settlement Agreement, was signed in District Court for Water Division No. 7, State of Colorado. With the consent decree in place, the Ute Tribes waive any and all claims to water rights in the State of Colorado not expressly identified in the decree after certain requirements are completed. A portion of their water claims are developed in McPhee Reservoir as part of the Dolores Project; their waiver of claims to the Mancos River was effective when the Towaoc-Highline Canal, a feature of the Dolores Project, was completed in 1994 to deliver Dolores Project water to Ute Mountain Ute Reservation lands.

With completion of that canal, all of the Colorado Ute water right claims have been met, except for those in the Animas and LaPlata Rivers. Final settlement of the Tribal Claims on those two rivers would be achieved by construction of the Project for storage of their allocated Project water in Ridges Basin Reservoir by January 1, 2000.

Cost-Sharing and Project Phasing

On August 15, 1985, the U.S. Congress in Public Law 99-88 appropriated \$1 million for design and construction of the Animas-LaPlata Project. The use of those funds was contingent upon the completion by June 30, 1986, of a binding, Federal/non-Federal cost-sharing agreement satisfactory to the Secretary of the Interior. Consequently, in late 1985, the Project proponents and the States of Colorado and New Mexico entered into negotiations for a cost-sharing agreement.

In March 1986, the State of Colorado was successful in reaching an agreement in principle with the two Ute Indian Tribes on their water rights claims and on a proposed cost-sharing agreement for the Project. This proposal, however, did not meet all the Federal needs to resolve the Ute Indian Tribe's water right claims or to satisfy the economic criteria for a suitable cost-sharing agreement. After continued negotiations, the parties signed the final cost-sharing agreement on June 30, 1986, and the Settlement Agreements on December 10, 1986. Provisions for implementation of the latter are contained in the Colorado Ute Indian Water Rights Settlement Act of November 3, 1988 (Public Law 100-585).

A principal element of the cost-sharing agreement and the Indian water rights settlement was dividing construction of the Project into two phases, Phases I and II. Further, the cost-sharing agreement establishes a tribal development fund and other Project financial arrangements. It also specifies that the Tribes, under provisions of Federal law, can lease or temporarily dispose of water to the extent also permitted by State and Federal laws, interstate compacts, and international treaties.

The Leavitt Act of July 1, 1932 (42 Stat. 564), as amended, states that the Tribes' irrigation construction costs are deferred for as long as the land remains in Indian ownership. Repayment of operation, maintenance, and replacement costs for Project facilities to deliver irrigation water to the Southern Ute Indian Tribe and Ute Mountain Ute Tribe would be deferred until this water is leased or otherwise used. For the Tribes, the amount in excess of payment capacity would be paid by appropriated revenues over 30 years.

General Characteristics of the Project Area

A key element of the cost-sharing agreement and Indian Water Rights settlement was to construct the Project in two phases. Two-phase construction was proposed as a means of increasing the necessary cost-share contributions made by sponsors, while still providing a water supply for the two Ute Tribes. Phase I would supply water for the two Ute Tribes at Ridges Basin Reservoir, construct irrigation facilities to serve most of the non-Indian Project area and some Indian lands, and provide the full non-Indian M&I water supply. Phase I would be funded from Federal and cost-shared sources. Phase II would be constructed to deliver Project water to the remainder of the Project area. It would be entirely funded by cost-sharing sources.

Included in Phase I non-Indian irrigation areas are full service and supplemental service areas. A full water supply would be provided to 21,122 acres in the Dryside and Red Mesa areas of Colorado. These lands are currently dry farmed. A supplemental water supply would be provided to 14,000 acres under Phase I of the Project. These lands are located in the Red Mesa, Thompson Park, and Hesperus areas of Colorado and currently receive a limited irrigation water supply from the LaPlata River and Cherry Creek. The Southern Ute Indian Reservation would receive a full water supply to 1,413 acres in Colorado both within and outside the contiguous reservation boundaries under Phase I of the Project. These lands are presently undeveloped timberland. Phase I of the Project would also provide full service and supplemental service to non-Indian lands in New Mexico. The Project would provide 2,630 acres a full water supply and 3,650 acres a supplemental water supply. The full service acres are presently uncultivated brushlands. The supplemental service acres currently receive a partial supply of irrigation water from the LaPlata River.

Under Phase II of the Project, 10,378 acres in Colorado would be provided a full water supply for irrigation. The Southern Ute Indian Reservation would be provided a full water supply for 387 acres in addition to lands irrigated in Phase I. Phase II would provide a full water supply to 11,600 acres within the Ute Mountain Ute Reservation in Colorado and an additional 380 acres of reservation lands in New Mexico. These lands lie primarily in the western segments of the Project and are largely undeveloped with sparse livestock grazing on native desert vegetation as the only agricultural activity. Under Phase II of the project, 1,900 acres in New Mexico would receive a full water supply in addition to the acres provided full service under Phase I.

Table 1 describes Project acres under Phase I and Phase II for Colorado and New Mexico.

The present agricultural economy in the irrigated areas of both States is based upon a livestock industry, and most of the irrigation water is used to produce feed and forage crops. The crops are utilized to support beef cattle and some sheep, most of which are grazed in the surrounding mountains or adjacent lowlands. A few dairy farms are located throughout the area but distance to processing plants make marketing difficult and expensive.

Cropping patterns in the non-irrigated areas of the Project are fixed by climate, precipitation, and market conditions. Climatic conditions vary somewhat within the different Project areas. In the LaPlata, NM area, average precipitation will not support dry farming. The predominate

Table 1. Irrigated Lands Under Phase I and Phase II.

Irrigated Land	Phase I	Phase II	Total Project
		(acres)	
Colorado			
Non-Indian Full Service	21,122	10,378	31,500
Non-Indian Supplemental Service	14,000		14,000
Southern Ute Indian Tribe Full Service	1,413	387	1,800
Ute Mountain Ute Indian Tribe Full Service		11,600	11,600
Subtotal	36,535	22,365	58,900
New Mexico			
Non-Indian Full Service	2,630	1,900	4,530
Non-Indian Supplemental Service	3,650		3,650
Ute Mountain Ute Indian Tribe Full Service		380	380
Subtotal	6,280	2,280	8,560
Total Project Irrigated Lands	42,815	24,645	67,460

vegetation is sagebrush which provides only sparse grazing. Climatic conditions in the rest of non-irrigated areas of the Project are suitable for dry farming, much of which is summer fallow or used for dry bean and wheat production.

Farm budgets have been prepared to represent each of the areas described in Table 1. Payment capacity and benefit budgets were prepared to calculate farmers ability to pay and irrigation benefits, respectively. All budgets were prepared following guidance and procedures of the Bureau of Reclamation in place at the time of project authorization.

Sources of Data

Farm Management Survey

An extensive farm management survey was taken in the Project area in 1972 and updated in 1978. This survey provided valuable data which was used in both the without Project budget analysis and for projections used in the with Project analysis for the 1979 DPR. A

comprehensive and detailed accounting of all farming practices, costs, returns, etc., was taken from approximately 35 percent of all farmers in the Project area. This provided a broad background to establish typical budgets for the various units of the Project.

In 1986 the farm budgets were updated for work involved in the cost-sharing agreement which was entered into at that time. This update work made changes in the farm size and some minor changes in crop rotations from the 1979 DPR. The 1986 farm budgets served as the basis for the current study in terms of farm size and crop rotation. Minor changes in the crop rotation have been made in the current study and will be explained in greater detail later in this report. Producers in the project area were interviewed for this analysis as they were in the past to gather current information relevant to the farm budgets.

Enterprise Studies

Cultural practices, machinery requirements, input rates, and prices paid were taken from Colorado State University and New Mexico State University enterprise budget studies. Preliminary farm budgets were compiled from these University studies and interviews with producers in the Project area were conducted in order to customize the farm budgets to the specific Project area. Machinery prices were obtained from a local equipment dealer in order to obtain current price information for machinery used in the farm budgets.

Other Data Sources

Crop yield and price received data was obtained from Colorado and New Mexico Agricultural Statistics Service publications. Land investment and development costs were obtained from the Federal Land Bank in Durango, CO and Soil Conservation Service offices in Durango, CO and Aztec, NM, respectively. Long term interest rates were obtained from the Federal Land Bank in Durango, CO. Short term interest rates were obtained from the Production Credit Association in Grand Junction, CO. Debt/asset ratios used in payment capacity budgets were obtained from Agricultural Statistics Service publications of Colorado and New Mexico. Tax rates for Colorado farm budgets were obtained from the LaPlata County Assessor's Office and tax rates for New Mexico farm budgets were obtained from the San Juan County Assessor's Office.

Scope of Study

The purpose of this study is to update farm budget information relating to the Animas-LaPlata Project. The most recent update of the original analysis was completed in 1986. Farm Budgets have been prepared for payment capacity analysis and benefit analysis. A payment capacity analysis is conducted to determine the ability of the irrigator to pay operation, maintenance, replacement, and energy costs (OMR&E), reserve fund assessments, and construction costs. The

amount which irrigators are able to pay toward project costs is that portion of the increased net farm income of the project area attributable to the increased water supply and project works after allowances have been made for returns to the farmer's capital investment, management, and to family labor. Direct user benefits from irrigation are measured by the increase in net farm income resulting from increased agricultural production under future conditions with the project as compared to future conditions without the project. The increased net farm income is measured by typical farm budgets or crop enterprise budgets which represent expected future conditions.

Payment capacity and benefit farm budgets have been prepared for without project and with project conditions representing the areas presented in Table 1. The Indian areas of the project have been represented with one farm budget due to the similar nature of the existing conditions and anticipated future conditions. Without project farm budgets were not prepared for Indian areas of the project or New Mexico full service project areas. Under existing conditions, little agricultural activity occurs except for sparse grazing.

CHAPTER 2. - BASIC INPUT-OUTPUT DATA

Level of Management

The level of management presently found in the irrigated portion of the project is considered as average or even slightly below when compared to National management levels in agriculture. The utilization of fertilizer, water, and labor is much lower than is found in most irrigated areas. This is primarily due to water shortages which do not allow the farmers to take advantage of increased yields which can be obtained by fertilizing according to crop requirements and proper use of other crop inputs. Labor could also be used more efficiently by rescheduling many of the work projects and annual maintenance work so that the farmers could decrease the amount of required hired labor.

For budgeting purposes under project conditions, a higher level of management has been projected. It is assumed that in order to stay in the business of farming, a farmer would have to utilize the latest methods and technology. Nearly optimal amounts of fertilizer and water would be applied, and hired labor would be kept to a minimum. It is also anticipated that irrigation scheduling would be increasingly utilized. More and more farms would be run in a business-like manner with management and efficiency as the main keys to success. Levels of management projected for payment capacity approximate a level of management anticipated to be obtained by full-time farmers in the project area with a full supply of water. Levels of management projected for the benefit studies were based on efficiencies of production which full-time farmers would obtain 20 years following the development period.

Representative Farm

As mentioned above, farm budgets have been prepared to represent each of the areas described in Table 1. Budgets have been developed for calculation of payment capacity and irrigation benefits. Project service areas which farm budgets have been developed for include Red Mesa, Thompson Park -Hesperus area, Dryside, Red Mesa area, Ute Mountain Ute and Southern Ute Indian Reservations, and the South LaPlata area. With project and without project budgets have been developed in order to measure the increase in payment capacity and irrigation benefits due to development of the project. Without project budgets were not developed for Indian and New Mexico full service areas. Only small amounts of leased grazing takes place on the sparse desert vegetation in these areas. Table 2 describes the farm budgets prepared and the areas they represent.

Table 2. Areas Represented by Farm Budgets.

Budget Name	Budget Code	Farm Type	With or Without Project	Repayment or Benefit	Service Area
CO Supplemental Service	1R	Livestock, Crop	Without	Repayment	Red Mesa, Thompson Park-Hesperus
CO Supplemental Service	1B	Livestock, Crop	Without	Benefit	Red Mesa, Thompson Park-Hesperus
CO Supplemental Service	2RW	Livestock, Crop	With	Repayment	Red Mesa, Thompson Park-Hesperus
CO Supplemental Service	2BW	Livestock, Crop	With	Benefit	Red Mesa, Thompson Park-Hesperus
CO Full Service	3R	Dryland Crop	Without	Repayment	Dryside, Red Mesa
CO Full Service	3B	Dryland Crop	Without	Benefit	Dryside, Red Mesa
CO Full Service	4RW	Livestock, Crop	With	Repayment	Dryside, Red Mesa
CO Full Service	4BW	Livestock, Crop	With	Benefit	Dryside, Red Mesa
Indian Full Service	5RW	Livestock, Crop	With	Repayment	Ute Mountain Ute, Southern Ute
Indian Full Service	5BW	Livestock, Crop	With	Benefit	Ute Mountain Ute, Southern Ute
NM Supplemental Service	6R	Livestock, Crop	Without	Repayment	South LaPlata
NM Supplemental Service	6B	Livestock, Crop	Without	Benefit	South LaPlata
NM Supplemental Service	7RW	Livestock, Crop	With	Repayment	South LaPlata
NM Supplemental Service	7BW	Livestock, Crop	With	Benefit	South LaPlata
NM Full Service	8RW	Livestock, Crop	With	Repayment	South LaPlata
NM Full Service	8BW	Livestock, Crop	With	Benefit	South LaPlata

Type of Operation

Types of farms and sizes of operating units used in the farm budgets are based on information obtained from previous studies completed for this project. Farming operations in the project area are predominately livestock and crop operations. Livestock enterprises consist mainly of cow-calf

enterprises with a small number of dairy operations. Dairy operations have not been budgeted in this analysis due to the declining number of dairies in the project area. Crop enterprises include cash crop and livestock feed enterprises. Cash crops are grown in a crop rotation and include alfalfa hay, small grains, dry beans, and grain corn. Feed for livestock raised on-farm include alfalfa hay, pasture, and some corn silage.

There are both dryland and irrigated farming practices in the project area. Dryland farming areas include the Dryside and Red Mesa areas and irrigated farming areas include the Thompson Park and Hesperus areas, and the project areas in New Mexico. Irrigation methods practiced are almost exclusively flood irrigation. Dryland crops budgeted in this analysis include wheat, pinto beans, and summer fallow. Irrigated crops budgeted in this analysis include alfalfa, oats produced both for hay and grain, corn silage, and irrigated pasture.

Livestock are grazed on both private and public range. Private rangeland grazing includes owned rangeland and leased rangeland from private sources. Public rangeland includes grazing permits on Bureau of Land Management (BLM) or United States Forest Service (Forest Service) lands. Other sources of grazing include crop aftermath. Livestock operations budgeted are cow/calf operations with calves sold in the fall at weaning time. This is the predominant type of livestock operation in the area although some producers retain ownership of the calves and feed them through the winter, selling the calves in the spring.

Farm Size

Farm sizes vary somewhat depending on the area represented and type of budget. The farm size in Colorado is larger than farm sizes in New Mexico due to larger cow herd sizes in Colorado. Larger cow herd size requires more native rangeland for grazing and therefore larger farm size. Irrigated crop land is relatively equal across all farm budgets. Table 3 presents the farm size for the representative farm budgets in this analysis. Irrigated, dryland, rangeland, and total farm size are presented along with cow herd sizes on an exposed female basis and the specified amount of leased grazing in the farm budget.

Crop Distribution

The cropping pattern in the project area is influenced by an interrelationship of climate, water supply, and location. Improving the water supply in the presently irrigated area would encourage better rotation and fertilizer programs and result in increased yields but would not significantly change the types of farming. Providing irrigation water to the areas which are not irrigated at the present time would change the dry farming or livestock grazing to the same type of farming and cropping pattern found in the presently irrigated areas.

Table 3. Farm Size Projected for Farm Budgets.

Budget Number	Irrigated	Dryland	Rangeland	Total Farm Size	Cow Herd Size	Leased Grazing
	(acres, incl farmstead)	(acres)	(acres)	(acres)	(females exposed)	(aum)
1R	444 ⁴²⁵	219	1,193	1,856	150	689
1B	467	240	1,200	1,907	150	693
2RW	415 ²⁰²	80	820 ¹²⁵	1,315	150	465
2BW	525	110	825	1,460	150	468
3R	0 ²⁰²	1,300	950	2,250	0	0
3B	0	1,300	950	2,250	0	0
CD 4RW	415 ²⁰²	80	820	1,315	150	465
4BW	525	110	825	1,460	150	468
5RW	415 ²⁰²	80	820	1,315	150	465
5BW	525	110	825	1,460	150	468
6R	406 ⁶⁷⁶	0	625	1,031	115	625
6B	443	0	630	1,073	115	630
NM 7RW	416 ²⁰⁵	0	630	1,046	115	357
7BW	515	0	635	1,150	115	360
8RW	416 ²⁰⁵	0	630	1,046	115	357
8BW	515	0	635	1,150	115	360

Storage water provided by the project would enable the farmers to improve a number of their farm management practices. In the supplemental service area, the additional water provided by the project would enable the farmers to make further improvements. These improvements would result largely from additional water and fertilizer and would be reflected in increased yields. There would also be an overall improvement from bringing land into production that is now permitted to remain idle in order to establish a balance between the crop requirements and the amount of water that is available in the late season.

Irrigation water in the full service areas would result in some rather substantial changes in farming practices. Where the land can now be utilized only for grazing or production of dryland wheat and beans, irrigation water would enable the farmers to produce any crops climatically adapted to the area for which they could establish a market.

It is anticipated that under project conditions the same crops would be produced in about the same proportions in the supplemental service areas. Alfalfa, pasture, small grains, and some corn silage would make up the crop rotation, with alfalfa being the predominant crop in the rotation. Other crops are climatically adapted to the project area and could, in the future, be a part of the crop rotation. These include potatoes, onions, carrots, and alfalfa seed. Such crops are not presently being grown in the project area and were not considered in the farm budget studies. Projected crop distributions for both the repayment and benefit analyses for the service areas are presented in Table 4.

Table 4. Cropping Pattern for Animas-LaPlata Farm Budgets. (acres)

Budget Number	Alfalfa	Alfalfa Establishment	Oats	Corn Silage	Irrigated Pasture	Dryland Wheat	Dryland Pinto Beans	Summer Fallow	Farmstead or Waste	Range
1R	250 673	42 673	42 673	0	90 673	73 202	73 202	73 202	20 20	1193-30
1B	270	45	45	0	77	80	80	80	30	
2RW	250 202	42 202	42 202	0	56 202	0	80 202	0	20 25	820-30
2BW	335	60	60	0	45	0	110	0	25	
3R	0	0	0	0	0	330 202	750 202	190 202	20 30	950-30
3B	0	0	0	0	0	330	750	190	30	
4RW	250 202	42 202	42 202	0	56 202	0	80 202	0	20 25	820-30
4BW	335	60	60	0	45	0	110	0	25	
5RW	250 202	42 202	42 202	0	56 202	0	80 202	0	20 25	820-30
5BW	335	60	60	0	45	0	110	0	25	
6R	250 676	42 676	42 676	0	52 676	0	0	0	20 6 25-33	
6B	285	48	48	0	42	0	0	0	20	
7RW	220 205	37 205	37 205	60 205	42 205	0	0	0	20 5 20	630-33
7BW	285	48	48	80	34	0	0	0	20	
8RW	220 205	37 205	37 205	60 205	42 205	0	0	0	20 5 20	630-33
8BW	285	48	48	80	34	0	0	0	20	

ALL NOS +125

Without Project costs should be the same as, or less than
Crop Yield with Project

Project areas represented by the farm budgets have been classified, and only the most productive soils would receive project water, ensuring that these lands would have the capability to support a farm family and pay estimated water charges for the life of the project. On this basis, projected crop yields were estimated for both the repayment and benefit analysis, with the repayment

reflecting yields expected at the end of the development period and the benefits approximately 20 years following the development period. Yields reported by farmers in the area were used in the farm budgets representing the without project condition. Yields estimated for with project conditions, with some adjustments to reflect the appropriate time period of analysis, were made for lands receiving a full supply of water under sprinkler irrigation.

Table 5 presents crop yields utilized in the farm budget analysis. The alfalfa establishment enterprise is composed of alfalfa being planted in the spring along with oats for a cover crop. In this analysis, it is assumed oat hay is harvested from the oat cover crop in the first year. Alfalfa is harvested in the following year as part of the established alfalfa enterprise. In the oats enterprise, grain is harvested in Colorado and oat hay is harvested in New Mexico. Yields for oats straw are based on a ratio of bales of straw to bushels of oats harvested. It is assumed in this analysis that one 50 pound bale of straw is harvested for every one bushel of oats harvested. Yields for irrigated pasture and rangeland are reported on an animal month/unit (aum) basis. An animal unit month is the amount of forage required to support one 1,000 pound cow and her calf for one month.

Price Received

Reclamation Instructions provide for three methods in determining price received by farmers. The three methods are 1.) an average of the most recent three years of data, 2.) an average of the three most "normal" years over the most recent five years, and 3.) in the case of specialty crops where prices are determined by producer-processor contracts which have a sustained upward trend, the "normalized" price should be the most recent price. A normalized price is calculated by taking an average of the most recent five years of data, removing the two years which deviate the most from this five year average, and averaging the remaining three years of data. In this study, prices received have been determined using an average of three years of data from 1990 to 1992. This method was used because there has been a steady decline in prices received for most crops in this analysis over the past four years.

Price received by farmers are calculated from data taken from Colorado Agricultural Statistics and New Mexico Agricultural Statistics. These publications are published cooperatively by the United States Department of Agriculture (USDA) and the Departments of Agriculture for the state of Colorado and New Mexico, respectively. Data for LaPlata County, Colorado and San Juan County, New Mexico were used in this analysis to capture price levels relevant to the project area. In the case of alfalfa and other hay, the three year average price received for each county was averaged together to reflect a common market for the entire project area. Price received data for corn silage is not collected and published in above named publications. As a result, price received for corn silage is based on information obtained from producers in the area. Price received data for oats straw is not collected and published, either, and is based on information obtained from producers in the area. Table 6 presents the price received by farmers utilized in

this analysis. Appendix A presents data for price received for each state over the time period of 1988 to 1992.

Table 5. Crop Yields for Animas-LaPlata Farm Budgets.

Crop	Units	Colorado		New Mexico	
		Without Project		Without Project	
		<u>Repayment</u>	<u>Benefit</u>	<u>Repayment</u>	<u>Benefit</u>
Alfalfa	ton/ac	2.00	2.50	2.50	3.00
Dryland Wheat	bu/ac	16.70	22.00	0.00	0.00
Oats	bu/ac	50.00	65.00	0.00	0.00
Corn Silage	ton/ac	0.00	0.00	0.00	0.00
Pinto Beans	cwt/ac	4.22	4.50	0.00	0.00
Oat Hay	ton/ac	1.50	2.25	1.50	2.25
Irrigated Pasture	aum/ac	1.70	2.00	4.50	5.70
Rangeland	aum/ac	0.20	0.20	0.20	0.20
Oat Straw	ton/ac	1.25	1.80	0.00	0.00
		With Project		With Project	
Alfalfa	ton/ac	5.25	6.00	5.75	6.50
Dryland Wheat	bu/ac	0.00	0.00	0.00	0.00
Oats	bu/ac	100.00	110.00	0.00	0.00
Corn Silage	ton/ac	0.00	0.00	30.00	35.00
Pinto Beans	cwt/ac	4.22	4.50	0.00	0.00
Oat Hay	ton/ac	3.00	4.00	3.00	4.00
Irrigated Pasture	aum/ac	8.50	10.50	8.50	10.50
Rangeland	aum/ac	0.20	0.20	0.20	0.20
Oat Straw	ton/ac	2.50	2.75	0.00	0.00

Table 6. Price Received for Animas-LaPlata Farm Budgets.

Crop	Units	Colorado		New Mexico	
		Without Project		Without Project	
		<u>Repayment</u>	<u>Benefit</u>	<u>Repayment</u>	<u>Benefit</u>
Alfalfa	\$/ton	90.25	90.25	90.25	90.25
Dryland Wheat	\$/bu	2.90	2.90	0.00	0.00
Oats	\$/bu	1.67	1.67	0.00	0.00
Corn Silage	\$/ton	0.00	0.00	0.00	0.00
Pinto Beans	\$/cwt	16.00	16.00	0.00	0.00
Oat Hay	\$/ton	76.92	76.92	76.92	76.92
Irrigated Pasture	\$/aum	0.00	0.00	0.00	0.00
Rangeland	\$/aum	9.00	9.00	0.00	0.00
Oat Straw	\$/ton	70.00	70.00	0.00	0.00
Crop	Units	With Project		With Project	
Alfalfa	\$/ton	90.25	90.25	90.25	90.25
Dryland Wheat	\$/bu	0.00	0.00	0.00	0.00
Oats	\$/bu	1.67	1.67	0.00	0.00
Corn Silage	\$/ton	0.00	0.00	22.00	22.00
Pinto Beans	\$/cwt	16.00	16.00	0.00	0.00
Oat Hay	\$/ton	76.92	76.92	76.92	76.92
Irrigated Pasture	\$/aum	0.00	0.00	0.00	0.00
Rangeland	\$/aum	9.00	9.00	0.00	0.00
Oat Straw	\$/ton	70.00	70.00	0.00	0.00

Capital Investment

Capital investment in this analysis is based on the types, amounts, and values of the various assets found on typical farms in the project area. The value of farm assets is based on market values or on new replacement costs. Capital investment in farming operations has increased rapidly in recent years, and farmers must spread their fixed costs over as many acres as possible. Investments in land from outside capital have resulted in a strong demand and inflated land value.

Farmers' estimates, secondary data, estimated land development costs, and other items of capital investment were considered in determining the various land values.

Land Value

Land values are affected by location, degree of development, water supply, drainage, and land class. Land investment values have been based on estimates made by agricultural professionals including rural appraisers in the project area. Market values for lands in the project area were secured by interview. These values concur with estimates made by most of the farmers in the project area.

Most of the appraisers' estimates were based on recent sales which have taken place within the area, but an attempt was made to reflect an agricultural value rather than the inflated value for which some parcels of land are selling at the present time. Investment values for rangeland with improvement potential for irrigation and currently dry farmed lands in Colorado and New Mexico were estimated to range from \$100 to \$150 per acre with an average of \$125 in the project area. This value per acre is the base land value and development costs for sprinkler irrigation are in addition to this base price per acre. Development costs for sprinkler irrigation include clearing, leveling, ditches, and fencing.

Clearing

Clearing costs vary in the project area depending on the type and amount of cover on the land. There are two main types of cover which need to be removed for irrigation to take place, sagebrush and pinion-juniper trees. In the first year of development, sagebrush removal has been estimated to cost \$40-\$50 per acre with an average of \$45 per acre. Also in the first year of development pinion-juniper removal has been estimated to cost \$250 per acre. Some cleanup work would be required in the second year of development and has been estimated to cost \$25 per acre. In this analysis it is assumed one half of the land has sagebrush cover and one half of the land has pinion-juniper cover. Land clearing costs in the first year of development are estimated to be \$147.50. In the second year of development, follow up work is estimated to be \$25 per acre. Total land clearing costs are assumed to be \$172.50, rounded to \$172.00 per acre.

Leveling

Leveling costs vary according to the amount of soil that must be moved. The project lands would require only some land shaping which would not change the general gradient of the land. Land leveling to this extent would facilitate the use of equipment which would include farm machinery and sprinkling systems. Lands presently irrigated in Colorado and New Mexico utilize a contour irrigation system, which required very little initial leveling. It is estimated that the average cost of leveling would be approximately \$75 per acre.

On-Farm Distribution System

For without project farm budgets, the existing gravity irrigation system must be included in the land development costs. This type of irrigation system would consist of some permanent structures such as headgates, checks, and division boxes, as well as a network of small ditches to distribute the water. Based on a field size of 40 acres, it is assumed three miles of on-farm ditches and permanent structures would be required to adequately irrigate this field. These ditches and permanent structures would cost \$1.00 per foot of ditch. Investment costs for an on-farm irrigation system total \$396 per acre. Sprinkler irrigation system costs for with project farm budgets will be explained later in this report.

Fencing

The amount of fence on each farm would vary with the size, shape, and type of farm, the location of public roads, and the boundaries common to neighboring farms. All permanent fences are assumed to be four strand barbed wire with three steel posts and one cedar post. The amount of fencing required has been determined for budgets representative of farms in Colorado and New Mexico. The average farm size in Colorado is 1,659 acres, or 2.6 sections of land. In this analysis, it is assumed 9.2 miles of fence would be required on this farm. This is calculated by fencing the boundary of the farm and two main cross fences following section lines. The average farm size in New Mexico is 1,083 acres, or 1.7 sections. Following the same procedure, 6.4 miles of fence would be required on New Mexico farms. The investment costs for this fence configuration is estimated to be \$5,500 per mile of fence. The average fence investment cost are calculated to be \$30.00 per acre in Colorado and \$33.00 per acre in New Mexico. Table 7 presents land investment values and development costs for the farm budgets in this study.

Repair work for fences has been broken down into material and labor expenses. Repair materials are based on linear feet of fence. After converting total miles of fence to feet and dividing by total farm acres, there is 29 feet of fence per acre in the Colorado budgets and 31 feet of fence per acre in the New Mexico budgets. Fence repair materials are estimated to cost \$0.05 per linear foot of fence. Labor spent on repair work totals 0.07 hrs per acre based on conversations

with producers in the project area. Family or hired labor would be utilized for fence repair. Labor costs will be explained later in the text.

Table 7. Land Investment Value and Development Costs for Farm Budgets.

	Colorado	New Mexico
	(\$/acre)	(\$/acre)
Land Value	125	125
<u>Development Costs</u>		
Clearing		
1st Year	147	147
2nd Year	<u>25</u>	<u>25</u>
Subtotal Clearing	172	172
Leveling	75	75
On-Farm Distribution System	396	396
<u>Fencing</u>	<u>30</u>	<u>33</u>
Total Investment Costs	798	801

This table is not complete

Farm Buildings

Farm building requirements for this analysis are based on data obtained from university enterprise studies and conversations with producers in the project area. Farm buildings in this analysis include a shop/shed, grain bin, hay shed, and calving shed. The shop/shed building is assumed to be a post-frame structure with a concrete floor adequate for storage of machinery and space for repair work to be performed. The grain bin is assumed to be a steel bin with a concrete floor. The hay shed is assumed to be a post frame structure with open sides. The calving shed is assumed to be a post frame structure adequate to provide shelter for cows during calving. Facilities for assisting cows during calving include a head-catch gate and a few inside pens and are included in the cost of the calving shed. Table 8 presents a list of farm buildings utilized in this analysis along with investment costs. Farm budgets for New Mexico project areas do not have a grain bin entered into them. There is no grains harvested in these budgets and so no grain bins are required.

Repair expenses for farm buildings are based on hours of use of the farm buildings. Hours of use for the farm buildings are based on such factors as time spent repairing machinery, storing harvested crops, or time spent assisting cows during calving. The estimated repair cost are assumed to be \$0.10 per hour of use.

Table 8. Farm Buildings Utilized in Farm Budgets.

Farm Buildings	Size of Capacity	Investment Value
Shop/Shed	40' x 60'	\$30,000
Grain Bin	2,500 bushel	2,500
Hay Shed	20' x 120'	8,400
<u>Calving Shed</u>	30' x 81'	<u>8,500</u>
Total Investment		\$49,400

Machinery and Equipment

Machinery and equipment found in the project area would vary greatly as to kind and quality among farms. Information pertaining to the machinery and equipment used in this analysis has been obtained from university enterprise studies and interviews with producers in the area. It was assumed that a farmer would own all the machinery necessary to efficiently carry out his farm operations, with the exception of a few items that would only be used for short periods each year and have high investment costs. Among these types of machinery are harvesting equipment such as combines. It was assumed harvesting of grains would be performed by custom work in the farm budgets. Machinery prices were obtained from local dealers in the project area and indexed to a 1992 price level.

Non-Power Machinery

Non-power machinery types include tillage, planting, cultivating, and harvest equipment. Machinery sizes are of sufficient capacity to complete the required farming operations in a timely manner. Table 9 presents a listing of the non-power machinery along with the investment value, accomplishment rate in terms of hours per acre of use required, and repair costs per hour of use. Repair costs are representative of repair costs among the different farm budgets. These costs vary between farm budgets depending on use rates specified. Each farm budget may not specify all pieces of machinery listed in Table 9. Machinery required for the different crop enterprises are

specified for each farm budget. For example, corn planting, cultivation, and harvesting equipment are only specified in farm budgets where corn silage is a part of the crop rotation.

Table 9. Investment Values and Operating Costs for Non-Power Machinery.

Implement	Size or Capacity	Accomplishment Rate (hour per acre)	Investment Value	Repair Cost per Hour of Use
<u>Tillage Equipment</u>				
Moldboard Plow	4-18's	0.18	\$11,000	\$1.64
Tandem Disk	15'	0.18	9,000	0.91
Flex Tine Harrow	18'	0.15	2,000	0.38
Spike Tooth Harrow	24'	0.15	2,000	0.51
<u>Planting Equipment</u>				
Grain Drill	12'	0.18	7,000	2.12
Bean Planter	6 row	0.18	18,000	1.71
Corn Planter	6 row	0.18	18,000	1.71
<u>Cultivating Equipment</u>				
Field Cultivator (chisel)	18'	0.18	19,000	1.22
Row Crop Cultivator	6 row	0.23	6,000	1.40
Corrugator		0.22	2,000	1.22
Spray Equipment	28'	0.05	4,000	0.90
<u>Harvest Equipment</u>				
Silage Chopper	3 row head	0.37	34,000	3.99
Forage Wagon	14'	0.37	10,000	1.86
PTO Baler, Twine	small square	0.20	16,000	6.67
Rodweeder/Bean Windrower	8 row	0.18	18,000	2.07
Grain Auger	40'	0.20	2,500	0.30

Tractors and Self Propelled Machinery

Tractors included in this analysis are a 70 horsepower tractor and a 120 horsepower tractor. It is further assumed the 70 horsepower tractor has a front end loader attached to it. Investment and repair costs are specified separately from the tractor but useful life for the loader is adjusted to be equal to the useful life of the tractor. Self propelled machinery includes a bale wagon and swather used for harvesting forage crops.

Pickups and Trucks

One three-quarter ton four wheel drive pickup has been specified for the farm budgets. This pickup is specified for general farm use including travel for machinery parts. One two-ton truck with a gasoline engine and hoist has been specified for the farm budgets. This truck is specified for use in transporting harvested crops from the field to storage facilities either on the farmstead or in town. Table 10 presents investment value, accomplishment rates in terms of hours per acre of use, fuel costs per hour of use, and repair costs per hour of use for tractors, self-propelled machinery, pickups, and trucks.

Table 10. Investment Values and Operating Costs for Self Propelled and Power Machinery.

Machinery	Size or Capacity	Accomplishment Rate (hours per acre)	Investment Value	Fuel Cost per Hour of Use	Repair Cost per Hour of Use
Bale Wagon		0.20	82,000	8.93	31.71
Swather	14'	0.20	60,000	4.16	5.95
Tractor #1	70 hp		46,000	3.96	3.48
Tractor #2	120 hp		75,000	6.18	2.55
Truck	2 ton	0.35	20,000	7.00	3.50
Pickup	3/4 ton	0.07	20,000	5.00	3.50
Front Loader			7,000	0.00	2.08

Sprinkler Irrigation System

The Animas-LaPlata Project area contains within its boundaries lands which are rolling and often of steep grades, varying in direction within the same field. Through an extensive study of farming practices and interviews with producers in the area, it was determined that sprinkler systems could make the most efficient use of both labor and water. An on-farm gravity irrigation system for the without project farm budgets has been described previously. For the with project farm budgets, it is assumed in this analysis side roll sprinkler irrigation systems would be installed by producers in the area. It is believed side roll sprinklers would be well suited for the project areas due to terrain and field sizes.

Sprinkler system irrigation costs are based on a field size of 40 acres, assumed to be one-quarter mile square. Two main components are required for a side roll irrigation system, a buried mainline and the sprinkler system. Based on the assumed field configuration, each component would be one-quarter mile in length. In this analysis, buried mainline are assumed to be six inch PVC pipe which costs \$0.80 per foot. Risers are required to bring the water to the surface every 60 feet along the length of the mainline at a cost of \$150.00 each. Labor to install the mainline are assumed to cost \$2.00 per foot of mainline. The cost for the mainline total \$7,000.00, or \$175.00 per acre. The side roll sprinkler system are assumed to be five inch aluminum pipe with seven foot wheels. The installed price for the system are assumed to be \$7,100, or \$177.50 per acre rounded to \$178.00. The cost for the complete sprinkler system total \$353.00 per acre.

Interest Rates and Farm Indebtedness

Costs of investment in fixed capital and operating capital are required to be charged as a production expense in the farm budgets. Fixed capital investments include the land, improvements (clearing, leveling, ditches, and fencing), and buildings. Interest costs for fixed capital are calculated using a long term interest rate. Operating capital investments include machinery investment and production expenses for crop and livestock enterprises. Interest costs for operating capital are calculated using a short term interest rate.

Long Term Interest Rates

Long term interest rates are calculated from information obtained from the Federal Land Bank in Durango, CO. The Durango Federal Land Bank services the entire project area, including producers in New Mexico. A long term average interest rate of 9.4 percent was used in this analysis based on information obtained for years 1990 through 1992. This interest rate is applied to the debt portion of the operator's capital investment.

Short Term Interest Rates

Short term interest rates are calculated from information obtained from Production Credit Association of Grand Junction. The Grand Junction office services producers in the project area. A short term interest rate of 9.79 percent was calculated from information obtained for years 1990 through 1992. Interest expenses for machinery investment and production costs for crop and livestock enterprises are calculated using the short term interest rate. This interest rate is applied to the debt portion of machinery investment and production expenses. Interest is charged for 7 months of the year for crop enterprises and 10 months of the year for livestock enterprises.

Debt/Equity Ratio

Farm indebtedness is computed by using debt/asset ratios for the states of Colorado and New Mexico. Data for each state has been used in farm budgets as they pertain to lands which lie in either state. Debt/asset ratios are reported by state in a United States Department of Agriculture (USDA) publication entitled Economic Indicators of the Farm Sector. A three year average from 1990 through 1992 has been utilized for real estate and non-real estate debt. For Colorado farm budgets, a real estate debt/asset ratio of 13 percent and a non-real estate debt/asset ratio of 29.81 percent have been utilized. For New Mexico farm budgets, a real estate debt/asset ratio of 6.06 percent and a non-real estate debt/asset ratio of 26.81 percent have been utilized. A return to the operators equity of 3.4 percent is charged against the equity portion of the operators capital investment including land, improvements, buildings, machinery, and production expenses.

Depreciation

Annual depreciation costs are included in the farm budgets for machinery, buildings, and any other nonpermanent capital investment. Depreciation charges are based on recovering full current purchase prices using a sinking fund factor determined by the useful life of the capital investment and the appropriate interest rate. In this analysis, long term interest rates are used to calculate depreciation for buildings and land improvements. Short term interest rates are used to calculate depreciation for machinery and sprinkler systems.

Taxes

The tax structure applicable to the project area has been determined from an analysis of the assessed values and mill levies obtained from the County Assessor's offices in Durango, CO and Aztec NM. For taxation purposes, the assessed value of the land as determined by the respective assessor's offices has been used in determining tax expenses in the farm budgets. The method for computing taxes varies between the two states. In Colorado, the assessed land value is

multiplied by an assessment factor of 29 percent. This factored assessment value is then multiplied by the appropriate mill levy to arrive at the producers tax expense. In Colorado machinery and livestock are not taxed. In New Mexico, the assessment value is multiplied directly by the mill levy to arrive at the producers tax expense. Table 11 presents assessed land values for the different land types in the farm budgets and the appropriate mill levies applied in each state.

The state of New Mexico also taxes producers on the investment of farm machinery and livestock. Farm machinery is taxed based on the purchase price of the machinery. For this analysis the investment values presented in Table 9 are used to calculate tax expenses for machinery. The mill levy applied to the investment value for machinery tax is \$22.50 per \$1,000.00. Livestock are taxed based on a taxable value calculated by the assessor's office. Table 11 also presents the assessed valuation for different classes of livestock and the mill levy applied to livestock taxable values.

Table 11. Assessed Valuation and Mill Levies Used For Calculating Tax Expenses.

Land Type	Assessed Valuation (\$/ac)	Assessment Factor	Mill Levy (per \$1,000)
<u>Colorado</u>			
Irrigated Land	232.00	.29	64.40
Dry Farmed Land	72.00	.29	64.40
Rangeland	20.00	.29	64.40
<u>New Mexico</u>			
Irrigated Land	320.00	1.00	22.50
Rangeland	140.00	1.00	22.50
Cows	172.00	1.00	22.50
Bulls	269.00	1.00	22.50
Replacement Heifers	149.00	1.00	22.50
Heifer Calves	103.00	1.00	22.50
Steer Calves	137.00	1.00	22.50

Insurance

Most producers in the project area carry hazard insurance on buildings and a standard insurance on automobiles and trucks. In recent years more producers have begun to carry some liability insurance as an added protection. A cost to cover farm liability insurance is included in the farm budgets. Current insurance rates have been obtained by interview from local professionals in the area. Insurance costs are based on the assumed investments in the farm budgets for buildings, machinery, and livestock.

In addition to liability insurance mentioned above, insurance costs cover fire for the farm buildings, fire insurance on equipment and other improvements such as corrals, vehicle insurance, and coverage for livestock. Table 12 presents annual insurance costs assumed in the farm budgets. Insurance costs for the farm buildings is adequate to cover the buildings specified in Table 8.

Table 12. Insurance Costs for Animas LaPlata Farm Budgets.

Item	Annual Insurance Costs
Buildings	\$460.00 150
Liability	80.00 ✓
Machinery	1,520.00 1000
Corrals	25.00
3/4 Ton Pickup	500.00 500
2 Ton Truck	220.00
Cows (\$/head)	3.50
Bulls (\$/head)	7.42

Labor

There are few full-time hired men on family-sized farms. Extra labor is usually required only for occasional short periods and is usually employed on an hourly or daily basis without full board or room. In interviews with producers in the area it was determined only a limited amount of custom work is employed for such jobs as applying commercial fertilizer, or harvesting of small grains. When required, custom work is entered as an input into a particular crop enterprise.

Operator, Family, and Hired Labor

An irrigated farm should be of sufficient size and productivity to keep the operator and his family gainfully employed throughout the year. The amount of hired labor depends largely upon the type of farming and available family and operator labor. For this study, the farm family is estimated to consist of the two parents and two children under 15 years of age.

The maximum amount of labor which the operator and his family are expected to contribute is 3,930 hours annually, with a maximum of 380 hours per month for the months June, July, and August and 310 hours per month for the months of September through May. It is assumed in this analysis the operator contributes 240 hours per month year round and the family contributes 140 hours per month for the months June through August and 70 hours per month for the months September through May. The assistance of the wife and children is primarily seasonal and limited largely to the months of June, July, and August. During the remainder of the year, family labor would largely be on weekends. Any labor contributed above total operator and family monthly labor is considered to be hired labor.

Labor requirements for crop enterprises are based on accomplishment rates specified for machinery listed in Table 9. The accomplishment rate for the machinery determines the amount of tractor hours required to plant, cultivate, and harvest the crop. In addition to actual time required in the field, there would be time spent traveling to and from the fields, changing from one piece of equipment to another, making adjustments, and marketing crops. The actual time required for each field operation has been increased by 10 percent to allow for these additional labor requirements.

Information on labor distribution throughout the year is taken from secondary sources. The percentage of labor performed in any one month is based on activities needed to be performed in that month. Labor is distributed based on the amount of time and timing of work required for each of field preparation, planting, cultivation, irrigation, and harvesting activities. These estimates also assume average managerial work efficiency and machinery and technology employed by the operator.

Labor requirements for livestock were taken primarily from secondary sources. These data were then adjusted to present and projected long-term managerial practices in the project area. The

total amount of labor for the cow/calf enterprise are assumed to be 1500 hours annually. The distribution of labor throughout the year are assumed to be 15 percent for the months of January through April, 2 percent for the months May through September, and 10 percent for the months October through December. These estimates assume an average managerial work efficiency and the use of typical types of facilities and equipment.

Wage Rates

Wage rates used in this analysis are taken from the USDA's National Agricultural Statistics Service publication Farm Labor. Data for the Mountain II region, which includes Colorado, Utah, and Nevada, was used. An average for 1992 was calculated for field labor and supervisory wage rates. Field labor wage rates were calculated to be \$5.56 per hour, rounded to \$5.60 per hour. This wage rate is applied to family and hired labor. Supervisory wage rate was calculated to be \$7.68 per hour, rounded to \$7.70 per hour. This wage rate is applied to operator labor.

Social Security Taxes and Worker's Compensation Rates

All wages paid to the farm operator, family labor, and hired labor are subject to Social Security Taxes. Tax rates used in the farm budgets are 15.30 percent for the farm operator, and 7.65 percent for farm family and all hired labor. Total Social Security taxes were estimated by multiplying the appropriate tax rate by the estimated wages paid to each wage earner, up to a maximum of \$55,500. Wages over \$55,500 were not subject to Social Security tax.

Worker's compensation rates are based on information obtained from workers compensation insurance providers in the State of Colorado. It was determined \$19.97 per \$100.00 of wages paid was appropriate for a farm consisting of both livestock and crop enterprises. For a farming operation consisting of only crop enterprises, \$13.30 per \$100.00 of wages paid was determined to be appropriate for worker's compensation rates.

Crop Production Expenses

Custom Work

Certain operations in the farm budget are performed by specialized individuals contracted by the farm operator. These include operations such as fertilizer, herbicide and pesticide application, and harvest operations. Chemical application requires licensing by state agencies and also requires specialized equipment. Harvest equipment is normally expensive to own and operate and requires large acreage be covered annually with this equipment in order to justify ownership. In

this analysis, harvesting of grains is performed by custom operators due to high ownership expenses of related machinery. Combining pinto beans is estimated to cost \$1.97 per hundred weight (cwt) of beans harvested. Combining oats is estimated to cost \$19.76 per acre harvested. Combining wheat is estimated to cost \$11.86 per harvested acre. Custom operators normally haul the wheat for the farmer and it is estimated this cost is \$0.18 per bushel of wheat harvested.

Fertilizer

Fertilizer requirements necessary to maintain proper fertility levels were obtained from university enterprise budgets and interviews with area producers. Farmers in the project area are currently using less commercial fertilizer than is recommended by research agencies. This is probably due to a lack of understanding of the cost-return relationship with the use of commercial fertilizer and late season water shortages which prevent farm operators from realizing full benefits. The utilization of commercial fertilizer is certain to increase. The level of farm management under project conditions would continue to rise and optimal quantities of fertilizers could be applied with a full water supply.

It is estimated for this analysis that the usage would be limited to the amount which would maintain the projected crop yields. Fertilizer rates and prices paid are based on a fertilizer mixture consisting of nitrogen, phosphorus, and potassium. Fertilizer rates and prices paid are presented in Table 13 for crop enterprises in which fertilizer is used. Fertilizer is not used in most of the without project farm budgets due to the short water supply. The lack of dependable water to finish crops to maturity discourages producers from applying fertilizer to irrigated crops. Producers in the project area do apply some fertilizer to dryland wheat crops in order to boost yields. Wheat prices tend to be more stable than beans and therefore producers will accept some risk in applying fertilizer in this dryland enterprise.

Herbicide

Noxious weeds such as knapweed, Canadian thistle, bindweed, burdock, white tip, and others are prevalent in the area. About half of the farmers interviewed have used some herbicides with varying degrees of effectiveness. Part of the badly infested fields have received at least initial treatments but with little follow-up. In the farm budgets it was assumed that all of the crops with the exception of irrigated pasture would be sprayed for weed control. The herbicides used include Sencor, Roundup, and 2-4-D. These herbicides are intended to be representative of current practices by producers in the area. New and better sprays at competitive prices will undoubtedly be developed in the future. Table 14 presents the herbicides used in the farm budgets, the assumed application rates, and prices paid by producers.

Table 13. Fertilizer Rates and Prices Paid for Repayment Farm Budgets.

	Units	Without Project	With Project	Price Paid
<u>Alfalfa</u>				
Phosphate 0-45-0	lbs/ac	0	150	\$0.28
<u>Alfalfa Establishment</u>				
Phosphate 0-45-0	lbs/ac	0	40	0.28
Nitrogen 33-0-0	lbs/ac		75	0.25
<u>Oats</u>				
Phosphate 0-45-0	lbs/ac	0	40	0.28
Nitrogen 33-0-0	lbs/ac	0	75	0.25
<u>Corn Silage</u>				
Anhydrous Ammonia	lbs/ac	0	225	0.11
<u>Irrigated Pasture</u>				
Urea 46-0-0	lbs/ac	0	100	0.28
<u>Dryland Wheat</u>				
Phosphate 0-45-0	lbs/ac	6.75	0	0.28

Table 14. Herbicide Rates and Prices Paid for Farm Budgets.

	Units	Without Project	With Project	Price Paid
<u>Alfalfa</u>				
Sencor	lbs/ac	0.35	0.35	\$28.06
<u>Alfalfa Establishment</u>				
Treflan	pints/ac	0.00	1.00	5.93
<u>Oats</u>				
2-4-D ¹	pints/ac	1.00	1.00	1.48
<u>Corn Silage</u>				
Herbicide ²	acre	0.00	1.00	10.87
<u>Dryland Wheat</u>				
2-4-D	pints/ac	1.00	0.00	1.48
<u>Summer Fallow</u>				
Roundup	pints/ac	1.50	0.00	8.91
2-4-D	pints/ac	1.00	0.00	1.48

¹ 2-4-D is not used in the oat hay enterprises defined in the New Mexico farm budgets.

² A specific herbicide was not defined for corn silage in university enterprise studies or in interviews with producers. The cost is taken from university enterprise studies.

Seed Cost

Seeding practices, rates of application, and prices paid were obtained from university enterprise studies and producers in the area. Seeding rates vary between with project farm budgets and without project farm budgets. Producers in the area do not seed to recommended seeding rates in without project farm budgets due to the known water shortages. This has the effect of reducing losses in the event of crop failure. With a full water supply producers will seed to recommended seeding rates and this will help in achieving higher yields in the farm budgets.

The alfalfa establishment enterprise has both alfalfa seed and oat seed in the farm budgets with the exception of the Colorado without project farm budgets. Only alfalfa is seeded in these budgets. Producers in the area indicated they do not use a cover crop when establishing the alfalfa stand with the current short water supply conditions. In the New Mexico without project farm budgets the alfalfa establishment enterprise uses the same seeding rates as the with project farm budgets due to the more reliable water supply for these producers.

The oats enterprise is a rotation crop in the farm budgets. In the Colorado farm budgets grain is harvested from this enterprise and the seeding rate varies between without and with project conditions. In the New Mexico farm budgets hay is harvested from this enterprise and seeding rates do not vary between without and with project conditions. Table 15 presents seeding rates for with and without project budgets along with prices paid for seed.

Table 15. Seed Rate and Prices Paid for Farm Budgets.

	Units	Without Project	With Project	Price Paid
<u>Alfalfa Establishment</u>				
Alfalfa Seed	lbs/ac	5.50	20.00	2.47
Oat Seed	lbs/ac	0.00	45.00	0.12
<u>Oats</u>				
Oats for Grain	lbs/ac	45.00	100.00	0.12
Oats for Hay	lbs/ac	45.00	45.00	0.12
Corn Silage	1000 seeds/ac	0.00	30.00	0.87
Dryland Wheat	lbs/ac	45.00	0.00	0.17
Pinto Beans	lbs/ac	15.00	15.00	0.25

Miscellaneous Costs

Miscellaneous costs would include costs for items which do not fall under the above crop production expense categories. Such costs would be baling twine, soil amendments, or dues and subscriptions. In this analysis baling twine is the only miscellaneous cost in the farm budgets. Baling twine costs are estimated to be \$22.72 per 9,600 foot spool of twine. The amount of twine required is based on crop yield and size and weight of the hay bale. It is assumed in this analysis one 9,600 foot spool of twine would make 480 bales of hay. It is also assumed a bale of alfalfa hay would weight 60 pounds, a bale of oat hay would weight 48 pounds, and a bale of oat straw would weight 48 pounds. The usage factor for a spool of twine per acre was calculated by dividing crop yield (in pounds) by bale weight and then dividing by bales of hay per spool of twine. For instance, in order to calculate twine usage for alfalfa, divide 2 ton (4000 pounds) per acre yield by 60 pounds per bale of hay, and then divide by 480 bales of hay per spool of twine to arrive at 0.14 spools of twine per acre.

Livestock Production, Death Loss, and Replacement Rates

Livestock turnoff rates have been developed from information obtained from university enterprise studies and interviews with producers in the area. Turnoff rates are determined by annual birth rates, death losses, and culling standards; and these are directly related to feeding and management practices. When animals are properly fed and cared for, the results are higher birth rates, fewer death losses, and larger offspring at marketing time. Producers in the project area are becoming increasingly aware of these relationships as they compete for livestock markets. As a result, new and better methods such as pregnancy testing, the use of proven sires, production testing, and testing feeds to determine their nutritional content are being adopted. These factors have been taken into account in this analysis for repayment and benefit analyses.

The cow-calf operation is dependent upon producers having access to non-project grazing in either private or public land. A source of relatively inexpensive feed to supplement feed produced on irrigated cropland is necessary to make the enterprise profitable. Calves are born in the spring and allowed to run with the mother cow until the fall, when they are weaned, weighing approximately 500 to 600 pounds. Heifer calves in excess of those required for replacements are sold as feeder calves. All steer calves are sold as feeder calves. Appendix B presents turnoff rates for each of the farm budgets in this analysis. Tables are set up to display the number of heifers held back for replacement heifers and track them through until they are incorporated into the mature cow herd. Culling rates and death losses are displayed for each class of livestock. The total number of calves produced and sold are also displayed along with the bull rotation assumed.

Cattle weights are used in calculating feed requirements and grazing requirements in the farm budgets. Also, cattle weights are important to the producer in terms of price received at the time of sale. Information on cattle weights were obtained from university enterprise studies and adjusted based on information from producers in the project area. Table 16 presents assumed cattle weights used in the farm budgets.

Price received data for livestock were obtained from USDA Agricultural Marketing Service, Livestock and Seed Division in Greeley, CO. The marketing service collects sales data for Greeley, Fort Collins, Brush, and LaJunta CO. The data is then averaged together for a combined price received for livestock. In interviews with producers in the project area it was determined LaJunta, CO was the primary market for their livestock. As with crop price received, livestock price received is a three year average based on information from 1990 to 1992. Table 17 presents prices received by producers utilized in the farm budgets. Appendix A contains historical data for livestock prices received by producers.

Table 16. Cattle Weights Utilized for Repayment and Benefit Farm Budgets.

Livestock	Units	Cattle Weights	
		Repayment Budgets	Benefit Budgets
Cows	cwt	10.0	10.0
2 Year Old Heifers	cwt	9.5	9.5
Yearling Heifers	cwt	7.0	7.0
Bulls	cwt	15.0	15.0
Steer Calves	cwt	5.5	6.0
Heifer Calves	cwt	5.0	5.5

Table 17. Price Received for Livestock for Repayment and Benefit Farm Budgets.

Livestock	Units	Price Received	
		Repayment Budgets	Benefit Budgets
Cows	\$/cwt	51.12	51.12
2 Year Old Heifers	\$/cwt	51.12	51.12
Yearling Heifers	\$/cwt	81.20	81.20
Bulls	\$/cwt	60.93	60.93
Steer Calves ¹	\$/cwt	93.83	90.50
Heifer Calves ¹	\$/cwt	89.80	87.25

¹ Price received for calves in the benefit budgets is reflective of heavier sale weights shown in Table 16.

Feed Requirements

The results achieved from a specific amount and kind of feed differ from farm to farm because of the quality of feed, management practices, and other variables. Since various common feeds are interchangeable to a degree, the amount of any particular feed that is fed in as area is largely determined by the amount that is produced locally.

Livestock feeding programs anticipated with the project are based upon sufficient farm produced feed to produce livestock with turnoff weights as estimated. Annual feed requirements are based upon sufficient feed to meet the total digestible nutrient requirements for one livestock unit. The feed requirement per livestock can then be applied to the size of herd that may be operated on each type of farm. Feeding would be performed under average managerial conditions and would reflect acceptable standards from a nutritional standpoint, largely determined from actual practices in the area.

Winter Feeding and Grazing Requirements

Feeds required for a cow/calf operation would be supplied from pasture and rangeland during the summer and fall and from a winter feeding period when the base herd is on the farm. The amount of feed required during the winter would depend upon the weather and the amount of crop aftermath that was available. Alfalfa hay is the primary feed during the winter feeding period. In interviews with producers in the area it was determined a 30 to 35 percent protein supplement would also be fed to livestock during the winter feeding period. A salt and mineral mixture would also be available to livestock on a year round basis. Table 18 presents the feed requirement assumptions for the farm budgets.

Data are presented in Table 18 for the animal unit coefficients for each class of livestock as well as the winter feed rations and time spent on each grazing source. An animal unit has been defined earlier in this report. The animal unit coefficient is the coefficient necessary to equal one animal unit for each class of livestock in the farm budgets. For example, one yearling replacement heifer is equal to 0.76 animal unit. During the summer grazing period the cattle are rotated around to the different grazing sources. The amount of time spent on each of these grazing sources is determined by the total animal units and the grazing capacity of the source. The grazing capacity is equal to the yield presented in Table 5 above. Information on crop aftermath was obtained from producers in the project area. Crop aftermath yields were determined to be 0.5 animal unit months of grazing for one month for alfalfa, oats, oat hay, and pinto beans.

Livestock Equipment

In addition to the farm equipment listed above, additional equipment is required specific to the livestock enterprise. This equipment includes such items as corrals, stock trailer, and squeeze chutes. Table 19 presents livestock equipment specified for the farm budgets. Some of the equipment listed in Table 19 has already been presented earlier as farm equipment but would also be utilized in the livestock enterprise. The pieces of equipment which are used in farming and livestock enterprises include the 70 horsepower tractor, the front end loader, and the three-quarter ton pickup. The investment value, operating costs, and use per year are presented in Table 19. For the livestock enterprise, use per year does not add to the 1,500 hours of labor specified

Table 18. Winter Feeding and Grazing Requirements for Farm Budgets.

Feed Type	Days on Feed	Cows	2 Year Old Heifers	Yearling Heifers	Bulls
Animal Unit Coefficient		1.00	0.96	0.76	1.35
Pounds per Day of Feed Required					
Alfalfa Hay	120	21.0	21.0	17.6	25.7
35 percent Protein Supplement	120	0.2	0.2	0.2	0.2
Salt and Mineral	360	0.1	0.1	0.1	0.1
Days on Feed Source, Without Project Farm Budgets					
Irrigated Pasture		30	30	30	30
Private Rangeland		90	90	90	120
Public Rangeland		90	90	90	90
Crop Aftermath		30	30	30	0
Days on Feed Source, With Project Farm Budgets					
Irrigated Pasture		90	90	90	90
Private Rangeland		30	30	30	60
Public Rangeland		90	90	90	90
Crop Aftermath		30	30	30	0

previously. The use per year specified here is used for calculating interest on investment, depreciation charges, and operating costs in the farm budget.

Livestock Marketing Costs

Livestock is marketed locally through livestock auctions or trucked to outside areas, going either to large market centers or directly to feeding areas. Sale barns located at Cortez and Durango are easily accessible to farmers in the project area. Sale barns outside the project area are accessible by truck for producers in the area include LaJunta, CO. Sales are held one day a week at each location and are usually well attended by buyers from larger market centers, thus assuring the producers a fair market price for their stock.

Table 19. Investment Value and Operating Costs for Livestock Equipment.

Equipment	Size or Capacity	Investment Value	Fuel & Repair Costs per Hour of Use	Hours of Use per Year
Tractor	70 horsepower	\$44,400	\$7.44	300
Loader		6,800	\$2.08	180
Pickup	3/4 ton	19,000	\$8.50	100
Corrals		5,000	\$1.00	160
Livestock Equipment		3,300	\$1.00	120
Stock Trailer		2,500	\$1.00	50

The cost of marketing livestock varies, depending upon the method used. When the producer markets directly to the buyer at the farm, he usually pays no direct marketing cost. When producers use auction markets for the sale of their livestock, the producer pays the marketing cost as the seller. It was determined during interviews with producers in the area, LaJunta, CO was the preferred auction market for the sale of their livestock. The Durango market would be used for sales of small lots of cattle such as cull cows. Marketing costs and buyer representatives are favorable enough to justify the transportation expense to sell in LaJunta. Table 20 presents the marketing costs for producers used in this analysis.

Table 20. Livestock Marketing Costs per Head for Farm Budgets.

Marketing Expense Item	Cost per Head
Transportation	\$7.00
Commission	4.70
Brand Inspection	0.35
Health Inspection	0.10
Beef Checkoff Program	1.00
Yardage	<u>4.00</u>
Total Marketing Cost	\$17.15

Miscellaneous Livestock Costs

There are numerous miscellaneous items of expense connected with the production of livestock such as breeding costs, veterinary supplies and services, and special equipment. Information on miscellaneous expenses was obtained from university enterprise studies and interviews with local producers. Table 21 presents miscellaneous livestock expenses utilized in this analysis.

Table 21. Miscellaneous Livestock Costs per Head for Farm Budgets.

Miscellaneous Expense Item	Cost per Head
Veterinary Medicine	\$10.00
Supplies	5.00
Pregnancy Testing (exposed females)	1.50
Miscellaneous	<u>3.00</u>
Total Miscellaneous Costs	\$19.50

Other Farm Expenses

Electricity

Electricity consumption was estimated using the 1983 through 1985 average rate of consumption as reported in Agricultural Prices, 1984 and 1985 summaries. Utility costs were last published in 1985. Average monthly electricity consumption over the 3-year period from 1983 to 1985 was 1,483 kWh in Colorado. This study assumes that one-half of electricity consumption is assigned to the farm and on-half to the household.

Costs for electricity consumption were taken from Agricultural Price Summaries for 1983 through 1985. An average of the 3 years were used in this analysis to calculate the price paid for electricity. The 3-year average price paid for electricity was \$0.075 per kWh. Electricity costs are indexed to 1992 prices using electricity indexes from Statistical Abstract of the United States, 1992, published by the Bureau of the Census. The 1983 to 1985 average index is 104.37. In order to bring the index value current, the average index of 104.37 is applied in a ratio to a 1991 index value of 121.8. The 1991 index value is used because it is the last full year of data available. Annual costs for electricity for the farm is calculated as follows;

$$\$111.25 * 12 \text{ mo.} * .5 * (121.8/104.37) = \$778.97$$

rounded to \$778. Electricity costs in New Mexico farm budgets were calculated using the same procedure. Monthly electricity consumption averaged 1,150 kWh for the 1983 through 1985 time period with cost averaging \$0.08067 per kWh for the same time period. Annual electricity costs in New Mexico farm budgets were calculated to be \$649.56, rounded to \$650.

Telephone

Estimates of monthly telephone costs are taken from the same data source as monthly electricity consumption. Average monthly telephone costs over the 3-year period from 1983 to 1985 was \$49.90 in Colorado. Telephone costs are indexed to 1992 prices using telephone services indexes from Statistical Abstract of the United States, 1992, published by the Bureau of the Census. The 1983 to 1985 average index is 106.1. In order to bring the index value current, the average index of 106.1 is applied in ratio to a 1991 index value of 119.7. The 1991 index value was used because it is the last full year of data available. As with electricity, the farm share of telephone costs is assumed to be one-half of annual telephone costs. The equation to calculate annual telephone costs is as follows;

$$\$49.90 * 12 \text{ mo.} * .5 * (119.7/106.1) = \$337.77$$

rounded to \$338. Telephone costs for New Mexico were calculated using the same procedure. Monthly telephone costs for the same time period averaged \$60.50. Annual telephone costs were calculated to be \$409.53, rounded to \$410 for New Mexico farm budgets.

Adjustments to Farm Budgets for Benefit Analysis

Procedures for developing benefit farm budgets differ from payment capacity farm budgets in terms of interest rates, debt/equity ratios, crop distribution, and crop yield. The following description details these differences from the information presented previously. Some information has already been presented for the benefit farm budgets. Farm size and crop distribution in benefit farm budgets has been presented in Table 3 and 4, respectively. Crop yields and prices received utilized in benefit farm budgets has been presented in Tables 5 and 6, respectively. Data for livestock production and prices received for cattle has been presented in Tables 16 and 17, respectively.

Interest Rates for Benefit Analysis

Interest rates for benefit analyses are set by Reclamation guidelines. An interest rate of 6 percent has been utilized for this analysis under guidelines in place at the time of project authorization. This interest rate is used to calculate interest expense on capital investment, operating capital, and depreciation.

Debt/Equity Ratio for Benefit Analysis

Debt/equity ratios for benefit analyses are set by Reclamation guidelines. A debt/equity ratio of 100 percent debt has been utilized in this analysis. This applies to interest expenses for capital investment and operating costs.

Fertilizer Rates for Benefit Analysis

Fertilizer application rates are increased in the benefit farm budgets. This is done to achieve the projected crop yields in the farm budgets. It is believed producers in the project area would utilize increased levels of fertilizer in the future in order to achieve maximum response from the fertilizer application. Over time, with the dependable water supply, producers would be willing to apply more fertilizer with less risk of poor yields. Table 22 presents fertilizer application rates for the benefit farm budgets.

Table 22. Fertilizer Rates and Prices Paid for Benefit Farm Budgets.

	Units	Without Project	With Project	Price Paid
<u>Alfalfa</u>				
Phosphate 0-45-0	lbs/ac	0	200	\$0.28
<u>Alfalfa Establishment</u>				
Phosphate 0-45-0	lbs/ac	0	40	0.28
Nitrogen 33-0-0	lbs/ac		75	0.25
<u>Oats</u>				
Phosphate 0-45-0	lbs/ac	0	40	0.28
Nitrogen 33-0-0	lbs/ac	0	75	0.25
<u>Corn Silage</u>				
Anhydrous Ammonia	lbs/ac	0	225	0.11
<u>Irrigated Pasture</u>				
Urea 46-0-0	lbs/ac	0	100	0.28
<u>Dryland Wheat</u>				
Phosphate 0-45-0	lbs/ac	5	0	0.28
Nitrogen 33-0-0	lbs/ac	20	0	0.25

CHAPTER 3. - IRRIGATION PAYMENT CAPACITY ANALYSIS

Method of Analysis

Farm budgets encompassing the family farm concept for the with and without project conditions were used to determine the farmers' ability to repay project costs. This method involves the systematic study of the organization and operation of representative farms, including the estimated income and expenditures on a farm with and without project conditions. A farm unit is appraised from the viewpoint of family-sized farm which includes land owned by the farmer and lease land operated by a farmer and his family with average managerial ability under average conditions. Such a unit does not represent the highest project combination nor the most efficient organization, farm size, or practices. Neither does it represent the production and farm incomes that could be expected from inexperienced farmers in need of special training and assistance.

Net Farm Income

Net farm income is defined as the gross farm income less total variable expenses and total fixed expenses. Gross farm income is the total sales of farm products, including crops, livestock, and livestock products. Variable expenses are costs incurred during production and vary with the level of production. These expenses include input items such as hired labor, fertilizer, seed, fuel, and interest on operating capital. Fixed expenses are costs incurred whether production of crops takes place or not. They include expenses items such as taxes, insurance, interest on investments, and depreciation. An allowance for a family living is deducted from net farm income to arrive at payment capacity or the farmers ability to repay project costs. The family living allowance consists of a return to management, a return to equity, and a return to operator and family labor.

Return to Management

The net farm income is determined partially by the operator's management ability. The farmer decides what crops to grow, what kind of livestock to raise, and what production inputs to use. Better management usually results in higher net farm income. A value of 10 percent of net farm income was used to estimate return to management.

Return to Equity.

Return to equity was calculated by multiplying the farm operator's equity share of the total farm investment by 3.4 percent. The farmer's debt/equity ratios have been explained previously in this report. An equity allowance for operating capital includes a return to non-borrowed operating capital for 7 months of the year. It was assumed that interest on non-borrowed operating capital could be earned at the same rate used in the budget to compute interest on borrowed operating capital. This rate was applied to the operating costs multiplied by the farmer's equity share of non-real estate investment to determine the return to the equity portion of operating costs.

Return to Operator and Family Labor

The development of irrigation is premised on farms of sufficient size to support a farm family, provide reasonably full employment, pay production costs, and permit a reasonable payment of project construction costs. This requires the efficient utilization of both operator and family labor. It is assumed that the operator and family can and will work as described previously in terms of hours worked and wages received.

Payment Capacity

Payment capacity is the maximum annual amount that water users will be able to pay for irrigation service. It is taken out of farm earnings attributable to the increased water supply and project works. Payment capacity, therefore, does not encroach on earnings properly creditable to other factors. For example, net farm income without the project is not available for use as payment capacity; payment capacity is a part of the increase in net farm income shown by a comparison of conditions with and without the project.

Payment capacity represents the total annual water payment by irrigators toward project costs, including operation, maintenance, and replacement costs. This payment capacity is considered to be within the ability of the farmers to pay. Payment capacity per acre for each project area and the total project are presented in Table 23. Payment capacity for without project conditions is subtracted from with project conditions to arrive at payment capacity as a result of the project. If payment capacity is negative for without project condition, payment capacity is considered to be zero. This is the case for the without project conditions for which farm budgets have been developed. Payment capacity attributable to the project is multiplied by the acres represented for each area and totaled to arrive at payment capacity for the total project. The total project payment capacity of \$5,139,025 is then divided by project acres of 67,460 acres to arrive at total project payment capacity of \$76.18 per acre. Payment capacity for each of the project areas are \$1,029,700 for the Colorado supplemental service area, \$2,316,825 for the Colorado full service area, \$1,013,519 for the Indian full service area, \$347,590 for the New Mexico supplemental

service area, and \$431,392 for the New Mexico full service area. Summaries of each payment capacity farm budget are presented in Appendix C.

Table 23. Calculation of Payment Capacity for Project Areas.

Project Area	Budget Number	Result from Farm Budget	Payment Capacity	Service Acres	Total Payment Capacity
		(\$/acre)	(\$/acre)	(acres)	(\$)
Colorado Supplemental Service Without	1R	-57.89			
Colorado Supplemental Service With	2RW	73.55	73.55	14,000	1,029,700
Colorado Full Service Without	3R	-30.71			
Colorado Full Service With	4RW	73.55	73.55	31,500	2,316,825
Indian Full Service	5RW	73.55	73.55	13,780	1,013,519
New Mexico Supplemental Service Without	6R	-69.08			
New Mexico Supplemental Service With	7RW	95.23	95.23	3,650	347,590
New Mexico Full Service With	8RW	95.23	95.23	4,530	431,392
Totals				67,460	5,139,025
Project Payment Capacity per Acre					\$76.18

Without Service adds nothing to the table

CHAPTER 4: IRRIGATION BENEFIT ANALYSIS

Method of Analysis

Irrigation benefits are estimated from the increased production in goods and services that are expected to accrue over the entire 100-year period of analysis. The economic analysis is based on the time frame of approximately 20 years after the end of the development period. This reflects some anticipated improvements in agricultural science and technology expected to continue and gradually be adopted by producers in the project area. In contrast, the irrigation repayment analysis was based upon anticipated conditions at the end of the development period. Farm sizes, types of farms, land use, crop yields, livestock production, labor and machinery efficiencies, and all other factors of production have been estimated for the time frame. Normalized prices received and paid, including farm investments, are assumed to remain the same for each analysis. The analysis of irrigation benefits is based on the average conditions that are expected to exist during the period of analysis and approximates, with respect to levels of management, the existing conditions on the upper 25 percent of farms with adequate irrigation water in this and comparable areas. Some increase is anticipated in such items as livestock turnoff rates and crop yields. The without project conditions are based upon the average conditions that are expected to exist during the period of analysis with livestock related farms on the supplemental lands and dry-farming and grazing on full service lands.

Irrigation Benefits

The increased production of goods and services attributable to the project has been estimated for each service area as well as for the entire project. These data have been evaluated in monetary terms and provide the basis for determining tangible irrigation benefits after adjusting for partial production during the development periods.

Project irrigation benefits are measured by subtracting the value of production expected in the future without the project from the value of production expected with the project. Production with and without the project was estimated with farm budgets. Future conditions without the project were projected from present conditions. A cow-calf/cash crop farm was projected for the future without condition on supplemental service lands in both Colorado and New Mexico. A dry farm raising wheat and beans was projected for full service lands on the Colorado Dryside and Red Mesa areas, which are presently dry farmed. The value of production on full service lands in New Mexico and full service Indian Lands in Colorado is essentially zero; therefore, no farm budget was prepared for the future without project condition. Future conditions with the project in both Colorado and New Mexico are represented by a cow-calf/cash crop budget. A

summary of the farm budget results for each project service area is presented in Table 24. Summary pages from the benefit farm budgets are presented in Appendix D.

Table 24. Calculation of Irrigation Benefits for Project Areas.

Project Area	Budget Number	Result from Farm Budget	Irrigation Benefit	Service Acres	Total Irrigation Benefit
		(\$/acre)	(\$/acre)	(acres)	(\$)
Colorado Supplemental Service Without	1B	-21.11			
Colorado Supplemental Service With	2BW	205.61	226.72	14,000	3,174,080
Colorado Full Service Without	3B	-28.30			
Colorado Full Service With	4BW	205.61	233.91	31,500	7,368,165
Indian Full Service	5BW	205.61	205.61	13,780	2,833,306
New Mexico Supplemental Service Without	6B	14.95			
New Mexico Supplemental Service With	7BW	237.62	222.67	3,650	812,746
New Mexico Full Service With	8BW	237.62	237.62	4,530	1,076,416
Totals				67,460	15,264,715
Project Irrigation Benefits per Acre					\$226.28

The values for irrigation benefits presented in Table 24 are direct irrigation benefits. Direct irrigation benefits are the economic and social values accruing to the immediate water users and are measured from the estimated increase in net farm income associated with project water. The increase in net farm income is derived from differences in project area totals for representative farm budgets with and without the project. In contrast to payment capacity farm budgets, a negative net farm income in an irrigation benefit farm budget is not counted as zero because benefits measure the total change in goods and services. The project would produce direct benefits of \$15,264,715 consisting of \$3,174,080 from the Colorado supplemental service area, \$7,368,165 from the Colorado full service area, \$2,833,306 from the Indian full service area,

\$812,746 from the New Mexico supplemental service area, and \$1,076,419 from the New Mexico full service area.

APPENDIX A: HISTORICAL DATA FOR PRICES RECEIVED BY PRODUCERS

USDA AGRICULTURAL STATISTICS CROP DATA
PROJECT NAME: ANIMAS-LAPLATA ECON UPDATE, COLORADO DATA
DATA REGION: LAPLATA COUNTY COLORADO

CROP	UNIT	1988	1989	1990	1991	1992	5 YEAR AVERAGE	3 YEAR AVERAGE	NORMALIZED AVERAGE
<u>CROP ACRES</u>									
ALFALFA		21,000	19,000	18,500	15,000	14,200	17,540	15,900	17,500
OTHER HAY		10,000	9,000	11,000	15,000	17,500	12,500	14,500	12,000
DRY BEANS, DRYLAND		4,300	8,000	4,500	3,400	1,800	3,960	3,167	4,087
WINTER WHEAT, DRYLAND		2,900	2,200	1,800	2,400	2,700	2,400	2,300	2,433
OATS		1,200	2,000	1,900	1,000	1,000	1,420	1,300	1,087
NOT USED		0	0	0	0	0	0	0	0
<u>CROP YIELD</u>									
ALFALFA	TON	3.35	2.15	2.65	3.15	3.15	2.89	2.98	2.98
OTHER HAY	TON	2.55	1.80	2.10	2.25	2.25	2.19	2.20	2.20
DRY BEANS, DRYLAND	POUND	500.00	400.00	330.00	500.00	500.00	448.00	443.33	488.87
WINTER WHEAT, DRYLAND	BUSHEL	20.00	15.00	13.50	18.00	18.00	18.10	15.17	15.87
OATS	BUSHEL	85.00	82.00	59.00	68.00	68.00	72.40	65.00	72.87
NOT USED		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<u>PRICE RECEIVED</u>									
ALFALFA	TON	85.70	92.50	81.00	71.00	65.50	79.14	72.50	79.23
OTHER HAY	TON	74.50	89.00	77.50	70.00	63.00	74.80	70.17	74.00
DRY BEANS, DRYLAND	POUND	0.31	0.30	0.16	0.14	0.20	0.22	0.18	0.22
WINTER WHEAT, DRYLAND	BUSHEL	3.89	3.88	2.47	3.07	3.15	3.21	2.90	3.30
OATS	BUSHEL	2.45	1.45	1.70	1.60	1.70	1.78	1.87	1.87
NOT USED		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<u>PRICE RECEIVED - CATTLE (Repayment)</u>									
	WT.								
COWS	1000	48.38	49.43	54.82	49.58	49.17	50.24	51.12	49.39
BULLS	1500	60.82	62.51	64.89	59.89	58.22	61.23	60.93	61.01
YEARLING REPLMT HFRS	700	78.57	78.93	83.39	80.80	79.42	79.82	81.20	79.72
HEIFER CALVES	500	85.70	88.88	92.49	89.25	87.85	88.39	89.80	87.92
STEER CALVES	550	90.42	91.65	97.24	92.02	92.24	92.71	93.83	91.97
NOT USED		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<u>PRICE RECEIVED - CATTLE (Benefit)</u>									
	WT.								
COWS	1000	48.38	49.43	54.82	49.58	49.17	50.24	51.12	49.39
BULLS	1500	60.82	62.51	64.89	59.89	58.22	61.23	60.93	61.01
YEARLING REPLMT HFRS	700	78.57	78.93	83.39	80.80	79.42	79.82	81.20	79.72
HEIFER CALVES	550	82.27	83.78	89.52	86.44	85.79	85.58	87.25	85.33
STEER CALVES	600	87.17	88.50	93.85	89.38	88.48	89.44	90.50	88.79
NOT USED		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

USDA AGRICULTURAL STATISTICS CROP DATA
 PROJECT NAME: ANIMAS-LAPLATA ECON UPDATE, NEW MEXICO DATA
 DATA REGION: SAN JUAN COUNTY NEW MEXICO

CROP	UNIT	1988	1989	1990	1991	1992	5 YEAR AVERAGE	3 YEAR AVERAGE	NORMALIZED AVERAGE
CROP ACRES									
ALFALFA		30,000	30,000	30,000	39,000	29,200	31,640	32,733	30,000
CORN GRAIN		8,800	10,200	10,000	11,800	13,650	10,890	11,817	10,667
WINTER WHEAT		3,500	6,200	7,500	6,000	6,000	5,840	6,500	6,067
NOT USED		0	0	0	0	0	0	0	0
NOT USED		0	0	0	0	0	0	0	0
NOT USED		0	0	0	0	0	0	0	0
CROP YIELD									
ALFALFA	TON	4.50	4.50	5.00	5.00	5.50	4.90	5.17	4.83
CORN GRAIN	BUSHEL	159.20	164.30	135.00	160.00	158.20	155.34	151.07	159.13
WINTER WHEAT	BUSHEL	110.00	100.00	85.00	90.00	92.00	95.40	89.00	94.00
NOT USED		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NOT USED		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NOT USED		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PRICE RECEIVED									
ALFALFA	TON	0.00	112.00	114.00	110.00	100.00	87.20	108.00	107.33
CORN GRAIN	BUSHEL	2.91	2.51	2.67	2.85	2.50	2.69	2.67	2.68
WINTER WHEAT	BUSHEL	3.45	3.68	2.79	2.85	3.10	3.17	2.91	3.13
OTHER HAY		0.00	89.50	90.00	84.50	76.50	68.10	83.67	83.50
NOT USED		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NOT USED		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

APPENDIX B: LIVESTOCK TURNOFF RATES FOR FARM BUDGETS

Animas—LaPlata Cow/Calf Turnoff Rate, Budget 1R

FALL/WINTER FEEDING	CALVING	BREEDING	SUMMER GRAZING	WEANING
21 H0 REPL HFRS	21 H1 REPL HFRS 0 CULLS 21 H1 REPL HFRS	21 H1'S EXPOSED	21 H1 REPL HFRS -1 DEATHS 20 H1 REPL HFRS	20 H1 REPL HFRS -3 CULL H1'S 17 BRED H1 HFRS
17 BRED H1 HFRS	17 BRED H1 HFRS 0 DRY H2'S 17 H2'S W/ CALVES 0 DRY H2'S SOLD	17 H2'S EXPOSED 0 DRY H2'S EXPOSED	17 H2 HEIFERS 0 DEATHS 17 H2 HEIFERS	17 H2 HEIFERS 0 CULL H2'S 17 BRED H2 HFRS
17 BRED H2 HFRS 95 BRED COWS	112 BRED COWS -1 DRY COWS 111 COWS W/ CALVES 0 DRY COWS SOLD	111 COWS EXPOSED 1 DRY COWS EXPOSED	112 COWS -1 DEATHS 111 COWS	111 COWS -16 CULL COWS 95 BRED COWS
150 FEMALES ON FEED	128 COWS W/ CALVES	150 FEMALES EXPOSED	148 EXPOSED FEMALES	129 BRED FEMALES
	64 STEER CALVES		64 STEER CALVES -1 DEATHS 63 STEER CALVES	63 STEERS WEANED
	64 HEIFER CALVES		64 HEIFER CALVES 0 DEATHS 64 HEIFER CALVES	63 STEERS SOLD 64 HEIFERS WEANED -21 REPL HEIFERS 43 HEIFERS SOLD
	CULL SALES 0 CULL H1'S 0 DRY H2'S 0 DRY COWS 0 FEMALES SOLD			CULL SALES 3 CULL H1'S 0 CULL H2'S 16 CULL COWS 19 FEMALES SOLD 1 CULL BULLS 0 CULL HORSE
6 BULLS ON FEED	6 BULLS 1 BULLS PURCHASED 7 BULLS	7 BULLS	7 BULLS -1 DEATHS 6 BULLS	6 BULLS -1 CULL BULLS 1 BULLS PURCHASED 6 BULLS
0 HORSES	0 HORSES 0 HORSE PURCHASED	0 HORSES	0 HORSES 0 DEATHS	0 HORSES 0 CULL HORSE
0 HORSES ON FEED	0 HORSES		0 HORSES	0 HORSES

Pregnancy Percentage =	Bred Females/Females Exposed =	88.00%
Calving Percentage =	Cows w/ Calves/Females Exposed =	85.33%
Calf Death Loss =	Dry Cows & H2's/Females Exposed =	0.67%
Weaning Percentage =	Calves Weaned/Females Exposed =	84.67%
Replacement Rate =	Repl Heifers/Females Exposed =	14.00%
Bull to Cow Ratio=	Females Exposed/Bulls=	1: 21

Animas—LaPlata Cow/Calf Turnoff Rate, Budget 1B

FALL/WINTER FEEDING	CALVING	BREEDING	SUMMER GRAZING	WEANING
18 H0 REPL HFRS	18 H1 REPL HFRS 0 CULLS 18 H1 REPL HFRS	18 H1'S EXPOSED	18 H1 REPL HFRS 0 DEATHS 18 H1 REPL HFRS	18 H1 REPL HFRS -1 CULL H1'S 17 BRED H1 HFRS
17 BRED H1 HFRS	17 BRED H1 HFRS 0 DRY H2'S 17 H2'S W/ CALVES 0 DRY H2'S SOLD	17 H2'S EXPOSED 0 DRY H2'S EXPOSED	17 H2 HEIFERS 0 DEATHS 17 H2 HEIFERS	17 H2 HEIFERS 0 CULL H2'S 17 BRED H2 HFRS
17 BRED H2 HFRS 98 BRED COWS	115 BRED COWS 0 DRY COWS 115 COWS W/ CALVES 0 DRY COWS SOLD	115 COWS EXPOSED 0 DRY COWS EXPOSED	115 COWS 0 DEATHS 115 COWS	115 COWS -17 CULL COWS 98 BRED COWS
150 FEMALES ON FEED	132 COWS W/ CALVES	150 FEMALES EXPOSED	150 EXPOSED FEMALES	132 BRED FEMALES
	66 STEER CALVES		66 STEER CALVES 0 DEATHS 66 STEER CALVES	66 STEERS WEANED 66 STEERS SOLD
	66 HEIFER CALVES		66 HEIFER CALVES 0 DEATHS 66 HEIFER CALVES	66 HEIFERS WEANED -18 REPL HEIFERS 48 HEIFERS SOLD
	CULL SALES 0 CULL H1'S 0 DRY H2'S 0 DRY COWS 0 FEMALES SOLD			CULL SALES 1 CULL H1'S 0 CULL H2'S 17 CULL COWS 18 FEMALES SOLD 2 CULL BULLS 0 CULL HORSE
6 BULLS ON FEED	6 BULLS 1 BULLS PURCHASED 7 BULLS	7 BULLS	7 BULLS 0 DEATHS 7 BULLS	7 BULLS -2 CULL BULLS 1 BULLS PURCHASED 6 BULLS
0 HORSES	0 HORSES 0 HORSE PURCHASED	0 HORSES	0 HORSES 0 DEATHS	0 HORSES 0 CULL HORSE
0 HORSES ON FEED	0 HORSES		0 HORSES	0 HORSES

Pregnancy Percentage =	Bred Females/Females Exposed =	88.00%
Calving Percentage =	Cows w/ Calves/Females Exposed =	88.00%
Calf Death Loss =	Dry Cows & H2's/Females Exposed =	0.00%
Weaning Percentage =	Calves Weaned/Females Exposed =	88.00%
Replacement Rate =	Repl Heifers/Females Exposed =	12.00%
Bull to Cow Ratio=	Females Exposed/Bulls=	1: 21

Animas-LaPlata Cow/Calf Turnoff Rate, Budget 2RW

FALL/WINTER FEEDING	CALVING	BREEDING	SUMMER GRAZING	WEANING
15 H0 REPL HFRS	15 H1 REPL HFRS 0 CULLS 15 H1 REPL HFRS	15 H1'S EXPOSED	15 H1 REPL HFRS -1 DEATHS 14 H1 REPL HFRS	14 H1 REPL HFRS -2 CULL H1'S 12 BRED H1 HFRS
12 BRED H1 HFRS	12 BRED H1 HFRS 0 DRY H2'S 12 H2'S W/ CALVES 0 DRY H2'S SOLD	12 H2'S EXPOSED 0 DRY H2'S EXPOSED	12 H2 HEIFERS 0 DEATHS 12 H2 HEIFERS	12 H2 HEIFERS 0 CULL H2'S 12 BRED H2 HFRS
12 BRED H2 HFRS 111 BRED COWS	123 BRED COWS -1 DRY COWS 122 COWS W/ CALVES 0 DRY COWS SOLD	122 COWS EXPOSED 1 DRY COWS EXPOSED	123 COWS -1 DEATHS 122 COWS	122 COWS -11 CULL COWS 111 BRED COWS
150 FEMALES ON FEED	134 COWS W/ CALVES	150 FEMALES EXPOSED	148 EXPOSED FEMALES	135 BRED FEMALES
	67 STEER CALVES		67 STEER CALVES -1 DEATHS 66 STEER CALVES	66 STEERS WEANED 66 STEERS SOLD
	67 HEIFER CALVES		67 HEIFER CALVES 0 DEATHS 67 HEIFER CALVES	67 HEIFERS WEANED -15 REPL HEIFERS 52 HEIFERS SOLD
	CULL SALES 0 CULL H1'S 0 DRY H2'S 0 DRY COWS 0 FEMALES SOLD			CULL SALES 2 CULL H1'S 0 CULL H2'S 11 CULL COWS 13 FEMALES SOLD 1 CULL BULLS 0 CULL HORSE
6 BULLS ON FEED	6 BULLS 1 BULLS PURCHASED 7 BULLS	7 BULLS	7 BULLS -1 DEATHS 6 BULLS	6 BULLS -1 CULL BULLS 1 BULLS PURCHASED 6 BULLS
0 HORSES	0 HORSES 0 HORSE PURCHASED	0 HORSES	0 HORSES 0 DEATHS	0 HORSES 0 CULL HORSE
0 HORSES ON FEED	0 HORSES		0 HORSES	0 HORSES

Pregnancy Percentage =	Bred Females/Females Exposed =	90.00%
Calving Percentage =	Cows w/ Calves/Females Exposed =	89.33%
Calf Death Loss =	Dry Cows & H2's/Females Exposed =	0.67%
Weaning Percentage =	Calves Weaned/Females Exposed =	88.67%
Replacement Rate =	Repl Heifers/Females Exposed =	10.00%
Bull to Cow Ratio=	Females Exposed/Bulls=	1: 21

Animas—LaPlata Cow/Calf Turnoff Rate, Budget 2BW

FALL/WINTER FEEDING	CALVING	BREEDING	SUMMER GRAZING	WEANING
12 H0 REPL HFRS	12 H1 REPL HFRS 0 CULLS 12 H1 REPL HFRS	12 H1'S EXPOSED	12 H1 REPL HFRS 0 DEATHS 12 H1 REPL HFRS	12 H1 REPL HFRS -2 CULL H1'S 10 BRED H1 HFRS
10 BRED H1 HFRS	10 BRED H1 HFRS 0 DRY H2'S 10 H2'S W/ CALVES 0 DRY H2'S SOLD	10 H2'S EXPOSED 0 DRY H2'S EXPOSED	10 H2 HEIFERS 0 DEATHS 10 H2 HEIFERS	10 H2 HEIFERS 0 CULL H2'S 10 BRED H2 HFRS
10 BRED H2 HFRS 118 BRED COWS	128 BRED COWS 0 DRY COWS 128 COWS W/ CALVES 0 DRY COWS SOLD	128 COWS EXPOSED 0 DRY COWS EXPOSED	128 COWS 0 DEATHS 128 COWS	128 COWS -10 CULL COWS 118 BRED COWS
150 FEMALES ON FEED	138 COWS W/ CALVES	150 FEMALES EXPOSED	150 EXPOSED FEMALES	138 BRED FEMALES
	69 STEER CALVES		69 STEER CALVES 0 DEATHS 69 STEER CALVES	69 STEERS WEANED 69 STEERS SOLD
	69 HEIFER CALVES		69 HEIFER CALVES 0 DEATHS 69 HEIFER CALVES	69 HEIFERS WEANED -12 REPL HEIFERS 57 HEIFERS SOLD
	CULL SALES 0 CULL H1'S 0 DRY H2'S 0 DRY COWS 0 FEMALES SOLD			CULL SALES 2 CULL H1'S 0 CULL H2'S 10 CULL COWS 12 FEMALES SOLD 2 CULL BULLS 0 CULL HORSE
6 BULLS ON FEED	6 BULLS 1 BULLS PURCHASED 7 BULLS	7 BULLS	7 BULLS 0 DEATHS 7 BULLS	7 BULLS -2 CULL BULLS 1 BULLS PURCHASED 6 BULLS
0 HORSES	0 HORSES 0 HORSE PURCHASED	0 HORSES	0 HORSES 0 DEATHS	0 HORSES 0 CULL HORSE
0 HORSES ON FEED	0 HORSES		0 HORSES	0 HORSES

Pregnancy Percentage =	Bred Females/Females Exposed =	92.00%
Calving Percentage =	Cows w/ Calves/Females Exposed =	92.00%
Calf Death Loss =	Dry Cows & H2's/Females Exposed =	0.00%
Weaning Percentage =	Calves Weaned/Females Exposed =	92.00%
Replacement Rate =	Repl Heifers/Females Exposed =	8.00%
Bull to Cow Ratio=	Females Exposed/Bulls=	1: 21

Animas—LaPlata Cow/Calf Turnoff Rate, Budget 4RW

FALL/WINTER FEEDING	CALVING	BREEDING	SUMMER GRAZING	WEANING
15 H0 REPL HFRS	15 H1 REPL HFRS 0 CULLS 15 H1 REPL HFRS	15 H1'S EXPOSED	15 H1 REPL HFRS -1 DEATHS 14 H1 REPL HFRS	14 H1 REPL HFRS -2 CULL H1'S 12 BRED H1 HFRS
12 BRED H1 HFRS	12 BRED H1 HFRS 0 DRY H2'S 12 H2'S W/ CALVES 0 DRY H2'S SOLD	12 H2'S EXPOSED 0 DRY H2'S EXPOSED	12 H2 HEIFERS 0 DEATHS 12 H2 HEIFERS	12 H2 HEIFERS 0 CULL H2'S 12 BRED H2 HFRS
12 BRED H2 HFRS 111 BRED COWS	123 BRED COWS -1 DRY COWS 122 COWS W/ CALVES 0 DRY COWS SOLD	122 COWS EXPOSED 1 DRY COWS EXPOSED	123 COWS -1 DEATHS 122 COWS	122 COWS -11 CULL COWS 111 BRED COWS
150 FEMALES ON FEED	134 COWS W/ CALVES	150 FEMALES EXPOSED	148 EXPOSED FEMALES	135 BRED FEMALES
	67 STEER CALVES		67 STEER CALVES -1 DEATHS 66 STEER CALVES	66 STEERS WEANED 66 STEERS SOLD
	67 HEIFER CALVES		67 HEIFER CALVES 0 DEATHS 67 HEIFER CALVES	67 HEIFERS WEANED -15 REPL HEIFERS 52 HEIFERS SOLD
	CULL SALES 0 CULL H1'S 0 DRY H2'S 0 DRY COWS 0 FEMALES SOLD			CULL SALES 2 CULL H1'S 0 CULL H2'S 11 CULL COWS 13 FEMALES SOLD 1 CULL BULLS 0 CULL HORSE
6 BULLS ON FEED	6 BULLS 1 BULLS PURCHASED 7 BULLS	7 BULLS	7 BULLS -1 DEATHS 6 BULLS	6 BULLS -1 CULL BULLS 1 BULLS PURCHASED 6 BULLS
0 HORSES	0 HORSES 0 HORSE PURCHASED	0 HORSES	0 HORSES 0 DEATHS 0 HORSES	0 HORSES 0 CULL HORSE 0 HORSES

Pregnancy Percentage =	Bred Females/Females Exposed =	90.00%
Calving Percentage =	Cows w/ Calves/Females Exposed =	89.33%
Calf Death Loss =	Dry Cows & H2's/Females Exposed =	0.67%
Weaning Percentage =	Calves Weaned/Females Exposed =	88.67%
Replacement Rate =	Repl Heifers/Females Exposed =	10.00%
Bull to Cow Ratio=	Females Exposed/Bulls=	1: 21

Animas—LaPlata Cow/Calf Turnoff Rate, Budget 4BW

FALL/WINTER FEEDING	CALVING	BREEDING	SUMMER GRAZING	WEANING
12 H0 REPL HFRS	12 H1 REPL HFRS 0 CULLS 12 H1 REPL HFRS	12 H1'S EXPOSED	12 H1 REPL HFRS 0 DEATHS 12 H1 REPL HFRS	12 H1 REPL HFRS -2 CULL H1'S 10 BRED H1 HFRS
10 BRED H1 HFRS	10 BRED H1 HFRS 0 DRY H2'S 10 H2'S W/ CALVES 0 DRY H2'S SOLD	10 H2'S EXPOSED 0 DRY H2'S EXPOSED	10 H2 HEIFERS 0 DEATHS 10 H2 HEIFERS	10 H2 HEIFERS 0 CULL H2'S 10 BRED H2 HFRS
10 BRED H2 HFRS 118 BRED COWS	128 BRED COWS 0 DRY COWS 128 COWS W/ CALVES 0 DRY COWS SOLD	128 COWS EXPOSED 0 DRY COWS EXPOSED	128 COWS 0 DEATHS 128 COWS	128 COWS -10 CULL COWS 118 BRED COWS
150 FEMALES ON FEED	138 COWS W/ CALVES	150 FEMALES EXPOSED	150 EXPOSED FEMALES	138 BRED FEMALES
	69 STEER CALVES		69 STEER CALVES 0 DEATHS 69 STEER CALVES	69 STEERS WEANED
	69 HEIFER CALVES		69 HEIFER CALVES 0 DEATHS 69 HEIFER CALVES	69 STEERS SOLD 69 HEIFERS WEANED
	CULL SALES 0 CULL H1'S 0 DRY H2'S 0 DRY COWS 0 FEMALES SOLD			69 HEIFERS SOLD CULL SALES 2 CULL H1'S 0 CULL H2'S 10 CULL COWS 12 FEMALES SOLD 2 CULL BULLS 0 CULL HORSE
6 BULLS ON FEED	6 BULLS 1 BULLS PURCHASED 7 BULLS	7 BULLS	7 BULLS 0 DEATHS 7 BULLS	7 BULLS -2 CULL BULLS 1 BULLS PURCHASED 6 BULLS
0 HORSES	0 HORSES 0 HORSE PURCHASED	0 HORSES	0 HORSES 0 DEATHS	0 HORSES 0 CULL HORSE
0 HORSES ON FEED	0 HORSES		0 HORSES	0 HORSES

Pregnancy Percentage =	Bred Females/Females Exposed =	92.00%
Calving Percentage =	Cows w/ Calves/Females Exposed =	92.00%
Calf Death Loss =	Dry Cows & H2's/Females Exposed =	0.00%
Weaning Percentage =	Calves Weaned/Females Exposed =	92.00%
Replacement Rate =	Repl Heifers/Females Exposed =	8.00%
Bull to Cow Ratio=	Females Exposed/Bulls=	1:

21

Animas—LaPlata Cow/Calf Turnoff Rate, Budget 5RW

FALL/WINTER FEEDING	CALVING	BREEDING	SUMMER GRAZING	WEANING
15 H0 REPL HFRS	15 H1 REPL HFRS 0 CULLS 15 H1 REPL HFRS	15 H1'S EXPOSED	15 H1 REPL HFRS -1 DEATHS 14 H1 REPL HFRS	14 H1 REPL HFRS -2 CULL H1'S 12 BRED H1 HFRS
12 BRED H1 HFRS	12 BRED H1 HFRS 0 DRY H2'S 12 H2'S W/ CALVES 0 DRY H2'S SOLD	12 H2'S EXPOSED 0 DRY H2'S EXPOSED	12 H2 HEIFERS 0 DEATHS 12 H2 HEIFERS	12 H2 HEIFERS 0 CULL H2'S 12 BRED H2 HFRS
12 BRED H2 HFRS 111 BRED COWS	123 BRED COWS -1 DRY COWS 122 COWS W/ CALVES 0 DRY COWS SOLD	122 COWS EXPOSED 1 DRY COWS EXPOSED	123 COWS -1 DEATHS 122 COWS	122 COWS -11 CULL COWS 111 BRED COWS
150 FEMALES ON FEED	134 COWS W/ CALVES	150 FEMALES EXPOSED	148 EXPOSED FEMALES	135 BRED FEMALES
	67 STEER CALVES		67 STEER CALVES -1 DEATHS 66 STEER CALVES	66 STEERS WEANED 66 STEERS SOLD
	67 HEIFER CALVES		67 HEIFER CALVES 0 DEATHS 67 HEIFER CALVES	67 HEIFERS WEANED -15 REPL HEIFERS 52 HEIFERS SOLD
	CULL SALES 0 CULL H1'S 0 DRY H2'S 0 DRY COWS 0 FEMALES SOLD			CULL SALES 2 CULL H1'S 0 CULL H2'S 11 CULL COWS 13 FEMALES SOLD 1 CULL BULLS 0 CULL HORSE
6 BULLS ON FEED	6 BULLS 1 BULLS PURCHASED 7 BULLS	7 BULLS	7 BULLS -1 DEATHS 6 BULLS	6 BULLS -1 CULL BULLS 1 BULLS PURCHASED 6 BULLS
0 HORSES	0 HORSES 0 HORSE PURCHASED	0 HORSES	0 HORSES 0 DEATHS	0 HORSES 0 CULL HORSE
0 HORSES ON FEED	0 HORSES		0 HORSES	0 HORSES

Pregnancy Percentage =	Bred Females/Females Exposed =	90.00%
Calving Percentage =	Cows w/ Calves/Females Exposed =	89.33%
Calf Death Loss =	Dry Cows & H2's/Females Exposed =	0.67%
Weaning Percentage =	Calves Weaned/Females Exposed =	88.67%
Replacement Rate =	Repl Heifers/Females Exposed =	10.00%
Bull to Cow Ratio=	Females Exposed/Bulls=	1: 21

Animas—LaPlata Cow/Calf Turnoff Rate, Budget 5BW

FALL/WINTER FEEDING	CALVING	BREEDING	SUMMER GRAZING	WEANING
12 H0 REPL HFRS	12 H1 REPL HFRS 0 CULLS 12 H1 REPL HFRS	12 H1'S EXPOSED	12 H1 REPL HFRS 0 DEATHS 12 H1 REPL HFRS	12 H1 REPL HFRS -2 CULL H1'S 10 BRED H1 HFRS
10 BRED H1 HFRS	10 BRED H1 HFRS 0 DRY H2'S 10 H2'S W/ CALVES 0 DRY H2'S SOLD	10 H2'S EXPOSED 0 DRY H2'S EXPOSED	10 H2 HEIFERS 0 DEATHS 10 H2 HEIFERS	10 H2 HEIFERS 0 CULL H2'S 10 BRED H2 HFRS
10 BRED H2 HFRS 118 BRED COWS	128 BRED COWS 0 DRY COWS 128 COWS W/ CALVES 0 DRY COWS SOLD	128 COWS EXPOSED 0 DRY COWS EXPOSED	128 COWS 0 DEATHS 128 COWS	128 COWS -10 CULL COWS 118 BRED COWS
150 FEMALES ON FEED	138 COWS W/ CALVES	150 FEMALES EXPOSED	150 EXPOSED FEMALES	138 BRED FEMALES
	69 STEER CALVES		69 STEER CALVES 0 DEATHS 69 STEER CALVES	69 STEERS WEANED 69 STEERS SOLD
	69 HEIFER CALVES		69 HEIFER CALVES 0 DEATHS 69 HEIFER CALVES	69 HEIFERS WEANED -12 REPL HEIFERS 57 HEIFERS SOLD
	CULL SALES 0 CULL H1'S 0 DRY H2'S 0 DRY COWS 0 FEMALES SOLD			CULL SALES 2 CULL H1'S 0 CULL H2'S 10 CULL COWS 12 FEMALES SOLD 2 CULL BULLS 0 CULL HORSE
6 BULLS ON FEED	6 BULLS 1 BULLS PURCHASED 7 BULLS	7 BULLS	7 BULLS 0 DEATHS 7 BULLS	7 BULLS -2 CULL BULLS 1 BULLS PURCHASED 6 BULLS
0 HORSES	0 HORSES 0 HORSE PURCHASED	0 HORSES	0 HORSES 0 DEATHS	0 HORSES 0 CULL HORSE
0 HORSES ON FEED	0 HORSES		0 HORSES	0 HORSES

Pregnancy Percentage =	Bred Females/Females Exposed =	92.00%
Calving Percentage =	Cows w/ Calves/Females Exposed =	92.00%
Calf Death Loss =	Dry Cows & H2's/Females Exposed =	0.00%
Weaning Percentage =	Calves Weaned/Females Exposed =	92.00%
Replacement Rate =	Repl Heifers/Females Exposed =	8.00%
Bull to Cow Ratio=	Females Exposed/Bulls=	1: 21

Animas—LaPlata Cow/Calf Turnoff Rate, Budget 6R

FALL/WINTER FEEDING	CALVING	BREEDING	SUMMER GRAZING	WEANING
16 H0 REPL HFRS	16 H1 REPL HFRS 0 CULLS 16 H1 REPL HFRS	16 H1'S EXPOSED	16 H1 REPL HFRS -1 DEATHS 15 H1 REPL HFRS	15 H1 REPL HFRS -2 CULL H1'S 13 BRED H1 HFRS
13 BRED H1 HFRS	13 BRED H1 HFRS 0 DRY H2'S 13 H2'S W/ CALVES 0 DRY H2'S SOLD	13 H2'S EXPOSED 0 DRY H2'S EXPOSED	13 H2 HEIFERS 0 DEATHS 13 H2 HEIFERS	13 H2 HEIFERS 0 CULL H2'S 13 BRED H2 HFRS
13 BRED H2 HFRS 73 BRED COWS	86 BRED COWS -1 DRY COWS 85 COWS W/ CALVES 0 DRY COWS SOLD	85 COWS EXPOSED 1 DRY COWS EXPOSED	86 COWS -1 DEATHS 85 COWS	85 COWS -12 CULL COWS 73 BRED COWS
115 FEMALES ON FEED	98 COWS W/ CALVES	115 FEMALES EXPOSED	113 EXPOSED FEMALES	99 BRED FEMALES
	49 STEER CALVES		49 STEER CALVES -1 DEATHS 48 STEER CALVES	48 STEERS WEANED 48 STEERS SOLD
	49 HEIFER CALVES		49 HEIFER CALVES 0 DEATHS 49 HEIFER CALVES	49 HEIFERS WEANED -16 REPL HEIFERS 33 HEIFERS SOLD
	CULL SALES 0 CULL H1'S 0 DRY H2'S 0 DRY COWS 0 FEMALES SOLD			CULL SALES 2 CULL H1'S 0 CULL H2'S 12 CULL COWS 14 FEMALES SOLD 1 CULL BULLS 0 CULL HORSE
4 BULLS ON FEED	4 BULLS 1 BULLS PURCHASED 5 BULLS	5 BULLS	5 BULLS -1 DEATHS 4 BULLS	4 BULLS -1 CULL BULLS 1 BULLS PURCHASED 4 BULLS
0 HORSES	0 HORSES 0 HORSE PURCHASED	0 HORSES	0 HORSES 0 DEATHS 0 HORSES	0 HORSES 0 CULL HORSE 0 HORSES
0 HORSES ON FEED	0 HORSES			

Pregnancy Percentage =	Bred Females/Females Exposed =	86.09%
Calving Percentage =	Cows w/ Calves/Females Exposed =	85.22%
Calf Death Loss =	Dry Cows & H2's/Females Exposed =	0.87%
Weaning Percentage =	Calves Weaned/Females Exposed =	84.35%
Replacement Rate =	Repl Heifers/Females Exposed =	13.91%
Bull to Cow Ratio=	Females Exposed/Bulls=	1: 23

Animas—LaPlata Cow/Calf Turnoff Rate, Budget 6B

FALL/WINTER FEEDING	CALVING	BREEDING	SUMMER GRAZING	WEANING
14 H0 REPL HFRS	14 H1 REPL HFRS 0 CULLS 14 H1 REPL HFRS	14 H1'S EXPOSED	14 H1 REPL HFRS 0 DEATHS 14 H1 REPL HFRS	14 H1 REPL HFRS -1 CULL H1'S 13 BRED H1 HFRS
13 BRED H1 HFRS	13 BRED H1 HFRS 0 DRY H2'S 13 H2'S W/ CALVES 0 DRY H2'S SOLD	13 H2'S EXPOSED 0 DRY H2'S EXPOSED	13 H2 HEIFERS 0 DEATHS 13 H2 HEIFERS	13 H2 HEIFERS 0 CULL H2'S 13 BRED H2 HFRS
13 BRED H2 HFRS 75 BRED COWS	88 BRED COWS 0 DRY COWS 88 COWS W/ CALVES 0 DRY COWS SOLD	88 COWS EXPOSED 0 DRY COWS EXPOSED	88 COWS 0 DEATHS 88 COWS	88 COWS -13 CULL COWS 75 BRED COWS
115 FEMALES ON FEED	101 COWS W/ CALVES	115 FEMALES EXPOSED	115 EXPOSED FEMALES	101 BRED FEMALES
	51 STEER CALVES		51 STEER CALVES 0 DEATHS 51 STEER CALVES	51 STEERS WEANED
	50 HEIFER CALVES		50 HEIFER CALVES 0 DEATHS 50 HEIFER CALVES	51 STEERS SOLD 50 HEIFERS WEANED -14 REPL HEIFERS 36 HEIFERS SOLD
	CULL SALES 0 CULL H1'S 0 DRY H2'S 0 DRY COWS 0 FEMALES SOLD			CULL SALES 1 CULL H1'S 0 CULL H2'S 13 CULL COWS 14 FEMALES SOLD 1 CULL BULLS 0 CULL HORSE
4 BULLS ON FEED	4 BULLS 1 BULLS PURCHASED 5 BULLS	5 BULLS	5 BULLS 0 DEATHS 5 BULLS	5 BULLS -1 CULL BULLS 0 BULLS PURCHASED 4 BULLS
0 HORSES	0 HORSES 0 HORSE PURCHASED	0 HORSES	0 HORSES 0 DEATHS	0 HORSES 0 CULL HORSE
0 HORSES ON FEED	0 HORSES		0 HORSES	0 HORSES

Pregnancy Percentage =	Bred Females/Females Exposed =	87.83%
Calving Percentage =	Cows w/ Calves/Females Exposed =	87.83%
Calf Death Loss =	Dry Cows & H2's/Females Exposed =	0.00%
Weaning Percentage =	Calves Weaned/Females Exposed =	87.83%
Replacement Rate =	Repl Heifers/Females Exposed =	12.17%
Bull to Cow Ratio=	Females Exposed/Bulls=	1: 23

Animas—LaPlata Cow/Calf Turnoff Rate, Budget 7RW

FALL/WINTER FEEDING	CALVING	BREEDING	SUMMER GRAZING	WEANING
12 H0 REPL HFRS	12 H1 REPL HFRS 0 CULLS 12 H1 REPL HFRS	12 H1'S EXPOSED	12 H1 REPL HFRS -1 DEATHS 11 H1 REPL HFRS	11 H1 REPL HFRS -2 CULL H1'S 9 BRED H1 HFRS
9 BRED H1 HFRS	9 BRED H1 HFRS 0 DRY H2'S 9 H2'S W/ CALVES 0 DRY H2'S SOLD	9 H2'S EXPOSED 0 DRY H2'S EXPOSED	9 H2 HEIFERS 0 DEATHS 9 H2 HEIFERS	9 H2 HEIFERS 0 CULL H2'S 9 BRED H2 HFRS
9 BRED H2 HFRS 85 BRED COWS	94 BRED COWS -1 DRY COWS 93 COWS W/ CALVES 0 DRY COWS SOLD	93 COWS EXPOSED 1 DRY COWS EXPOSED	94 COWS -1 DEATHS 93 COWS	93 COWS -8 CULL COWS 85 BRED COWS
115 FEMALES ON FEED	102 COWS W/ CALVES	115 FEMALES EXPOSED	113 EXPOSED FEMALES	103 BRED FEMALES
	51 STEER CALVES		51 STEER CALVES -1 DEATHS 50 STEER CALVES	50 STEERS WEANED 50 STEERS SOLD
	51 HEIFER CALVES		51 HEIFER CALVES 0 DEATHS 51 HEIFER CALVES	51 HEIFERS WEANED -12 REPL HEIFERS 39 HEIFERS SOLD
	CULL SALES 0 CULL H1'S 0 DRY H2'S 0 DRY COWS 0 FEMALES SOLD			CULL SALES 2 CULL H1'S 0 CULL H2'S 8 CULL COWS 10 FEMALES SOLD 1 CULL BULLS 0 CULL HORSE
4 BULLS ON FEED	4 BULLS 1 BULLS PURCHASED 5 BULLS	5 BULLS	5 BULLS -1 DEATHS 4 BULLS	4 BULLS -1 CULL BULLS 1 BULLS PURCHASED 4 BULLS
0 HORSES	0 HORSES 0 HORSE PURCHASED	0 HORSES	0 HORSES 0 DEATHS	0 HORSES 0 CULL HORSE
0 HORSES ON FEED	0 HORSES		0 HORSES	0 HORSES

Pregnancy Percentage =	Bred Females/Females Exposed =	89.57%
Calving Percentage =	Cows w/ Calves/Females Exposed =	88.70%
Calf Death Loss =	Dry Cows & H2's/Females Exposed =	0.87%
Weaning Percentage =	Calves Weaned/Females Exposed =	87.83%
Replacement Rate =	Repl Heifers/Females Exposed =	10.43%
Bull to Cow Ratio=	Females Exposed/Bulls=	1: 23

Animas—LaPlata Cow/Calf Turnoff Rate, Budget 7BW

FALL/WINTER FEEDING	CALVING	BREEDING	SUMMER GRAZING	WEANING
9 H0 REPL HFRS	9 H1 REPL HFRS 0 CULLS 9 H1 REPL HFRS	9 H1'S EXPOSED	9 H1 REPL HFRS 0 DEATHS 9 H1 REPL HFRS	9 H1 REPL HFRS -1 CULL H1'S 8 BRED H1 HFRS
8 BRED H1 HFRS	8 BRED H1 HFRS 0 DRY H2'S 8 H2'S W/ CALVES 0 DRY H2'S SOLD	8 H2'S EXPOSED 0 DRY H2'S EXPOSED	8 H2 HEIFERS 0 DEATHS 8 H2 HEIFERS	8 H2 HEIFERS 0 CULL H2'S 8 BRED H2 HFRS
8 BRED H2 HFRS 90 BRED COWS	98 BRED COWS 0 DRY COWS 98 COWS W/ CALVES 0 DRY COWS SOLD	98 COWS EXPOSED 0 DRY COWS EXPOSED	98 COWS 0 DEATHS 98 COWS	98 COWS -8 CULL COWS 90 BRED COWS
115 FEMALES ON FEED	106 COWS W/ CALVES	115 FEMALES EXPOSED	115 EXPOSED FEMALES	106 BRED FEMALES
	53 STEER CALVES		53 STEER CALVES 0 DEATHS 53 STEER CALVES	53 STEERS WEANED 53 STEERS SOLD
	53 HEIFER CALVES		53 HEIFER CALVES 0 DEATHS 53 HEIFER CALVES	53 HEIFERS WEANED -9 REPL HEIFERS 44 HEIFERS SOLD
	CULL SALES 0 CULL H1'S 0 DRY H2'S 0 DRY COWS 0 FEMALES SOLD			CULL SALES 1 CULL H1'S 0 CULL H2'S 8 CULL COWS 9 FEMALES SOLD 1 CULL BULLS 0 CULL HORSE
4 BULLS ON FEED	4 BULLS 1 BULLS PURCHASED 5 BULLS	5 BULLS	5 BULLS 0 DEATHS 5 BULLS	5 BULLS -1 CULL BULLS 0 BULLS PURCHASED 4 BULLS
0 HORSES	0 HORSES 0 HORSE PURCHASED	0 HORSES	0 HORSES 0 DEATHS 0 HORSES	0 HORSES 0 CULL HORSE 0 HORSES
0 HORSES ON FEED	0 HORSES			

Pregnancy Percentage =	Bred Females/Females Exposed =	92.17%
Calving Percentage =	Cows w/ Calves/Females Exposed =	92.17%
Calf Death Loss =	Dry Cows & H2's/Females Exposed =	0.00%
Weaning Percentage =	Calves Weaned/Females Exposed =	92.17%
Replacement Rate =	Repl Heifers/Females Exposed =	7.83%
Bull to Cow Ratio=	Females Exposed/Bulls=	1: 23

Animas—LaPlata Cow/Calf Turnoff Rate, Budget 8RW

FALL/WINTER FEEDING	CALVING	BREEDING	SUMMER GRAZING	WEANING
12 H0 REPL HFRS	12 H1 REPL HFRS 0 CULLS 12 H1 REPL HFRS	12 H1'S EXPOSED	12 H1 REPL HFRS -1 DEATHS 11 H1 REPL HFRS	11 H1 REPL HFRS -2 CULL H1'S 9 BRED H1 HFRS
9 BRED H1 HFRS	9 BRED H1 HFRS 0 DRY H2'S 9 H2'S W/ CALVES 0 DRY H2'S SOLD	9 H2'S EXPOSED 0 DRY H2'S EXPOSED	9 H2 HEIFERS 0 DEATHS 9 H2 HEIFERS	9 H2 HEIFERS 0 CULL H2'S 9 BRED H2 HFRS
9 BRED H2 HFRS 85 BRED COWS	94 BRED COWS -1 DRY COWS 93 COWS W/ CALVES 0 DRY COWS SOLD	93 COWS EXPOSED 1 DRY COWS EXPOSED	94 COWS -1 DEATHS 93 COWS	93 COWS -8 CULL COWS 85 BRED COWS
115 FEMALES ON FEED	102 COWS W/ CALVES	115 FEMALES EXPOSED	113 EXPOSED FEMALES	103 BRED FEMALES
	51 STEER CALVES		51 STEER CALVES -1 DEATHS 50 STEER CALVES	50 STEERS WEANED 50 STEERS SOLD
	51 HEIFER CALVES		51 HEIFER CALVES 0 DEATHS 51 HEIFER CALVES	51 HEIFERS WEANED -12 REPL HEIFERS 39 HEIFERS SOLD
	CULL SALES 0 CULL H1'S 0 DRY H2'S 0 DRY COWS 0 FEMALES SOLD			CULL SALES 2 CULL H1'S 0 CULL H2'S 8 CULL COWS 10 FEMALES SOLD 1 CULL BULLS 0 CULL HORSE
4 BULLS ON FEED	4 BULLS 1 BULLS PURCHASED 5 BULLS	5 BULLS	5 BULLS -1 DEATHS 4 BULLS	4 BULLS -1 CULL BULLS 1 BULLS PURCHASED 4 BULLS
0 HORSES	0 HORSES 0 HORSE PURCHASED	0 HORSES	0 HORSES 0 DEATHS	0 HORSES 0 CULL HORSE
0 HORSES ON FEED	0 HORSES		0 HORSES	0 HORSES

Pregnancy Percentage =	Bred Females/Females Exposed =	89.57%
Calving Percentage =	Cows w/ Calves/Females Exposed =	88.70%
Calf Death Loss =	Dry Cows & H2's/Females Exposed =	0.87%
Weaning Percentage =	Calves Weaned/Females Exposed =	87.83%
Replacement Rate =	Repl Heifers/Females Exposed =	10.43%
Bull to Cow Ratio=	Females Exposed/Bulls=	1: 23

Animas—LaPlata Cow/Calf Turnoff Rate, Budget 8BW

FALL/WINTER FEEDING	CALVING	BREEDING	SUMMER GRAZING	WEANING
9 H0 REPL HFERS	9 H1 REPL HFERS 0 CULLS 9 H1 REPL HFERS	9 H1'S EXPOSED	9 H1 REPL HFERS 0 DEATHS 9 H1 REPL HFERS	9 H1 REPL HFERS -1 CULL H1'S 8 BRED H1 HFERS
8 BRED H1 HFERS	8 BRED H1 HFERS 0 DRY H2'S 8 H2'S W/ CALVES 0 DRY H2'S SOLD	8 H2'S EXPOSED 0 DRY H2'S EXPOSED	8 H2 HEIFERS 0 DEATHS 8 H2 HEIFERS	8 H2 HEIFERS 0 CULL H2'S 8 BRED H2 HFERS
8 BRED H2 HFERS 90 BRED COWS	98 BRED COWS 0 DRY COWS 98 COWS W/ CALVES 0 DRY COWS SOLD	98 COWS EXPOSED 0 DRY COWS EXPOSED	98 COWS 0 DEATHS 98 COWS	98 COWS -8 CULL COWS 90 BRED COWS
115 FEMALES ON FEED	106 COWS W/ CALVES	115 FEMALES EXPOSED	115 EXPOSED FEMALES	106 BRED FEMALES
	53 STEER CALVES		53 STEER CALVES 0 DEATHS 53 STEER CALVES	53 STEERS WEANED
	53 HEIFER CALVES		53 HEIFER CALVES 0 DEATHS 53 HEIFER CALVES	53 STEERS SOLD 53 HEIFERS WEANED -9 REPL HEIFERS 44 HEIFERS SOLD
	CULL SALES 0 CULL H1'S 0 DRY H2'S 0 DRY COWS 0 FEMALES SOLD			CULL SALES 1 CULL H1'S 0 CULL H2'S 0 CULL COWS 9 FEMALES SOLD 1 CULL BULLS 0 CULL HORSE
4 BULLS ON FEED	4 BULLS 1 BULLS PURCHASED 5 BULLS	5 BULLS	5 BULLS 0 DEATHS 5 BULLS	5 BULLS -1 CULL BULLS 0 BULLS PURCHASED 4 BULLS
0 HORSES	0 HORSES 0 HORSE PURCHASED	0 HORSES	0 HORSES 0 DEATHS	0 HORSES 0 CULL HORSE
0 HORSES ON FEED	0 HORSES		0 HORSES	0 HORSES

Pregnancy Percentage =	Bred Females/Females Exposed =	92.17%
Calving Percentage =	Cows w/ Calves/Females Exposed =	92.17%
Calf Death Loss =	Dry Cows & H2's/Females Exposed =	0.00%
Weaning Percentage =	Calves Weaned/Females Exposed =	92.17%
Replacement Rate =	Repl Heifers/Females Exposed =	7.83%
Bull to Cow Ratio=	Females Exposed/Bulls=	1: 23