FARMERS, LENDERS AND WATER DISTRICTS RESPONSE TO TEXAS' LOW INTEREST LOAN PROGRAM FOR WATER CONSERVATION [illegible]

Prepared by

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through

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TEXAS WATER DEVELOPMENT BOARD

November 5, [illegible]

FARMERS, LENDERS AND WATER DISTRICTS RESPONSE TO TEXAS' LOW INTEREST LOAN PROGRAM FOR WATER CONSERVATION IN AGRICULTURE

Lower Rio Grande Valley, Winter Garden Region,
and Texas High Plains

a joint project between

Texas A&M University
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Contract Completion Report
Submitted to
TEXAS WATER DEVELOPMENT BOARD

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Forward

This final report addresses separately the Winter Garden Region and Lower Rio Grande Valley, and then the Texas High Plains. Texas Tech University was responsible for the High Plains and Texas A&M University was responsible for the Winter Garden and Lower Rio Grande Valley. In each of the major sections of this report the details of each region are discussed and statistics presented. The implications one can glean from all areas of the study were surprisingly consistent. Some of the insight drawn from the surveys and interviews suggest some adjustments could be dramatic. These include: districts and irrigation equipment dealers being more aggressive in promoting the program, more farmer education and technical assistance by districts or the extension service, closer and more active involvement of irrigation equipment dealers in water districts that are participating in the program, and finally the consideration of expanding the law so that financial institutions are permitted to service the loan with the local water district doing technical assistance and assessment of the water conservation potential of a farmer application. As expected, there was a call for lower interest rates. One of the major limitations of the program currently is requiring a district to serve as a banker. We were a bit surprised at the strong response regarding a need for education and technical assistance, particularly in the Winter Garden and Lower Rio Grande Valley.

As we worked in the Winter Garden, it became apparent that this region has great potential for the program in the future. This is demonstrated by the success of the Evergreen UWCD and the institutional changes coming to the region. A major need is working agreements and institutional framework that provides incentives for conservation. this is a unique opportunity to establish a viable institution early that uses the low interest agricultural water conservation loan program and other concepts such as water banking, water markets, etc. In addition, there remains major opportunities to expand the program on the Texas High Plains, as shown in the Texas Tech work.

For the Lower Rio Grande Valley and other regions, implications are that the list of applicable equipment included in a local water district's approved plan encompass micro jet and drip systems. For the Lower Rio Grande Valley, it is especially important that districts not be responsible for administrating loans due to the small size of several districts and their reluctance to be a banker. Of the regions studied, the Lower Rio Grande Valley appears to be the most limited in potential for wide spread use of the program. This is partially due to the water rights that exist in this area for surface water as well as some very small water districts.

Recommendations

Based on analysis of farmer, water district, and lender surveys as well as personal interviews, limitations of the low interest loan program were identified. These are discussed in detail for each of the regions. Recommendations for increasing participation in the low interest program involve both developing interest by local water districts as

well as appealing to irrigation farmers in a participating district. Recommendations are presented in priority order that in our opinion will result in the greatest increase in participation.

An initial need is to improve participation by water districts in the program. This is expected to generate the largest increase in total participation across the state. A major limitation was lack of knowledge of the program by farmers and this is primarily because their local water district did not participate. Therefore the number one recommendation is as follows:

1) The program be modified so that commercial lending organizations can participate as the responsible institution for making the loan, doing the paperwork and being responsible for 50% of any outstanding balance of a loan that goes into default. However, retain the option of a district administering loans if they so choose.

Suggestion for accomplishment: A loan for agricultural water conservation qualifies under the Community Reinvestment Act (CRA) regulations 12 U.W.C. §§ 2901 - 2905. See HH 1.6/3:C 86 in government documents for the guidebook. Workshops and interaction between water districts, lending organizations and TWDB personnel would provide basis for education of the program and opportunities for short-run and long-run benefits to lending institutions through community development. It is recognized that this will require a change by the Texas Legislature.

With action regarding recommendations No. 1. there are two associated recommendations as follows:

1a) The local water district be responsible for evaluating the loan application and certifying the investment will indeed result in water conservation (improved water use efficiency) on the farm even when a lending institution assumes responsibility for the actual loan as in (1) above.

Suggestion for accomplishment: Current procedures for evaluating water conservation potential are adequate. This recommendation keeps the obligation with the local water district for evaluating applications for use of the Texas low interest loan program for water conservation in agriculture and provides for closer communication between water districts and lending organizations.

1b) The local water district be responsible for follow-up evaluation of farmer irrigation efficiency and estimated degree of water conservation achieved from use of each loan made using the program even when (if) a lending institution assumes responsibility for the actual loan as in (1) above.

Suggestion for accomplishment: Current procedures for follow-up evaluation of the degree of water conservation achieved appears to be acceptable, hence no change in procedure is suggested. Rather, it is recommended that if commercial lending institutions and/or equipment dealers are permitted to participate in

the program, a priority is suggested whereby the local water district maintains evaluation of water conservation achieved.

2) Consider expanding the list of applicable expenditures of the low interest loan program funds to include pumping plant efficiency improvements of existing wells.

Suggestions for accomplishment: In many parts of Texas, water is drawn from ground water. Inefficiency at the pump can be expected to impact the economics of improvements in the distribution of irrigation water. This recommendation involves a broadening of the applicable equipment and would require changes to be made by the Texas Legislature.

3) The state (TWDB) is encouraged to work closely with participating districts to assure systems applicable to a region are included in the local district's contract to participate (e.g., some farmers expressed a desire for including micro-jet and drip irrigation systems, but the district elected to not include them).

Suggestions for accomplishment: Some innovativeness by the TWDB will be needed to inform districts applying to participate in the program of the array of technologies applicable under the program and the principal selections best suited for that district. This requires some effort by the TWDB to become more informed of the latest irrigation technologies and how they fit into each region. It is important to be aware of a local district's perspective when making loans in that a district needs protection in case of default. Some systems and/or equipment would be difficult or impossible to recapture such as sub-surface drip. By expanding the program to commercial lending institutions, some of these concerns may be alleviated.

4) Reduce the effective interest rate on the loan to the farmers on agricultural water conserving practices and/or equipment to a range between 5 and 6 percent.

Suggestions for accomplishment: This is a refinement of the program whereby applicable interests rates are reduced slightly. Survey respondents suggested more interest in the program with slightly reduced rates. There may be opportunities in some districts where the district can participate in a cost sharing format to help reduce the interest rate paid the agricultural community. This may be of particular applicability to the Edwards Aquifer Authority when it becomes active.

5) Streamlining administrative procedures and reducing paperwork has been addressed by the TWDB but has not been well understood by many local water districts. There are two particular issues that emerged and are presented here.

5a) Streamlining administrative procedures and reducing paperwork has been addressed by the TWDB but has not been well understood by many local water districts. For example, there is a provision in the program that allows local water districts to continue making water conserving loans until the loan contracts are exhausted rather than requiring water districts to refund unused

funds and then having to make application for new loans simply because the contract period ran out. This is not well understood by some local water districts, hence it is recommended that the TWDB explicitly emphasize this option as it promotes the program across the state.

5b) The TWDB allows, in the case of early payoffs of a loan, the local water district to hold the income and continue making scheduled payments rather than re-calculating amortization schedules each time there is an early payoff. This is not well understood by some local water districts, hence it is recommended that the TWDB explicitly emphasize this option as it promotes the program across the state.

Suggestions for accomplishment: This recommendation involves developing language easily understood by water districts as well as verbally emphasizing the option in discussions with local water districts.

6) There are many farmers that elect to not participate in the program even though a local water district is participating. This is partially explained by a need to communicate with farmers and provide technical assistance before and after making a farm loan. Therefore, in a district that is participating in the program, conduct workshops and seminars relative to the program and potential water savings, economic implications, and value of the program.

Suggestions for accomplishment: As a part of acceptance of a district's application to the agricultural water conservation low interest loan program, the local water district be required to contact irrigation equipment dealers and irrigation farmers in the region informing them of the program. Furthermore, the district organize a farmer and dealer workshop involving the TWDB personnel, irrigation dealers and Texas Agricultural Extension Service specialists, when appropriate. It would be advantageous to include a cooperating dealer from a participating district to provide insight into how a dealer can interact with the program. Local dealers can be instrumental in directing interested irrigation farmers to the local participating water district.

An arrangement be developed whereby either the water district, irrigation specialists with the Texas Agricultural Extension Service, consultants with an irrigation equipment dealer, or other applicable expertise provide assistance to the farmer in optimizing water use efficiency of the new system (appropriate technology transfer). This is done effectively by water districts and other agencies such as the Texas Agricultural Extension Service in some regions, but certainly not in all; a major state wide shortcoming.

7) Improve tenant farm participation in the program.

Suggestions for accomplishment: Water districts purchase equipment and lease to tenants on an annual basis. In addition, by conducting a benefit/cost analysis, a

district, TWDB or other can demonstrate benefits associated with increased income associated with extending the life of an aquifer. These analyses could be used by tenants to illustrate to absentee landowners the benefits received from installing the non-recoverable equipment.

Acknowledgments

First and foremost, we would like to express our sincere appreciation to the many Texas farmers that took the time to complete the survey. Similarly, several water districts were most helpful in providing producer names and also completing a survey instrument. We are particularly indebted to Mr. Wayne Wyatt and Mrs. Becca Williams of the High Plains Underground Water Conservation District No. 1 in Lubbock, for participating in a pretest and providing suggestions for this study. Other water districts that participated and were kind enough to indulge us include Keith Pate (Evergreen Underground Water Conservation District), Luanna Buckner (Medina County Underground Water Conservation District), Rick Illgner (Edwards Underground Water District - now the Edwards Aquifer Authority), Bill Thompson (United Irrigation Water Conservation District), R. A. Peterson (Starr County Soil and Water Conservation District #332), Harvey Everheart (Mesa UWCD), Gary Walker (Sandy Land UWCD), C. E. Williams (Panhandle GWD #3), and Richard Bowers (North Plains Ground Conservation District #2). We are also indebted to Mr. Comer Tuck, Mr. Mike Personett, and Mr. Tommy Knowles of the Texas Water Development Board for responsiveness to our requests regarding the low interest loan program, materials submitted by the participating districts, a list of water districts in Texas and other interaction and comments regarding this study. Lastly, we recognize Dr. Joe Pena (Texas Agriculture Extension Service in Uvalde) for his help in providing a list of producer names.

Executive Summary

There are 6.4 million irrigated acres in Texas with 80 percent irrigated from ground water and 20 percent irrigated from surface sources. This is compared to 8.6 million acres irrigated in 1979, a dramatic reduction. Total acre feet of water applied annually is approximately 8.8 million. This is 60-65 percent of all water use in Texas. However, irrigated land contributes about $2.0 billion of output annually which has an economic impact to the state of over $6.0 billion.

Thus, irrigation is important to the economy of Texas and particularly to the economic viability of rural communities over much of the state. There was a time when water was plentiful and there were only a limited numbers of users. With urbanization and growth in industry, water has become a limited resource. Continued pumping from the Ogallalla results in a declining water table. Urban demands in many areas have drawn heavily upon available supplies. The importance of water to the continued growth of agriculture, municipal and industrial sectors emphasizes the critical need for efficiency in use. The Texas Legislature enacted a program whereby low interest loans could be made available for the purchase of water conserving (more efficient) irrigation equipment. This was called the "Agricultural Water Conservation Loan Program." The legislation is covered under Texas Administrative Code §§367.70-367.79 and are promulgated under the authority of the Texas Water Code, §§6.101 and 17.903.

The program was established under the Texas Water Development Board. It was designed to establish a fund from which the TWDB could make irrigation related loans directly to borrower districts, to make loans to lender districts, and to pay the cost of bond issuance. The loans can be made for capital equipment or materials, labor, preparation costs, and installation costs to (1) improve water use efficiency of water delivery and application on existing irrigation systems, (2) preparing irrigated land to be converted to dry land conditions, or (3) preparing dry land for more efficient use of natural precipitation. These conservation loans could be made by lender districts to individual borrowers for use on private property or by the TWDB to borrower districts for use on district facilities. Each loan requires fiscal information with a plan for repayment to the TWDB, including a plan for repayment in the event of default. To be approved requires financial integrity of a loan to an individual borrower including possibly a irrevocable letter of credit or a lien on property in excess of value of improvements. In the event of a default on a lender loan, the state (TWDB) assumes 50% of the amount that remains due with the district responsible for 50%.

As of December 1991, the Agricultural Water Conservation Loan Program had made 192 loans worth more than $6 million. This involved 51 thousand acres. It has been estimated that the program at that time was responsible for a 31 percent improvement in water use efficiency. This translates to about 67 thousand acre feet of saved water. By August 31, 1993 the program had provided $9.0 million for 284 individual farmer loans from 19 district contracts. The major participants include the High Plains Underground Water Conservation District No. 1, Sandy Land Underground Water Conservation District, Panhandle Underground Water Conservation District, and the Evergreen Underground Water Conservation District. Earlier Pilot Loan participants included the Brazos, Starr and Comal-Guadalupe Soil and Water Conservation Districts.

In reviewing the Agricultural Water Conservation Loan Program activity, it has been used only to a limited extent by water districts and by farmers. Typically, information gaps, lack of knowledge, and uncertainty contribute to non-participation in programs involving investment, even if the needed loans are subsidized. Another factor leading to program avoidance is the perceived or real need for a higher level of management of the farm following a significant investment. There is the risk that old practiced decision making may become obsolete or old decision making procedures will not result in benefits from the investment (a higher level of management is required for the advanced technologies). The issue becomes one of determining why more districts and farmers have not taken advantage of this program in order to economically make more efficient use of the water resources of Texas.

In June 1993, Texas A&M University and Texas Tech University undertook a joint project for the Texas Water Development Board. The purpose was to survey farmers, lenders and water district managers regarding the Texas low interest loan program for agricultural water conservation. This study was directed to the Texas High Plains (Texas Tech University took responsibility), Winter Garden Region, and Lower Rio Grande Valley (Texas A&M University was responsible for the last two). For the High Plains there was five underground water conservation districts included (High Plains UWCD #1, Mesa

UWCD, Sandy Land UWCD, Panhandle GWD #3, and North Plains GCD #2. For the Lower Rio Grande Valley, the major counties were Cameron, Hidalgo, and Willacy (United Irrigation Water Conservation District, Starr County S&WCD, and Donna Irrigation District. The Winter Garden Region includes much of the irrigated area of the Edwards Aquifer and included the counties of Uvalde, Zavala, Wilson, Gaines, Atascosa, Bexar, Frio, Medina, and La Salle (Edwards Underground Water Conservation District, Medina County District, and Evergreen Underground Water Conservation District).

Key Findings: This final report addresses separately the Winter Garden Region and Lower Rio Grande Valley, and then the Texas High Plains. Texas Tech University was responsible for the High Plains and Texas A&M University was responsible for the Winter Garden and Lower Rio Grande Valley. In each of the major sections of this report the details of each region are discussed and statistics presented. The implications one can glean from all areas of the study were surprisingly consistent. Some of the insight drawn from the surveys and interviews suggest some adjustments could be dramatic. These include, districts being more aggressive in promoting the program, more education and technical assistance by districts or the extension service, involvement of irrigation equipment dealers in water districts that are participating in the program, and finally the consideration of expanding the law so that financial institutions are permitted to service the loan with the water district doing technical assistance and assessment of the water conservation potential of a farmer application.

As expected, there was a call for lower interest rates. The highest percentage of responses falls in the 5%-6% range. Thirty six percent of total responses (251 total farmer responses) indicates this to be the maximum desirable level.

Requirements for tenant farmer participation have not been crucial in the involvement of participation. Under the current program, approximately 76% of all farmers surveyed either strongly liked, liked, or felt indifferent toward this feature of the program. This enables us to assume that the other aspects of the program are of much greater importance and allows us to concentrate upon them.

One of the major limitations of the program currently is requiring a district to serve as a banker. Many districts simply do not have the resources need to act in this capacity. Therefore it is recommended that the program be extended to permit lending institutions make the loans and be liable for 50% of any outstanding balance while the district is responsible for the evaluation of the loan application, applicability of equipment or use of the funds and conformation of water use efficiency. This will reduce the district's paperwork and administrative responsibilities. Lending institutions already possess this lending capability.

Another option for the districts is to interact with irrigation equipment dealers. District managers can educate dealers about the program who can in turn inform farmers. This enables all those interested in purchasing irrigation equipment two channels of information about the program, the district and equipment dealers, therefore improving

the chance of awareness of the program. Farmers who are interested in purchasing equipment can then be sent to the district office and then obtain complete information about the program before purchasing equipment.

We were a bit surprised at the strong response regarding a need for education and technical assistance, particularly in the Winter Garden and Lower Rio Grande Valley. Of the 334 total responses to the need for technical assistance, 179 responded yes, 44 being from the Valley and Winter Garden regions. Regarding the need for educational programs, of the 243 total responses 179 indicated the participation would be improved, 44 being from these two regions.

Most of the farmers simply were not familiar with the program at all. The lack of communication from the district to potential participants is the programs greatest downfall in the Winter Garden and Lower Rio Grande Valley regions. Of the total sample, 93 were unaware of the program. Of these responses, 49 were from the Winter Garden and Lower Rio Grande Valley. Reducing the banking type activities of the districts and the resources needed to act as lending institutions will increase participation of the districts and in turn enable them to concentrate more on informing the farmers of the program. A district that elects to not participate makes no effort to educate farmers of the program.

As we worked in the Winter Garden, it became apparent that this region has great potential for the program in the future. This is demonstrated by the success of the Evergreen UWCD and the institutional changes coming to the region. A major need is working agreements and institutional framework that provides incentives for conservation. This is a unique opportunity to establish a viable institution early that uses the low interest agricultural water conservation loan program and other concepts such as water banking, water markets, etc. In addition, there remains major opportunities to expand the program on the Texas High Plains, as shown in the Texas Tech contribution.

For the Lower Rio Grande Valley and other regions, implications are that the list of applicable equipment in a district's approved plan needs to include micro jet and drip systems as well as improvements in pumping plants where ground water is used. Micro jet and drip systems are approved items in the overall program but some districts did not include this technology in their plan to participate in the program. For the Lower Rio Grande Valley it is especially important that districts not be responsible for administering loans due to the small size of several districts and their reluctance to be a banker. Of the regions studied, the Lower Rio Grande Valley appears to be the most limited in potential for wide spread use of the program. This is partially due to the water rights that exist in this area for surface water as well as some very small water district.

FARMERS, LENDERS AND WATER DISTRICTS RESPONSE TO TEXAS' LOW INTEREST LOAN PROGRAM FOR WATER CONSERVATION IN AGRICULTURE

LOWER RIO GRANDE VALLEY AND WINTER GARDEN REGION

Texas A&M University

Lower Rio Grande Valley and Winter Garden Region

As indicated earlier, Texas A&M was responsible for the surveys in the Winter Garden and Lower Rio Grande Valley. These areas have not participated significantly in the Agricultural Water Conservation Program. The Evergreen Underground Water District has recently begun to participate and the program has been well received by equipment dealers and farmers. United Irrigation District in the Lower Rio Grande Valley also has participated.

A general implication of this study is that the Board of Directors of a Water District (often with support of a District Manager) represent a major impediment to the program. Many districts are simply too small to undertake the program or they just do not want to devote resources to implementation of the program. This leaves the farmers as the losers because they typically never have an option to participate.

However, beyond a district participating in the program, evidence suggest active involvement of irrigation equipment dealers essential to success. This means the district needs to be very active in education of water conservation options, making the public aware of the low interest loan program and having the cooperation and support of irrigation equipment dealers.

Turning to the producers, there is a significant demand for education and training in the application of water conservation irrigation equipment and associated management. Producers not only feel a need to be informed of the opportunity but have indicated the requirement of a district (or some organization) being active in technology transfer after installation of new irrigation equipment.

A last group, lenders, were queried as to their reaction to the low interest loan program for agricultural water conservation. The major concern expressed was relative to water districts acting as bankers. This concern was also expressed by water districts as a major factor of why they do not participate.

To support the finding and recommendation of this study, the details for each region are presented. This includes data provided by the farmers, commercial lenders and water districts.

Farmer Surveys

Farmers are listed in two categories, the Lower Rio Grande Valley and the Winter Garden area. There were 541 surveys mailed to farmers in these two areas (415 to the Winter Garden area and 126 to the Lover Rio Grande Valley). Of these surveys, 20 were returned for reasons such as retirement, deaths, and incorrect addresses (10 from both areas). Of the 521 valid surveys, 81 were returned and are utilized in this study. This gives

a response rate of 15.5% This low response rate may be attributed to the lack of familiarity and understanding of the program, and low involvement of the districts.

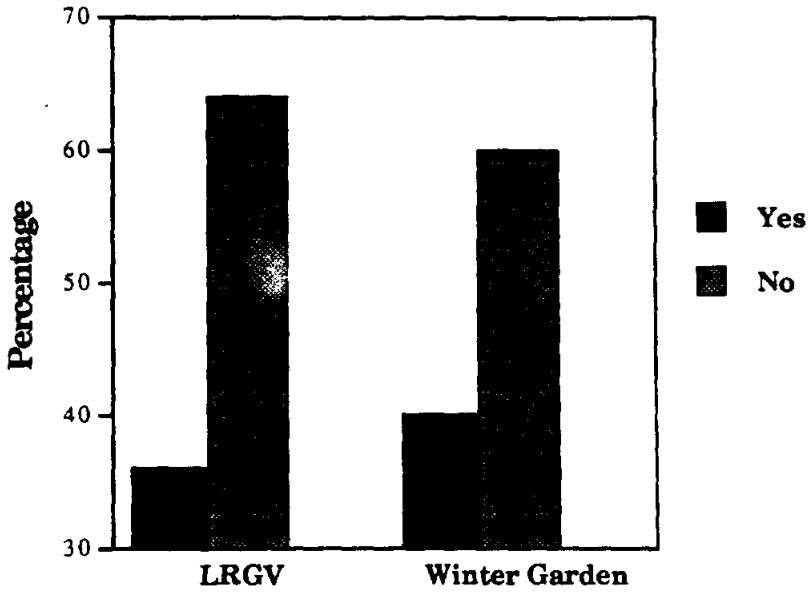

Figure 1: Farmer response regarding knowledge of the program.

There is some feeling that households and commercial users are more to blame for inefficient use of water in the region than agriculture.

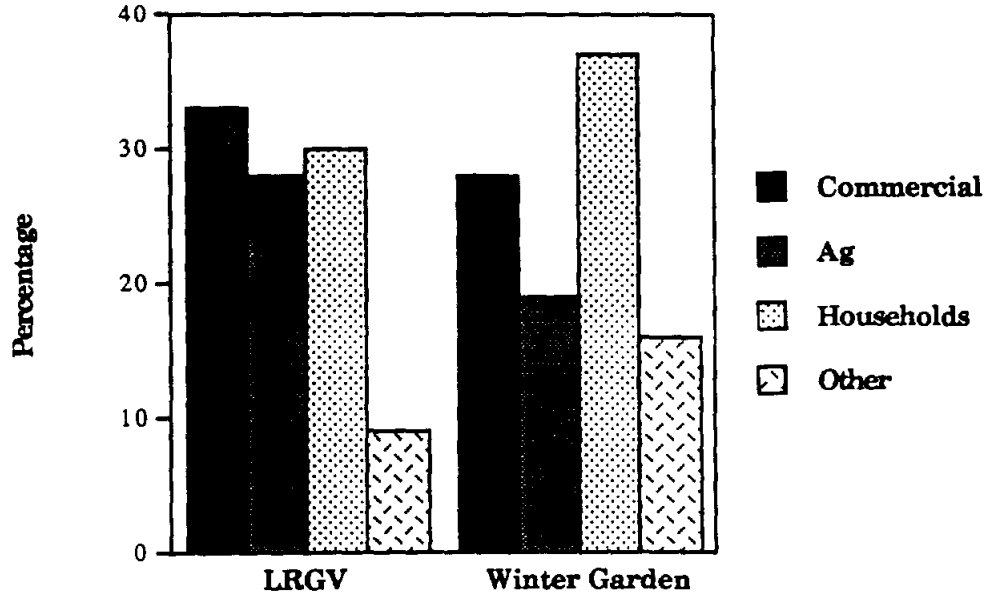

Figure 2: Farmer response as to who is the most inefficient users of water

Furthermore, there was a response of not wanting government involved in water conservation. This relates to much of the litigation and legislation related to the Edward's Aquifer. Across the region, several knew of the program but most districts do not participate.

The farmers responding were generally over 50 years of age with a high school education or better. There was little off-farm income and they grossed over $250,000 per year. There were not many with heavy long-term debt (22% had over $150,000) but there were several with heavy short-term debt. The Winter Garden represents a region with a bright future for the low interest agricultural water conservation program after the Edward's Aquifer Authority is operating, and there is some security in the future of institutions allocating water. The Edward's Aquifer Authority is in the drivers seat and can develop systems that include water marketing in conjunction with water conserving equipment and management whereby the farmer gains by sale or lease of water an maintains a previous level of production.

Participants: Five respondents participated in the program in 1993. Participation can be attributed to low interest rates, the benefits of water conservation, and reducing the cost and labor requirements of irrigation. All five respondents indicated that income taxes, expansion of the farm (although one farmer indicated it was part of the expansion of the farm), and old worn out equipment had little influence on their decision to participate.

All five indicated ground water as their main source of water on the farm with an average of 4.2 well per farm. Two farmers are from Frio County, one from Atascosa County one from Bexar County, and one from Uvalde County. The average age of these farmers is 44 years. Four of them have gone to college of which two received degrees. The fifth farmer has a high school education. The averaged farm size of owned acres is 1,356 acres with an average of 688 irrigated and 368 non-irrigated. The average acres leased by these farmers is 562, with an average of 373 acres irrigated and 35 acres non-irrigated. Principal crops grown were peanuts, grains, vegetables, corn, and hay. The average income for these farms is $270,000 on-farm and $11,200 off-farm. Debt load for these operations averaged $602,000 long-term and $231,250 short-term.

There are a total of six loans made, one amount not given. The average of the five loans is $30,760. The funds were used to purchase Center Pivot Low Pressure Systems and underground PVC pipe.

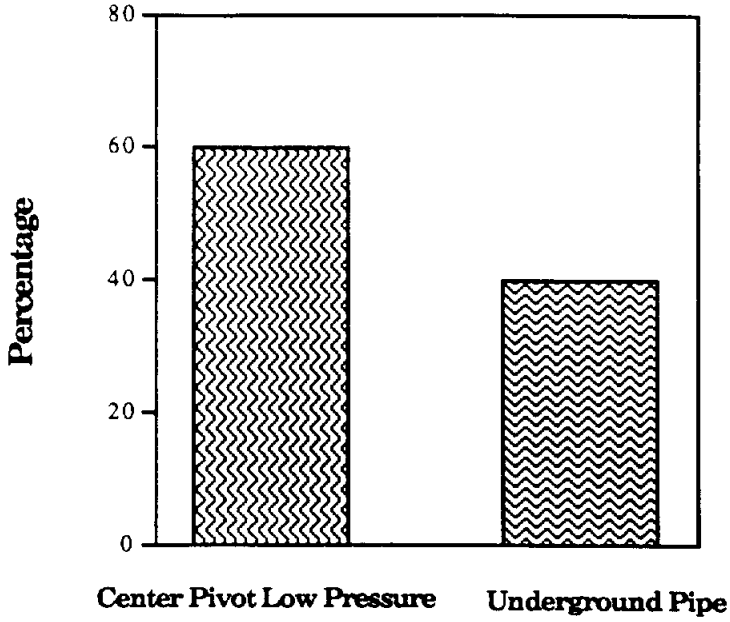

Figure 3: Purchases made with funds from the low interest loan program.

These new systems replaced open-ditches, siderows and handlines, hand move sprinklers, and two center pivot high pressure systems.

The average total costs incurred was $35,400. All five respondents indicated water use efficiency increased from 20% to 70% with an average of 46%. Four indicated an increase of crop yields which ranged from 10% to 29% and averaged 12.5%. Participation in the Evergreen Underground Water District is primarily attributable to the efforts of the district manager and a cooperating equipment dealer. What this experience shows is that the demand for this program exists if the districts are willing to exert effort for water conservation.

Non-Participants: Non participants indicated the principal problem with the program was that their district was not active or they did not know if it was active or not. There were 49% of the respondents indicating dislike of the paper work involved with obtaining a loan. Interest rate being too high was disliked or strongly disliked by 30% of those surveyed. Approximately 36% said they disliked or strongly disliked the administrative fee charged by the district. Many had already adopted water conservation equipment without the program, or they were pleased with their current equipment. There was also a general feeling of discomfort over the future of agriculture. Concerning issues related to a district doing banking activities, 40% responded they disliked or strongly disliked this feature. Although many of those surveyed indicated they were in favor of the list of approved equipment, 21% felt there needed to be some changes and additions. Other equipment such as micro jet systems, well pump systems, tail water construction, total plant equipment, and drip irrigation systems were some of the items mentioned for addition to the list. There was a general concern about water allocation in the region. In nearly all

cases there was a stated need for more education and technical assistance in conjunction with adoption of water conserving technologies. Approximately 63% indicated they had not attended a demonstration addressing water conservation. There were 56% of the respondents that indicated a farmer education or extension program emphasizing the importance of water conservation and the provisions of water conservation loan program would significantly improve participation.

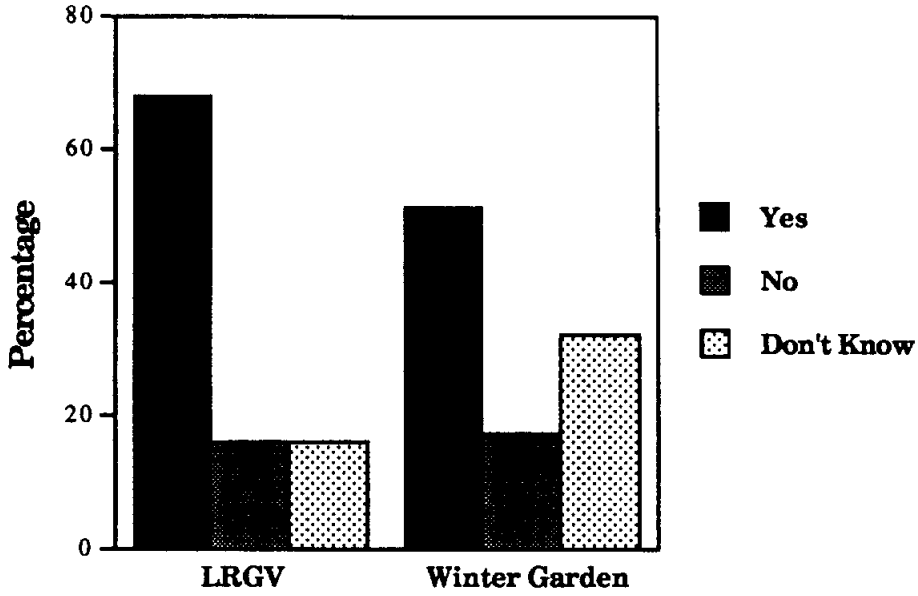

Figure 4: Farmer response to need for education and extension on water conservation.

This suggests a closer working relationship with the Texas Agricultural Extension Service, a larger role for water districts in education and technical assistance, and interaction with USDA, which was evident from the responses of the farmers surveyed.

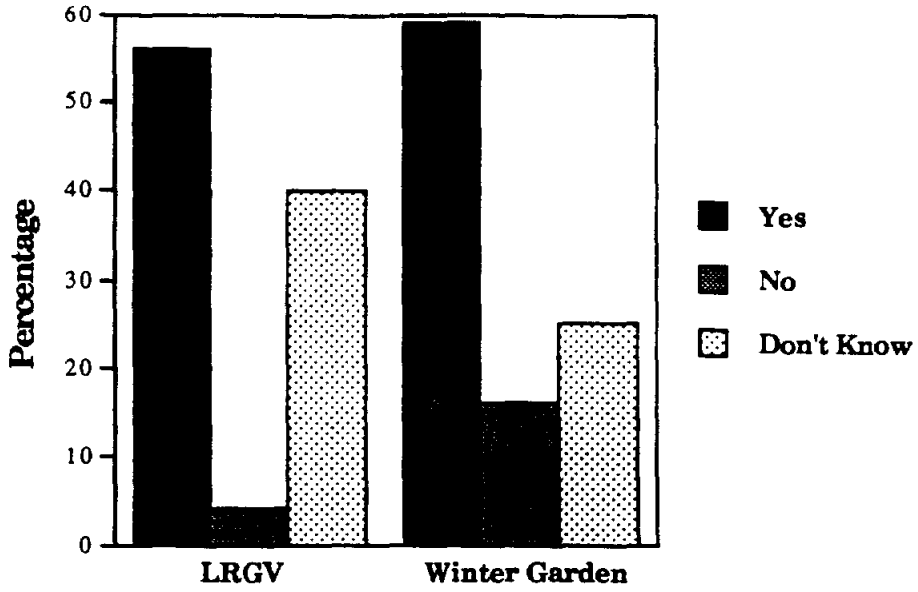

Figure 5: Farmer response to need for technical assistance on water conservation

We received a letter, in addition to a survey, from one farmer in south Texas who indicated there is a problem with non-dissemination of information about the activities of the district in which he lives. He had no idea if the district was involved in the low interest loan program or not. He indicated some personal ideas on how to conserve surface water in Texas, and we quote:

> 1. Install a full-time State water master on every river basin to ensure compliance with the State water use permits issued for that basin. Give him enforcement officer status and backing; make his authority superior to any River Authority or similar state created organization. The Legislature should make sure that organizations such as River Authorities know they do not own the water in the river.
> 2. Eliminate the authority of the Railroad Commission to issue discharge permits of any kind, especially for salt water discharges into fresh water.
> 3. There should be vigorous oversight inspections by the State on water-related districts, authorities, etc.
> 4. There must be strict compliance with all State-issued waste discharge permits, whether municipal, industrial, power-generated, etc.

For the Lower Rio Grande Valley (LRGV), all irrigation is essentially with surface water. The producers indicated there was opportunity for improvements and that all users were inefficient. There was general agreement that benefits of conservation exceed costs but 64% of the respondents did not know about the program. There were five farmer respondents that were eligible for the program but none-participated. The reason for non participation was the farm firm financial situation, interest rate too high, tenant farming, and a concern over the future of agriculture. Many of the producers that responded in the LRGV were small (50% gross less than $25,000 annually) and had significant off-farm income.

Major concerns of respondents regarding the low interest agricultural water conservation program include: district doing banking, excessive paperwork, high interest rate, and the administrative charge. To encourage more water conservation (and in turn help make the low interest state program more viable in the LRGV) there was a strong expression of need for more extension (education) and technical assistance. There was also the need to increase the list of equipment in this region to include drip and micro jet irrigation systems.

Lender Surveys

The lenders that participated in the study from the Winter Garden and LRGV felt that water was limiting and government help was needed to encourage conservation. Furthermore, they felt that water conservation in agriculture benefits exceeded costs. Of those surveyed, 83% felt that one approach to increase water use efficiency in agriculture was to adopt water conserving irrigation equipment. None knew about the state's low interest loan program. They were unanimous in their opposition to districts doing banking work, indicated too much paperwork was involved, but 67% said they liked the interest rate and 83% liked having a set of qualifying equipment. As expected, the lenders felt that allowing bankers to administer the loans would increase participation.

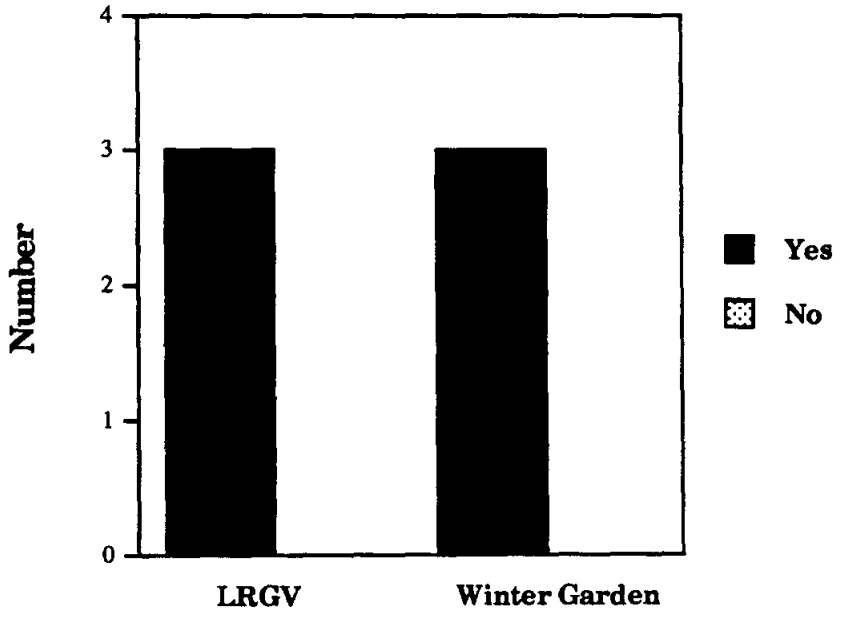

Figure 7: Lenders making loans for irrigation equipment

This is likely true since many districts are small and can not shoulder the financial exposure or the manpower to conduct the program. There are some water district board of directors that include bankers and they interpret the law as making the district as ineligible to participate in the low interest program.

All of the lenders surveyed in the Winter Garden and LRGV were active in making irrigation loans (Figure 7). There were strong feelings of improvements in profitability in agricultural activities, and good returns on loans, as compared to the past. The size of the irrigated sector also played a big role in financing loans for irrigation equipment. They indicated a willingness to participate in the program if the law were modified but liked the water district doing assessments of loan applications. Of six lenders, the total loans for irrigation in 1993 was $230,000. It has been relatively low but the trend is up. These loans are typically 20% down and less than 5 years to pay at a rate of 8 to 11%. Many loan applications are not accepted because of risk (100% agree), the farmer is in financial distress (100% agree), concern over future water allocation rules and regulation (83% agree), requirements for the farmer to qualify (67% agree) agreed, and a general concern over the future of agriculture.

Of those surveyed, most felt a farmer education program emphasizing the importance of water conservation and the program would significantly improve participation.

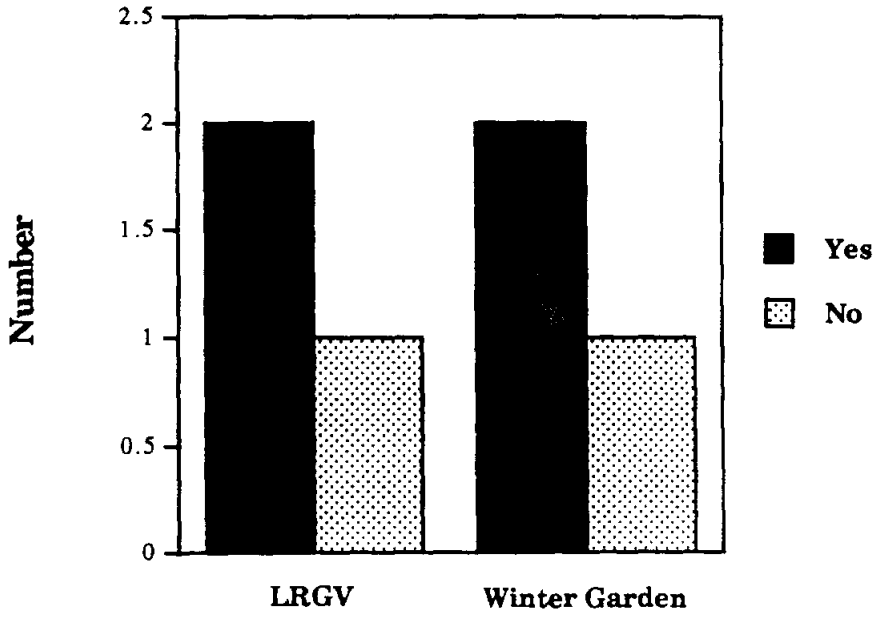

Figure 8: Lenders response to need for an educational program on water conservation in agriculture.

Water District Manager Surveys

Six water managers were surveyed in the Winter Garden and LRGV (three in each). Two of the districts participate in the low interest loan program. Participants did so to improve water conservation in the district and due to encouragement from the Texas Water Development Board.

A lack of participation by districts was due to low producer interest in water conservation (need for education and technical assistance), not wanting to do banking activities, incapable of assuming liability of default on a loan(s), collateral requirements for producers, too much administration (not enough employees), for political reasons (unresolved legal issues in the Winter Garden). and more equipment needs to be added to approved list. There was a call for lower interest rates and addition of drip and micro jet irrigation systems.

One particular district indicated they had already done a similar study. This district returned a letter with their blank survey that is paraphrased in the Water District Manager section. In meeting with another district manager that participates in the program, he indicated that his board was very reluctant to join the program. However, once on board, it has been most successful. Some keys to success include education (extension, demonstration) and technical assistance. A strong key is involvement of equipment dealers. This program offers an opportunity to sell highly efficient irrigation equipment and many successful programs have been associated with an aggressive dealer sending farmers to a participating district. So, some lessons are evolving and some rules and regulations are changing that are expected to provide a better environment for water conservation.

WINTER GARDEN
FARMER SURVEY RESULTS

Survey Methods

Questionnaire Development. The questionnaire used in this study was developed by research colleagues in the Agricultural Economics Departments of Texas A&M University and Texas Tech University, along with members from the Texas Water Development Board and the High Plains Underground Water Conservation District No. 1.

Survey Response Summary

The farmers in this study were all from the Winter Garden area. The Counties of Atascosa, Bexar, Frio, Medina, La Salle, Uvalde, Zavala, Wilson, and Gaines (one response from Gaines which is not in the Winter Garden but the farm is in the study area) are included in this study. Approximately 415 surveys were mailed. Of these 10 were returned for various reasons (incorrect addresses, deaths, etc.). There were a total of 56 responses giving a 13.8% response rate. The low response rate can be attributed to, among other things, the lack of awareness of the program. However, in the Winter Garden area, the issue of Edwards Aquifer water rights, litigation and legislation has contributed to a reluctance by farmers to volunteer information about irrigation. Dr. Jose Pena, Texas Agricultural Extension Service Specialist at Uvalde was the source of most farmer names in this area and to him we are most grateful. The Wintergreen Underground Water Conservation District is a participant in the agricultural low interest loan program.

The effort to obtain farmer names was difficult in that the Edwards Underground Water District had only observation wells, of which they freely shared the list. Many farmers on this list were not farmers. The Medina County Under Ground Water Conservation District would not provide any farmer names nor would the Soil and Water Conservation District. With the controversy surrounding water in the Edwards aquifer, the issue of water use in agriculture is touchy at best. Therefore, there was some reluctance for districts to provide farmer names and addresses. Given that there is legislation regarding the future of the Edwards aquifer and many unsettled questions about future rights, allocation, and grand fathering use, there may be some bias and hidden agenda's in some of the responses. However, it is our contention that the farmers were diligent in their responses and the questions regarding the outlook for the low interest loan program for agriculture provides insight into needs for the future. Furthermore, with the new Edwards Aquifer Authority that is now in place, there is a unique opportunity to re-address water conservation in this region. the following is a summary of producer responses to each question on the survey.

Questionnaire Section 1. Information regarding your views about water conservation.

Table 1. Has water become a limited resource and is there an immediate need to emphasize efficiency in water use?

Response	Frequency	Percentage
Yes	49	89%
No	6	11%
Don't Know	0	0%
	N=55	100%
Non-response	1	2%
Non-response	1	2%

Table 2. In your opinion, who is most responsible for inefficient use and loss of water? More that one response may be chosen.

Response	Frequency	Percentage
Commercial sector	21	28%
Agricultural sector	14	19%
Households(domestic use)	28	37%
Other	12	16%
	N=75	100%

Table 3. Do you believe that the government should take legislative actions to encourage water conservation?

Response	Frequency	Percentage
Yes	17	30%
No	30	54%
Don't Know	9	16%
	N=56	100%

Table 4. Do you believe that benefits of water conservation, in general, exceed the costs of its implementation?

Response	Frequency	Percentage
Yes	28	50%
No	13	23%
Don't Know	15	27%
	N=56	100%

Table 5. Do you believe that benefits of agricultural water conservation exceed the costs of its implementation?

Response	Frequency	Percentage
Yes	28	50%
No	14	25%
Don't Know	14	25%
	N=55	100%
Non-Response	1	2%

Table 6. Do you believe that one approach to increase water use efficiency in agriculture is to adapt water conserving irrigation equipment?

Response	Frequency	Percentage
Yes	47	84%
No	5	9%
Don't Know	4	7%
	N=56	100%

Table 7. Are you aware that the Texas Legislature has enacted an Agricultural Water Conservation Loan Program whereby low interest loans can be made available for the purchase of water conserving irrigation equipment?

Response	Frequency	Percentage
Yes	22	40%
No	33	60%
Don't Know	0	0%
	N=55	100%
Non-Response	1	2%

Table 8. **If Yes in Table 7,** is the program available in your district?

Response	Frequency	Percentage
Yes	11	58%
No	7	37%
Don't Know	1	5%
	N=19	100%
Non-Response	3	14%

Table 9. **If yes,** are you participating or did you participate in the past in the Agricultural Water Conservation Loan Program?

Response	Frequency	Percentage
Yes	5	30%
No	12	70%
Don't Know	0	0%
	N=17	100%
Non-Response	5	23%

Table 10. **If no,** what type of irrigation equipment or method of irrigation are you using, when was it installed, and how was it financed?

Irrigation Equipment	Installation Date	Finance Source
Mainline	1957, 1978-1989	Personal
Side Rolls	1970, 1972	Bank
LEPA	1990	Bank
Pivot	1988	Bank
Lateral Line Move	1972	Personal

Table 11. Respond with your opinion regarding the influence of the following factors on your decision to not participate in the program if answered **NO** to Table 9.

Factor	Strong	Moderate	Weak	No Effect	Non-response
Involvement of district in the program	3	0	0	1	8
% based on number of responses	75%	0%	0%	25%	67%
Excessive paperwork	1	0	1	2	8
% based on number of responses	25%	0%	25%	50%	67%
Requirements to qualify too Difficult	1	0	1	2	8
% based on number of responses	25%	0%	25%	50%	67%
Program's interest rate too high	0	1	1	2	8
% based on number of responses	0%	25%	25%	50%	67%
Limited funds available to farmers	0	1	1	2	8
% based on number of responses	0%	25%	25%	50%	67%
Financial situation of the farm	0	2	1	1	8
% based on number of responses	0%	50%	25%	25%	67%
Adopted conservation without program	1	1	0	2	8
% based on number of responses	25%	25%	0%	50%	67%
Too much in debt, do not want to increase it	0	0	1	3	8
% based on number of responses	0%	0%	25%	75%	67%
Satisfied with the existing irrigation equipment	1	2	1	0	8
% based on number of responses	25%	50%	25%	0%	67%
Non-farmer landowner (land rented or leased)	0	0	0	4	8
% based on number of responses	0%	0%	0%	100%	67%
Concern over the future of agriculture	3	0	0	1	8
% based on number of responses	75%	0%	0%	25%	67%

Section 2. Answer this section only if you are a farmer who has been or are currently a participant in the Agricultural Water Conservation Loan Program.

Table 12. Respond with your opinion regarding the influence of the following factors on your decision to participate in the program. (Circle one)

Factor	Strong	Moderate	Weak	No Effect	Non-response
Low interest rates relative to comm. rate	4	0	0	1	0
% based on number of responses	80%	0%	0%	20%	0%
Involvement of district in the program	2	0	0	0	3
based on number of response	100%	0%	0%	0%	60%
Benefits of conservation exceed costs	5	0	0	0	0
% based on number of responses	100%	0%	0%	0%	0%
Would have adopted conservation w/o program	3	1	0	1	0
% based on number of responses	60%	20%	0%	20%	0%
Investment to avoid income taxes	0	0	1	4	0
% based on number of responses	0%	0%	20%	80%	0%
Part of expansion of farm	1	0	0	4	0
% based on number of responses	20%	0%	0%	80%	0%
Reduce costs of irrigation	5	0	0	0	0
% based on number of responses	100%	0%	0%	0%	0%
Reduce labor requirements for irr.	5	0	0	0	0
% based on number of responses	100%	0%	0%	0%	0%
Equipment replaced was worn out	3	0	0	2	0
% based on number of responses	60%	0%	0%	40%	0%

Table 13. How many loans have you taken.

Loan Numbers	Frequency	Percentage
1	4	67%
2	1	33%
3	0	0%
	N=6	100%

Table 14. What was (were) the amount(s) of loan(s)?

Amount(s)	Frequency	Percentage
Less than $10,000	1	20%
$10,000-$19,999	0	0%
$20,000-$29,999	0	0%
$30,000-$39,999	3	60%
$40,000-$49,999	1	20%
$50,000 or more	0	0%
	N=5	0%
Non-Response	1	17%

Table 15. When did you take the loan(s)?

Year	Frequency	Percentage
1989	0	00%
1990	0	0%
1991	0	0%
1992	0	0%
1993	5	100%
	N=5	100%
Non-Response	1	17%

Table 16. How did you make use of the water conservation funds?

Equipment Purchased	Frequency	Percentage
Underground Pipe	1	40%
Center Pivot Low Pressure	4	60%
	N=7	100%

Table 17. How many acres of land were affected by the water conserving equipment?

Acres	Frequency	Percentage
Less than 100	0	0%
100-199	5	100%
200-299	0	0%
300-399	0	0%
400-499	0	0%
500 or more	0	0%
	N=5	100%

Table 18. What are the principal crop(s) grown using the water conserving equipment?

Crops	Frequency	Percentage
Vegetables	1	9%
Peas	1	9%
Peanuts	4	37%
Corn	1	9%
Sorghum	1	9%
Milo	1	9%
Wheat	2	18%
	N=11	100%

Table 19. What type of irrigation equipment or irrigation method was replaced by the water conserving equipment?

Method Replaced	Frequency	Percentage
Open Ditch	1	20%
Siderows	1	20%
Hand move sprinklers	1	20%
High Pressure Center Pivot	2	40%
	N=7	100%

Table 20. What was your estimate of total cost (investment) incurred due to your participation in the water conserving equipment?

Total Costs (Investment)	Frequency	Percentage
Less than $10,000	0	0%
$10,000-$10,999	1	20%
$20,000-$29,999	0	0%
$30,000-$39,999	0	0%
$40,000-$49,999	4	80%
$50,000-$59,999	0	0%
$60,000 or more	0	0%
	N=5	100%

Table 21. Were there any water use efficiency improvements? (were efficiency is defined in terms of yields(s) obtained by the amount of water used)

Response	Frequency	Percentage
Yes	4	80%
No	1	20%
	N=5	100%

Table 22. **If yes,** how much do you estimate the improvement in water use efficiency to be?

Improvement (%)	Frequency	Percentage
Less than 10%	0	0%
10%-19%	0	0%
20%-29%	1	25%
30%-39%	1	25%
40%-49%	0	0%
50%-59%	1	25%
60%-69%	1	25%
70% or more	0	0%
	N=4	0%
Non-Response	1	20%

Table 23. Were there any increased in yields in those areas in which the water conserving equipment was adopted?

Response	Frequency	Percentage
Yes	4	100%
No	0	0%
	N=4	100%
Non-Response	1	20%

Table 24. **If yes,** how much do you estimate the increase to be?

Increase (%)	Frequency	Percentage
Less than 10%	0	0%
10%-19%	3	75%
20%-29%	1	25%
30%-39%	0	0%
40%-49%	0	0%
50%-59%	0	0%
60%-69%	0	0%
70% or more	0	0%
	N=4	100%
Non-Response	1	20%

Section 3. **Information regarding your views about the Agriculture Water Conservation Loan Program. Respond whether you are or are not a participant in the program.**

Table 25. Please give your opinion about the following features of the current program.

Factor	Strongly Like	Like	Indifferent	Dislike	Strongly Dislike	Total Resp.	Non Resp.	Total
Dist required to do banking activities	4	12	6	4	4	30	26	N=56
% based on number of responses	13%	41%	20%	13%	13%	100%	46%	
Paperwork involved to obtain loan	6	4	7	11	2	30	26	N=56
% based on number of responses	20%	13%	23%	37%	7%	100%	46%	
Amounts of funds available to loan	5	7	11	4	2	29	27	N=56
% based on number of responses	17%	24%	38%	14%	7%	100%	48%	
Existing int. rate and comm. rate	5	11	7	6	1	30	26	N=56
% based on number of responses	17%	37%	23%	20%	3%	100%	46%	
Personal investment involved	5	9	10	4	1	29	27	N=56
% based on number of responses	17%	31%	34%	14%	4%	100%	48%	
Administrative fee charged by dist.	4	4	15	5	2	30	26	N=56
% based on number of responses	13%	13%	50%	17%	7%	100%	46%	
List of approved equipment	3	9	10	5	0	27	29	N=56
% based on number of responses	11%	33%	37%	19	0%	100%	52%	
Length of loan	4	10	11	1	1	27	29	N=56
% based on number of responses	15%	37%	40%	4%	4%	100%	52%	
Collateral requirements of loans	3	14	6	3	2	28	28	N=56
% based on number of responses	11%	50%	21%	11%	7%	100%	50%	
Requirements for tenant farmer	5	9	9	4	1	28	28	N=56
% based on number of responses	18%	32%	32%	14%	4%	100%	50%	

Table 26. Have you attended a program or demonstration addressing agricultural water conservation?

Response	Frequency	Percentage
Yes	28	54%
No	24	46%
	N=52	100%
Non-Response	4	7%

Table 27. Do you think that reducing interest rates of loans would significantly improve participation by farmers?

Response	Frequency	Percentage
Yes	28	55%
No	10	20%
Don't Know	13	25%
	N=51	100%
Non-Response	5	9%

Table 28. **If Yes,** What is the maximum level of interest that would be acceptable?

Interest Rate	Frequency	Percentage
3%-4%	8	29%
4%-5%	9	32%
5%-6%	10	36%
6%-7%	1	3%
	N=28	100%

Table 29. Do you think a farmer education or extension program emphasizing the importance of water conservation and the provisions of water conservation loan program would significantly improve participation by farmers?

Response	Frequency	Percentage
Yes	27	51%
No	9	17%
Don't Know	17	32%
	N=53	100%
Non-Response	3	5%

Table 30. Do you think that expanding the list of approved equipment for which loans could be made would significantly improve participation by farmers?

Response	Frequency	Percentage
Yes	21	42%
No	5	10%
Don't Know	24	48%
	N=50	100%
Non Response	6	11%

Table 31. What other equipment should be included in the list?

Equipment Type	Frequency	Percentage
Tail Water Construction	1	12.5%
Drip Irrigation	4	50%
Well Plant Equipment	1	12.5%
Well Pump Equipment	2	25%
	N=8	100%

Table 32. Do you think making loans available under the direction of commercial lenders would significantly improve participation by farmers?

Response	Frequency	Percentage
Yes	13	26%
No	14	28%
Don't Know	23	46%
	N=50	100%
Non Response	6	12%

Table 33. Do you think providing technical assistance for implementation of equipment bought under the conservation loan program would significantly improve participation by farmers?

Response	Frequency	Percentage
Yes	29	59%
No	8	16%
Don't Know	12	25%
	N=49	100%
Non Response	7	14%

Table 34. In which county do you live?

County	Frequency	Percentage
Uvalde	12	21%
Gaines	1	2%
Wilson	1	2%
Zavala	4	7%
Atascosa	15	26%
Bexar	5	9%
Frio	14	25%
Medina	2	4%
La Salle	2	4%
	N=56	

Table 35. How many acres do you own?

Acres	Frequency	Percentage
0-299	29	52%
300-599	14	25%
600 or more	13	23%
	N=56	100%

Table 36. How many of these acres are irrigated and dry land?

Acres	Frequency	Percentage
Irrigated Acres		
0-299	37	68%
300-599	9	16%
600 or more	9	16%
	N=17	100%
Non-Response	1	2%
Dry land Acres		
0-299	43	78%
300-599	8	15%
600 or more	4	7%
	N=55	100%
Non-Response	1	2%

Table 37. How many acres do you lease?

Acres	Frequency	Percentage
0-299	29	52%
300-599	10	18%
600 or more	17	30%
	N=56	100%

Table 38. How many of these acres are irrigated and dry land?

Acres	Frequency	Percentage
Irrigated Acres		
0-299	35	63%
300-599	12	21%
600 or more	9	16%
	N=56	100%
Dry land Acres		
0-299	44	79%
300-599	6	10.5%
600 or more	6	10.5%
	N=56	100%

Table 39. What is the main source of water to your farm?

Source of Water	Frequency	Percentage
Ground	42	79%
Surface	1	2%
Both Ground and Surface	10	19%
	N=53	100%
Non Response	3	5%

Table 40. How many wells do you have on your farm?

Number of Wells	Frequency	Percentage
0-3	35	65%
4-6	11	20%
7-9	3	6%
10 or more	5	9%
	N=54	100%
Non-Response	2	4%

Table 41. How many members of your family are working on your farm?

Family Members	Frequency	Percentage
0-2	42	78%
3-4	8	15%
5-6	3	6%
7-8	1	1%
9-10	0	0%
10 or more	0	0
	N=54	100%
Non Response	2	4%

Table 42. Of these family members how many are working full/part time?

Full Time	Frequency	Percentage
0-1	33	58%
2	17	30%
3	7	12%
4 or more	0	0%
	N=57	100%
Non-Response	2	4%
Part Time	**Frequency**	**Percentage**
0-1	44	81%
2	7	13%
3	2	4%
4 or more	1	2%
	N=54	100%
Non-Response	2	4%

Table 43. What are the main crops produced in your farm?

Crops	Frequency	Percentage
Peanuts	19	15%
Cotton	13	10%
Corn	21	17%
Grains	28	23%
Vegetables	21	17%
Other	22	18%
	N=124	100%

Table 44. What is your age?

Age	Frequency	Percentage
Less than 20 years	0	0%
20-29 years	1	2%
30-39 years	4	7%
40-49 years	10	18%
50-59 Years	20	36%
60-69 years	12	22%
70-79 years	7	13%
80 years or more	1	2%
	N=55	100.00%
Non-Response	1	2%

Table 45 What level of education have you completed?

Education Level	Frequency	Percentage
Grade School	2	4%
High School	18	33%
College	22	41%
College Degrees	12	22%
	N=54	100%
Non-Response	2	4%

Table 46. What is your average annual gross farm income?

Income Level	Frequency	Percentage
Less than $25,000	7	17%
$25,000 - $49,999	3	7%
$50,000 - $74,999	2	5%
$75,000 - $99,999	1	2%
$100,000 - $124,999	4	9%
$125,000 - $149,999	2	5%
$150,000 - $174,999	1	2%
$175,000 - $199,999	0	0%
$200,000 - $224,999	2	5%
$225,000 - $249,999	0	0%
$250,000 or more	20	48%
	N=42	100%
Non-Response	14	25%

Table 47. What is your gross off-farm income?

Income Level	Frequency	Percentage
Less than $25,000	29	64%
$25,000 - $49,999	7	15%
$50,000 - $74,999	7	15%
$75,000 - $99,999	1	2%
$100,000 - $124,999	1	2%
$125,000 - $149,999	0	0%
$150,000 or more	1	2%
	N=46	100%
Non-Response	10	18%

Table 48. What is your long term debt load for the farming operation?

Long Term Debt	Frequency	Percentage
Less than $25,000	24	51%
$25,000 - $49,999	4	9%
$50,000 - $74,999	4	9%
$75,000 - $99,999	1	2%
$100,000 - $124,999	3	6%
$125,000 - $149,999	1	2%
$150,000 or more	10	21%
	N=47	100.00%
Non-Response	4	7%

Table 49. What is your short term debt load for the farming operation?

Long Term Debt	Frequency	Percentage
Less than $25,000	25	54%
$25,000 - $49,999	1	2%
$50,000 - $74,999	1	2%
$75,000 - $99,999	3	6%
$100,000 - $124,999	6	13%
$125,000 - $149,999	3	6%
$150,000 or more	8	17%
	N=47	100.00%
Non-Response	9	22%

LOWER RIO GRANDE VALLEY
FARMER SURVEY RESULTS

Survey Response Summary

The farmers in this study were all from the Lower Rio Grande Valley. The Counties of Willacy, Hidalgo and Cameron are included in this study. Approximately 126 farmers surveys were mailed with 10 returned incomplete or otherwise useless, and 25 completed (23 from Hidalgo) giving a 23.5% response rate. The low response rate can be attributed to, among other things, the lack of awareness of the program therefore the lack of interest in it. The water allocation mechanism of the region for surface water may influence attitudes toward the low interest agricultural loan program as well as water conservation in general. We surveyed three water districts and obtained farmer names from each. However, in some cases there were only 10 or 12 farmers on the list. Therefore, we sought to enhance the farmer list by working with Mr. Jeff Johnson, Texas Agricultural Extension Specialist at Weslaco. He provided a producer list of his cooperators. Mr. Johnson, along with Dr. John Robinson (TAES economist at Weslaco) also participated in the interviewing of district managers and lenders.

Questionnaire Section 1. Information regarding your views about water conservation.

Table 1. Has water become a limited resource and is there an immediate need to emphasize efficiency in water use?

Response	Frequency	Percentage
Yes	21	84%
No	3	12%
Don't Know	1	4%
	N=25	100%

Table 2. In your opinion, who is most responsible for inefficient use and loss of water? More than one response may be chosen.

Response	Frequency	Percentage
Commercial sector	4	12%
Agricultural sector	12	36%
Households(domestic use)	13	40%
Other	4	12%
	N=33	100%

Table 3. Do you believe that the government should take legislative actions to encourage water conservation?

Response	Frequency	Percentage
Yes	12	48%
No	11	44%
Don't Know	2	8%
	N=25	100%

Table 4. Do you believe that benefits of water conservation, in general, exceed the costs of its implementation?

Response	Frequency	Percentage
Yes	11	46%
No	11	46%
Don't Know	2	8%
	N=24	100%
Non-Response	1	4%

Table 5. Do you believe that benefits of agricultural water conservation exceed the costs of its implementation?

Response	Frequency	Percentage
Yes	12	48%
No	9	36%
Don't Know	4	16%
	N=25	100%

Table 6. Do you believe that one approach to increase water use efficiency in agriculture is to adapt water conserving irrigation equipment?

Response	Frequency	Percentage
Yes	19	76%
No	4	16%
Don't Know	2	8%
	N=25	100%

Table 7. Are you aware that the Texas Legislature has enacted an Agricultural Water Conservation Loan Program whereby low interest loans can be made available for the purchase of water conserving irrigation equipment?

Response	Frequency	Percentage
Yes	9	36%
No	16	64%
Don't Know	0	0%
	N=25	100%

Table 8. **If Yes,** is the program available in your district?

Response	Frequency	Percentage
Yes	5	56%
No	4	44%
Don't Know	0	0%
	N=9	100%
Non-Response	16	64%

Table 9. **If yes,** are you participating or did you in past participate in the Agricultural Water Conservation Loan Program?

Response	Frequency	Percentage
Yes	0	0%
No	5	100%
Don't Know	0	0%
	N=5	100%

Table 10. **If no,** what type of irrigation equipment or method of irrigation are you using, when was it installed, and how was it financed?

Irrigation Equipment	Installation Date	Finance Source
Mainlines	1983-1985	Personal
Furrow Roll	1960	Personal
Pipelines and Valves	1987	Personal and ASCS

Table 11. Respond with your opinion regarding the influence of the following factors on your decision to not participate in the program if answered **NO** to Table 9.

Factor	Strong	Moderate	Weak	No Effect	Non-response
Involvement of district in the program	0	0	0	0	5
% based on number of responses	0%	0%	0%	0%	100%
Excessive paperwork	1	0	0	0	4
% based on number of responses	100%	0%	0%	0%	80%
Requirements to qualify too Difficult	0	1	0	0	4
% based on number of responses	0%	100%	0%	0%	80%
Program's interest rate too high	1	1	0	0	3
% based on number of responses	50%	50%	0%	0%	60%
Limited funds available to farmers	2	0	0	0	3
% based on number of responses	100%	0%	0%	0%	60%
Financial situation of the farm	3	0	0	0	2
% based on number of responses	100%	0%	0%	0%	40%
Adopted conservation without program	1	0	0	0	4
% based on number of responses	100%	0%	0%	0%	80%
Too much in debt, do not want to increase it	2	0	0	0	3
% based on number of responses	100%	0%	0%	0%	60%
Satisfied with the existing irrigation equipment	0	1	0	0	4
% based on number of responses	0%	100%	0%	0%	80%
Non-farmer landowner (land rented or leased)	1	0	0	0	4
% based on number of responses	100%	0%	0%	0%	80%
Concern over the future of agriculture	1	1	0	0	3
% based on number of responses	50%	50%	0%	0%	60%

Section 2. Answer this section only if you are a farmer who has been or are currently a participant in the Agricultural Water Conservation Loan Program.

As indicated in Table 9 all the returned surveys indicated that they were no farmers participating in the Agricultural Water Conservation Loan Program. Section 2 of this survey pertains to those farmers who are participating ; therefore, there are no responses to this area of the survey.

Section 3. **Information regarding your views about the Agriculture Water Conservation Loan Program. Respond whether you are or are not a participant in the program.**

Table 12. Please give your opinion about the following features of the current program.

Factor	Strongly Like	Like	Indiff.	Dislike	Strongly Dislike	Total Resp.	Non Resp.	Total
Dist required to do banking activities	3	1	2	7	4	17	8	N=25
% based on number of responses	18%	6%	12%	41%	23%	100%	32%	
Paperwork involved to obtain loan	1	0	6	4	6	17	8	N=25
% based on number of responses	6%	0%	35%	24%	35%	100%	32%	
Amounts of funds available to loan	1	4	4	3	4	16	9	N=25
% based on number of responses	9%	25%	25%	19%	25%	100%	36%	
Existing int. rate and comm. rate	2	5	3	4	3	17	8	N=25
% based on number of responses	12%	29%	18%	23%	18%	100%	32%	
Personal investment involved	1	3	6	2	6	18	7	N=25
% based on number of responses	6%	17%	33%	11%	33%	100%	28%	
Administrative fee charged by dist.	1	1	5	6	4	17	8	N=25
% based on number of responses	6%	6%	29%	35%	24%	100%	32%	
List of approved equipment	1	8	2	2	3	16	9	N=25
% based on number of responses	6%	50%	12.5%	12.5	19%	100%	36%	
Length of loan	1	4	7	1	2	15	10	N=25
% based on number of responses	7%	26%	47%	7%	13%	100%	40%	
Collateral requirements of loans	1	3	8	1	3	16	9	N=25
% based on number of responses	6%	19%	50%	6%	19%	100%	36%	
Requirements for tenant farmer	2	2	7	0	3	14	11	N=25
% based on number of responses	14%	14%	50%	0%	22%	100%	44%	

Table 13. Have you attended a program or demonstration addressing agricultural water conservation?

Response	Frequency	Percentage
Yes	4	16%
No	21	84%
	N=25	100%

Table 14. Do you think that reducing interest rates of loans would significantly improve participation by farmers?

Response	Frequency	Percentage
Yes	17	71%
No	4	17%
Don't Know	3	12%
	N=24	100%
Non Response	1	4%

Table 15. **If Yes,** what is the maximum level of interest that would be acceptable?

Interest Rate	Frequency	Percentage
3%-4%	11	55%
4%-5%	6	30%
5%-6%	3	15%
6%-7%	0	0%
	N=20	100%
Non-Response	5	20%

Table 16. Do you think a farmer education or extension program emphasizing the importance of water conservation and the provisions of the Water Conservation Loan Program would significantly improve participation by farmers?

Response	Frequency	Percentage
Yes	17	68%
No	4	16%
Don't Know	4	16%
	N=25	100%

Table 17. Do you think that expanding the list of approved equipment for which loans could be made would significantly improve participation by farmers?

Response	Frequency	Percentage
Yes	9	38%
No	2	8%
Don't Know	13	54%
	N=24	100%
Non Response	1	4%

Table 18. What other equipment should be included in the list?

Equipment Type	Frequency	Percentage
Micro Jet	1	50%
Drip Sprinkler	1	50%
	N=2	100%

Table 19. Do you think making loans available under the direction of commercial lenders would significantly improve participation by farmers?

Response	Frequency	Percentage
Yes	6	25%
No	8	33%
Don't Know	10	42%
	N=24	100%
Non Response	1	4%

Table 20. Do you think providing technical assistance for implementation of equipment bought under the conservation loan program would significantly improve participation by farmers?

Response	Frequency	Percentage
Yes	15	63%
No	1	4%
Don't Know	8	33%
	N=24	100%
Non Response	1	4%

Table 21. In which county do you live?

County	Frequency	Percentage
Hidalgo	23	92%
Cameron	2	8%
	N=25	100%

Table 22. How many acres do you own?

Acres	Frequency	Percentage
0-299	19	79%
300-599	1	4%
600 or more	4	17%
	N=25	100%
Non-Response	1	4%

Table 23. How many of these acres are irrigated and dry land?

Acres	Frequency	Percentage
Irrigated Acres		
0-299	19	79%
300-599	1	4%
600 or more	4	17%
	N=24	100%
Dry land Acres		
0-299	24	100%
300-599	0	0%
600 or more	0	0%
	N=24	100%
Non Response	1	4%

Table 24. How many acres do you lease?

Acres	Frequency	Percentage
0-299	19	79%
300-599	2	8%
600 or more	3	13%
	N=24	100%
Non-Response	1	4%

Table 25. How many of these acres are irrigated and dry land?

Acres	Frequency	Percentage
Irrigated Acres		
0-299	20	83%
300-599	1	4%
600 or more	3	13%
	N=24	N=24
Dry land Acres		
0-299	24	100%
300-599	2	0%
600 or more	2	10%
	N=24	100%
Non-Response	1	4%

Table 26. What is the main source of water to your farm?

Source of Water	Frequency	Percentage
Ground	1	5%
Surface	21	95%
Both Ground and Surface	0	0%
	N=22	100%
Non Response	3	12%

Table 27. How many wells do you have on your farm?

Number of Wells	Frequency	Percentage
0-3	21	95%
4-6	1	5%
7-9	0	0%
10 or more	0	0%
	N=22	100%
Non-Response	3	12%

Table 28. How many members of your family are working on your farm?

Family Members	Frequency	Percentage
0-2	19	86%
3-4	3	14%
5-6	0	0%
7-8	0	0%
9-10	0	0%
10 or more	0	0
	N=22	100%
Non Response	3	12%

Table 29. Of these family members how many are working full/part time?

Full Time	Frequency	Percentage
0-1	17	77%
2	2	9%
3	3	14%
4 or more	0	0%
	N=22	100%
Non-Response	3	12%
Part Time	**Frequency**	**Percentage**
0-1	21	95%
2	1	5%
3	0	0%
4 or more	0	0%
	N=22	100%
Non-Response	3	12%

Table 30. What are the main crops produced in your farm?

Crops	Frequency	Percentage
Citrus	14	33%
Vegetables	7	17%
Cotton	4	10%
Corn	3	7%
Grain	8	19%
Other	6	14%
	N=42	100%

Table 31. What is your age?

Age	Frequency	Percentage
Less than 20 years	0	0%
20-29 years	0	0%
30-39 years	3	12%
40-49 years	2	8%
50-59 Years	6	24%
60-69 years	7	28%
70-79 years	7	28%
80 years or more	0	0%
	N=25	100%

Table 32. What level of education have you completed?

Education Level	Frequency	Percentage
Grade School	2	8%
High School	9	36%
College	14	56%
Non-Response	0	0%
	N=25	100%

Table 33. What is your average annual gross farm income?

Income Level	Frequency	Percentage
Less than $25,000	9	43%
$25,000 - $49,999	2	9.5%
$50,000 - $74,999	2	9.5%
$75,000 - $99,999	0	0%
$100,000 - $124,999	2	9.5%
$125,000 - $149,999	0	0%
$150,000 - $174,999	0	0%
$175,000 - $199,999	0	0%
$200,000 - $224,999	2	9.5%
$225,000 - $249,999	0	0%
$250,000 or more	4	19%
	N=21	100%
Non-Response	4	16%

Table 34. What is your gross off-farm income?

Income Level	Frequency	Percentage
Less than $25,000	11	48%
$25,000 - $49,999	6	26%
$50,000 - $74,999	4	18%
$75,000 - $99,999	0	0%
$100,000 - $124,999	1	4%
$125,000 - $149,999	0	00%
$150,000 or more	1	4%
	N=23	100%
Non-Response	2	8

Table 35. What is your long term debt load for the farming operation?

Long Term Debt	Frequency	Percentage
Less than $25,000	13	58%
$25,000 - $49,999	1	5%
$50,000 - $74,999	1	5%
$75,000 - $99,999	1	5%
$100,000 - $124,999	1	5%
$125,000 - $149,999	0	0%
$150,000 or more	5	22%
	N=22	100%
Non-Response	3	12%

Table 36. What is your short term debt load for the farming operation?

Long Term Debt	Frequency	Percentage
Less than $25,000	17	80%
$25,000 - $49,999	2	10%
$50,000 - $74,999	0	0%
$75,000 - $99,999	0	0%
$100,000 - $124,999	0	0%
$125,000 - $149,999	0	0%
$150,000 or more	2	10%
	N=21	100%
Non-Response	4	16%

LENDERS
SURVEY METHODS

Questionnaire Development. The questionnaire used in this study was constructed by research colleagues in the Agricultural Economics Departments of Texas A&M University and Texas Tech University, along with members from the Texas Water Development Board and the High Plains Underground Water Conservation District 1.

Survey Response Summary

For this study, three lenders in the Winter Garden (Edward's Aquifer) region and three lenders in the Lower Rio Grande Valley were selected. All lenders were banks with the exception of one which was Production Credit Association in the Winter Garden area. Returned surveys were received over about a two week period. They were all surveyed in a personal interview and were most cooperative and helpful. Mr. Jeff Johnson and Dr. John Robinson conducted the personal interviews of dealers.

Following is a frequency distribution of the responses of the six lender regarding their views on water conservation and the low interest loan program for agriculture. No effort has been made to interpret the responses nor to develop any statistically significant relationships. However, the answers are useful in viewing opportunities for water conservation in agriculture and role in the future that the low interest loan program may play. For this presentation, the responses for the Winter Garden and the Lower Rio Grande Valley are presented separately.

Lender Questionnaire Section 1. Information regarding your views about water conservation.

Table 1. Do you perceive that water has become a limited resource and there is an immediate need to emphasize efficiency in water use?

Area		Frequency	Percentage
	Yes	2	67%
Lower Rio Grande Valley	No	1	33%
	Yes	3	100%
Winter Garden	No	0	0

Table 2. Do you believe that the government should take legislative actions to encourage water conservation?

Area		Frequency	Percentage
Lower Rio Grande Valley	Yes	2	67%
	No	1	33%
Winter Garden	Yes	2	67%
	No	1	33%

Table 3. Do you believe that benefits of water conservation, in general, exceed the costs?

Area		Frequency	Percentage
Lower Rio Grande Valley	Yes	1	33%
	No	0	0%
	Don't Know	2	67%
Winter Garden	Yes	3	100%
	No	0	0%

Table 4. Do you perceive that benefits of agricultural water conservation exceed the costs?

Area		Frequency	Percentage
Lower Rio Grande Valley	Yes	2	33%
	No	0	0%
	Don't Know	1	67%
Winter Garden	Yes	3	100%
	No	0	0%
	Don't Know	0	0%

Table 5. Do you believe that one approach to increase water use efficiency in agriculture is to adopt water conserving irrigation equipment?

Area		Frequency	Percentage
Lower Rio Grande Valley	Yes	2	67%
	No	1	33%
Winter Garden	Yes	3	100%
	No	0	0%

Table 6. Were you aware that the Texas Legislature has enacted a program whereby low interest loans could be made available for the purchase of water conserving irrigation equipment?

Area		Frequency	Percentage
Lower Rio Grande Valley	Yes	0	0%
	No	3	100%
Winter Garden	Yes	1	33%
	No	2	67%

Table 7. Has this program had any impact on your business?

Area		Frequency	Percentage
Lower Rio Grande Valley	Yes	0	0%
	No	0	0%
Winter Garden	Yes	0	0%
	No	1	33%

Lender Questionnaire Section 2. Your views about the Program

Table 8. Give your opinion about the following features of the current program.

Feature	Strongly Like	Like	Indifferent	Dislike	Strongly Dislike	Total
District required to do banking type activities						
LRGV	0%	0%	0%	67%	33%	3
Winter Garden	0%	33%	0%	33%	33%	3
Paperwork involved to obtain loan						
LRGV	0%	0%	67%	33%	0%	3
Winter Garden	0%	0%	100%	0%	0%	3
Amounts of funds available to loan						
LRGV	0%	100%	0%	0%	0%	3
Winter Garden	0%	0%	33%	67%	0%	3
Existing Interest Rate						
LRGV	0%	100%	0%	0%	0%	3
Winter Garden	0%	33%	33%	33%	0%	3
Administrative fee charged by the district						
LRGV	0%	33%	67%	0%	0%	3
Winter Garden	0%	0%	100%	0%	0%	3
List of approved equipment loans are made for						
LRGV	0%	67%	0%	33%	0%	3
Winter Garden	0%	100%	0%	0%	0%	3
Length of loans						
LRGV	0%	33%	67%	0%	0%	3
Winter Garden	0%	0%	67%	0%	33%	3
Collateral requirements of loans						
LRGV	0%	2%	33%	0%	0%	3
Winter Garden	0%	2%	33%	0%	0%	3
Requirements for a tenant farmer to qualify						
LRGV	0%	0%	100%	0%	0%	3
Winter Garden	0%	67%	33%	0%	0%	3

Table 9. Do you think that reducing interest rates would significantly improve participation?

Area		Frequency	Percentage
Lower Rio Grande Valley	Yes	2	67%
	No	1	33%
Winter Garden	Yes	2	67%
	No	1	33%

Table 10. What is the maximum level of interest that would be acceptable?

Area		Frequency	Percentage
Lower Rio Grande Valley	3%-4%	0	0%
	4%-5%	0	0%
	5%-6%	0	0%
	6%-7%	1	33%
		N=1	33%
Winter Garden	3%-4%	0	0%
	4%-5%	2	67
	5%-6%	0	0%
	6%-7%	1	33%
		N=3	100%

Table 11. Do you think a farmer education program emphasizing the importance of water conservation and the program would significantly improve participation?

Area		Frequency	Percentage
Lower Rio Grande Valley	Yes	2	67%
	No	1	33%
		N=3	100%
Winter Garden	Yes	2	67%
	No	1	33%
		N=3	100%

Table 12. Do you think providing technical assistance for implementation of equipment bought under the program would significantly improve participation?

Area		Frequency	Percentage
Lower Rio Grande Valley	Yes	2	67%
	No	1	33%
		N=3	100%
Winter Garden	Yes	1	33%
	No	2	67%
		N=3	100%

Table 13. Do you think that expanding the list of approved equipment for which loans could be made would significantly improve participation?

Area		Frequency	Percentage
Lower Rio Grande Valley	Yes	2	67%
	No	1	33%
		N=3	100%
Winter Garden	Yes	1	33%
	No	2	67%
		N=3	100%

Table 14. Do you think making loans available under commercial lenders would significantly improve participation?

Area		Frequency	Percentage
Lower Rio Grande Valley	Yes	3	100%
	No	0	0%
		N=3	100%
Winter Garden	Yes	2	67%
	No	1	33%
		N=3	100%

Table 15. Do you make loans for purchase or modification of irrigation equipment?

Area	Frequency		Percentage
Lower Rio Grande Valley	Yes	3	100%
	No	0	0%
		N=3	100%
Winter Garden	Yes	3	100%
	No	0	0%
		N=3	100%

Lender Questionnaire Section 3. Financing loans for the adoption or conversion of irrigation equipment.

Table 16. Respond regarding the influence of the following.

Area	Strong	Moderate	Weak	No Effect	Total
	----------percent----------				
Improvements in profitability of ag activities					
LRGV	100%	0%	0%	0%	3
Winter Garden	67%	33%	0%	0%	3
Interest shown by farmers					
LRGV	67%	33%	0%	0%	3
Winter Garden	0%	67%	0%	33%	3
Large irrigated ag sector in region					
LRGV	100%	0%	0%	0%	3
Winter Garden	67%	0%	0%	33%	3
Help fulfill District water conservation program					
LRGV	33%	33%	0%	33%	3
Winter Garden	0%	67%	33%	0%	3
Felt moral responsibility to assist conservation					
LRGV	0%	67%	33%	0%	3
Winter Garden	0%	100%	33%	0%	3
Equipment applicability assessed by water Dist.					
LRGV	33%	33%	33%	0%	3
Winter Garden	0%	67%	33%	0%	3
Good returns on loans					
LRGV	100%	0%	0%	0%	3
Winter Garden	33%	67%	0%	0%	3

Table 17. Loan information

Year of Loan	Number of Applications	Number of Loans Made	Total Amount Requested	Total Amount Made
1993				
LRGV	6	3	$175,000	$100,000
Winter Garden	2	2	$55,000	$$55,000
1992				
LRGV	7	4	$85,000	$35,000
Winter Garden	3	3	$90,000	$95,000
1991				
LRGV	3	3	$10,000	$10,000
Winter Garden	1	1	$75,000	$75,000
1990				
LRGV	3	3	$10,000	$10,000
Winter Garden	1	1	$35,000	$35,000
1989				
LRGV	3	3	$10,000	$10,000
Winter Garden	0	0	$0	$0
1988				
LRGV	3	3	$10,000	$10,000
Winter Garden	0	0	$0	$0

Table 18. How many have defaulted on the loans?

Defaults	LRGV	Winter Garden
Amount	0%	0%
Portion of Loans	0%	0%

Table 19. Provide an approximate description of the uses of loans by equipment type or conversions that have been made.

Equipment LRGV	Equipment Winter Garden	Total Loans ($) LRGV	Total Loans ($) Winter Garden	Total Acres LRGV	Total Acres Winter Garden
Booster Pump Motors Polypipe Ditcher Blades Water Pumps Irr. Motors Circle System Drainage Ditch Parts	Center Pivot Irr. Motors Circle Systems Convert from Electric to Diesel	$137,000	$255,000	10,500	920

Table 20. Describe the general terms of the water conserving used loans given.

Terms	LRGV	Winter Garden
Down Payment	20%	20%-25%
Length	3-5 Years	4-5 Years
Interest rate	8.5%-11%	8%-9%

Table 21. Response with your opinion regarding the following factors on your decision to participate in financing the adoption or conversion of irrigation equipment.

Factors	Strong	Moderate	Weak	No Effect	Total
	----------percent----------				
Loans too Risky					
LRGV	100%	0%	0%	0%	3
Winter Garden	100%	0%	0%	0%	3
Involvement of District					
LRGV	0%	100%	0%	0%	3
Winter Garden	0%	33%	33%	33%	3
Benefits of conservation exceed Costs					
LRGV	0%	67%	0%	33%	3
Winter Garden	67%	0%	0%	33%	3
Financial distress of farmers too high					
LRGV	100%	0%	0%	0%	3
Winter Garden	100%	0%	0%	0%	3
Profit potential too limited					
LRGV	67%	33%	0%	0%	3
Winter Garden	100%	0%	0%	0%	3
Down payment required too high					
LRGV	33%	67%	0%	0%	3
Winter Garden	67%	0%	33%	0%	3
Requirements for farmers to qualify too difficult.					
LRGV	67%	33%	0%	0%	3
Winter Garden	67%	0%	33%	0%	3
Concern over the future of the farm program					
LRGV	33%	33%	33%	0%	3
Winter Garden	33%	33%	33%	0%	3
Planning horizon of the current farmer					
LRGV	33%	0%	33%	33%	3
Winter Garden	67%	33%	0%	0%	3
Non-farmer landowner (land rented)					
LRGV	33%	0%	0%	67%	3
Winter Garden	0%	33%	0%	67%	3
Water allocation rules and regulations					
LRGV	100%	0%	0%	0%	3
Winter Garden	67%	0%	0%	33%	3

WATER DISTRICT MANAGERS
Survey Methods

Questionnaire Development. The questionnaire used in this study was constructed by research colleagues in the Agricultural Economics Departments of Texas A&M University and Texas Tech University, along with members from the Texas Water Development Board and the High Plains Underground Water Conservation District 1.

Survey Response Summary

For this study, three water districts in the Winter Garden (Edward's Aquifer) region and three districts in the Lower Rio Grande Valley were selected. From the districts selected, after a personal visit and discussion of the study, the Edwards Underground Water District returned a blank survey and a letter written on June 28, 1993 by Mr. Russell L. Masters, General Manager. Mr. Russell stated the district had conducted its own research in 1986 and 1987 when the program was being developed. Their response was the lack of interest on the part of farmers would not allow the program to be successful. The reasons they stated were:

1. Interest rates were not competitive.
2. They already had state-of-the-art equipment
3. Costs too high
4. They did not want to bother with it
5. Who would get the water that would be conserved?

The question of who would get the water that would be conserved seemed to be a major point of interest. He also stated from a personal perspective, that the number of irrigation farmers who have not kept up with technology for whatever reason is not sufficient to carry on the program as it was not during the 1980's when the Pilot Program was undertaken. The Evergreen Underground Water Conservation District did not return a survey. This district is one that participates in the low interest loan program for agricultural water conservation and is making dramatic advances in encouraging new equipment and management in the district. Mr. Willie Cruz of the Cameron County Water Improvement District #16, indicated their district did not have the resources needed to participate. There are only a small number of producers in the district and there simply isn't enough size, man power, or interest to make the program feasible.

Following is a frequency distribution of the responses of water district managers regarding views on water conservation and the low interest loan program for agriculture. No effort has been made to interpret the responses nor to develop any statistically significant relationships. However, the answers are useful in viewing opportunities for water conservation in agriculture and role in the future that the low interest loan program may play.

Questionnaire Section 1. Information regarding your views about water conservation.

Table 1. Is your district a participant in the Agricultural Water Conservation Loan Program?

Response	Frequency	Percentage
Yes	2	50%
No	2	50%
	N=4	100%

Table 2. Respond with your opinion regarding the influence of the following factors on your decision to not participate in the program if answered NO to Table 1.

Factor	Strong	Moderate	Weak	No Effect	Non-response
Districts liability on defaulted loans	1	0	0	0	1
% based on number of responses	100%	0%	0%	0%	50%
District required to do banking type activities	0	1	0	0	1
% based on number of responses	0%	100%	0%	0%	50%
Increased administrative paperwork	0	1	0	0	1
% based on number of responses	0%	100%	0%	0%	50%
Interest rate too near commercial rate	0	1	0	0	1
% based on number of responses	0%	100%	0%	0%	50%
Current adoption rate of equipment adequate	0	0	0	1	1
% based on number of responses	0%	0%	0%	100%	50%
Low interest shown by farmers	0	0	0	1	1
% based on number of responses	0%	0%	0%	100%	50%
Limited irrigated agricultural sector in district	0	0	0	1	1
% based on number of responses	0%	0%	0%	100%	50%
Limited applicability to dist. water cons. program	0	0	0	1	1
% based on number of responses	0%	0%	0%	100%	50%
Satisfied with the existing irrigation equipment	0	0	0	1	1
% based on number of responses	0%	0%	0%	100%	50%
Non-farmer landowner (land rented or leased)	0	0	0	1	1
% based on number of responses	0%	0%	0%	100%	50%
Concern over the future of agriculture	0	0	1	0	1
% based on number of responses	0%	0%	100%	0%	50%

Table 3. Does your district have the needed manpower to participate in the Agricultural Water Conservation Program?

Response	Frequency	Percentage
Yes	2	100%
No	0	0%
	N=2	100%
Non-Response	2	50%

Table 4. Are there opportunities to improve water conservation of district facilities?

Response	Frequency	Percentage
Yes	2	100%
No	0	0%
	N=2	100%
Non-Response	2	50%

Table 5. **If Yes in Table 4**, why didn't your district participate in the program to improve water conservation of district facilities?

Response	Frequency	Percentage
Political Reasons	1	100%
	N=1	100%
Non-Response	1	50%

Questionnaire Section 2. This section is only for the districts that are currently participating in the Agricultural Water Conservation Loan Program.

Table 6. Respond with your opinion regarding the influence of the following factors on your decision to participate in the program.

Factor	Strong	Moderate	Weak	No Effect	Non-response
To accelerate adoption of conservation equipment	0	1	0	1	0
% based on number of responses	0%	50%	0%	50%	0%
Interest shown by farmers	0	0	1	1	0
% based on number of responses	0%	0%	50%	50%	0%
Large irrigated agricultural sector in region	0	0	0	1	1
% based on number of responses	0%	0%	0%	100%	50%
Help fulfill district water conservation program	1	1	0	0	0
% based on number of responses	50%	50%	0%	0%	0%
Felt moral responsibility to assist conservation	0	1	0	1	0
% based on number of responses	0%	50%	0%	50%	0%
Encouragement from TWDB	0	1	0	1	0
% based on number of responses	0%	50%	0%	50%	0%
Healthy tax base for the district	0	0	0	1	1
% based on number of responses	0%	0%	0%	100%	50%

Table 7. Please indicate the number of applications, number of loans made, total amount requested, when implemented, and total amounts of the loan for each applicable year?

Year of Loan	Number of Applications	Number of Loans Made	Total Amount Requested	Total Amount Loaned
1989	2	2	$300,000	$200,000

Table 8. How many loans are in default?

Response	Frequency	Percentage
0	1	100%
	N=1	100%

Table 9. Amount of loans that are in default?

Response	Frequency	Percentage
0	1	100%
	N=1	100%

Table 10. How many loans are currently outstanding?

Response	Frequency	Percentage
2	1	100%
	N=1	100%

Table 11. How many loans were paid off early?

Response	Frequency	Percentage
0	1	100%
	N=1	100%

Table 12. What is the current outstanding loan balance?

Loan Balance	Frequency	Percentage
$140,000	1	100%
	N=1	100%

Table 13. How many applications are currently pending?

Applications	Frequency	Percentage
0	1	100%
	N=1	100%

Table 14. What is the total requested loan amount of the pending loan application?

Loan Amount	Frequency	Percentage
0	1	100%
	N=1	100%

Table 15. Please provide a description of the use of loans (by equipment type) that have been implemented.

Loan (Equip) Type	Type of Equip Replaced	Total Amount of Loan ($)	Total Applicable Acres	Improvement in Water Use Eff.
Drip Irr.	Furrow Irr.	$200,000	800	40%

Table 16. If funds are available, would your district continue to participate in the Agricultural Water Conservation Loan Program?

Response	Frequency	Percentage
Yes	1	50%
No	1	50%
	N=2	100%

Table 17. Please tell us why your district wouldn't participate.

There is little interest among users.
There is limited financial feasibility among citrus growers.

Questionnaire Section 3. General information and features about the Agricultural Water Conservation Loan Program.

Table 18. Please respond with your opinion regarding the following features of the Agricultural Water Conservation Loan Program.

Factor	Strongly Like	Like	Indiff.	Dislike	Strongly Dislike	Total Resp.	Non Resp.	Total
Dist. liability on defaulted loans	0	0	1	0	2	3	1	N=4
% based on number of responses	0%	0%	33.3%	0%	66.6%	99.9%	25%	
District required to do banking acts	0	0	0	1	2	3	1	N=4
% based on number of responses	0%	0%	0%	33.3%	66.6%	99.9%	25%	
Paperwork involved to receive loan	0	0	2	1	0	3	1	N=4
% based on number of responses	0%	0%	66.6%	33.3%	0%	99.9%	25%	
Amounts of funds available	1	1	1	0	0	22	1	N=4
% based on number of responses	33.3%	33.3%	33.3%	0%	0%	100%	25%	
Existing int. rate relative to comm rate	0	2	1	0	0	21	1	N=4
% based on number of responses	0%	66.6%	33.3%	0%	0%	100%	25%	
Personal investment required for farmer	0	1	1	0	0	2	2	N=4
% based on number of responses	0%	50%	50%	0%	0%	100%	50%	
Admin. fee charged by the district	0	2	1	0	0	3	1	N=4
% based on number of responses	0%	66.6%	33.3%	0%	0%	99.9%	25%	
Approved equipment for which loans can be made	0	2	1	0	0	3	1	N=4
% based on number of responses	0%	66.6%	33.3%	0%	0%	99.9%	25%	
Length of loan	0	2	1	0	2	3	1	N=4
% based on number of responses	0%	66.6%	33.3%	0%	10%	99.9%	25%	
Collateral requirements of loan	0	0	1	2	1	3	1	N=4
% based on number of responses	0%	0%	33.3%	66.6%	5%	99.9%	25%	
Req. for tenant farmer to qualify	0	0	2	0	0	2	2	N=4
% based on number of responses	0%	0%	100%	0%	0%	100	50%	

Table 19. Please give your opinion about how the farmers perceive the following features of the Agricultural Water Conservation Loan Program.

Factor	Strongly Like	Like	Indiff.	Dislike	Strongly Dislike	Total Resp.	Non Resp.	Total
District required to do banking acts	0	0	1	0	0	1	3	N=4
% based on number of responses	0%	0%	100%	0%	0%	100%	75%	
Paperwork involved to receive loan	0	0	1	0	1	1	3	N=4
% based on number of responses	0%	0%	100%	0%	100%	100%	75%	
Amounts of funds available	0	1	0	0	0	1	3	N=4
% based on number of responses	0%	100%	0%	0%	0%	100%	75%	
Existing int. rate relative to comm rate	0	1	0	0	0	1	3	N=4
% based on number of responses	0%	100%	0%	0%	0%	100%	75%	
Personal investment required for farmer	0	0	0	0	1	1	3	N=4
% based on number of responses	0%	0%	0%	0%	100%	100%	75%	
Admin. fee charged by the district	0	0	1	0	0	1	3	N=4
% based on number of responses	0%	0%	100%	0%	100%	100%	75%	
Approved equipment for which loans can be made	0	1	0	0	0	1	3	N=4
% based on number of responses	0%	100%	0%	0%	0%	100%	75%	
Length of loan	0	1	0	0	0	1	3	N=4
% based on number of responses	0%	100%	0%	0%	0%	100%	75%	
Collateral requirements of loan	0	0	0	0	1	1	3	N=4
% based on number of responses	0%	0%	0%	0%	100%	100%	75%	
Req. for tenant farmer to qualify	0	0	1	0	1	1	3	N=4
% based on number of responses	0%	0%	100%	0%	100%	100%	75%	

Table 20. Do you think that reducing interest rates of loans would significantly improve participation by farmers

Response	Frequency	Percentage
Yes	3	100%
No	0	0%
	N=3	100%
Non-Response	1	25%

Table 21. **If yes in Table 18**, what is the maximum level of interest that would be acceptable?

Interest Level	Frequency	Percentage
3%-4%	2	66.6%
4%-5%	1	33.6
5%-6%	0	0%
6%-7%	0	0%
	N=3	99.9%
Non-Response	1	25%

Table 22. Do you think a farmer education program emphasizing the importance of water conservation and the provisions of the conservation loan program would significantly improve participation by farmers?

Response	Frequency	Percentage
Yes	2	66.6%
No	0	0%
Don't Know	1	33.3%
	N=3	99.8%
Non-Response	1	25%

Table 23. Do you think expanding the list of approved equipment for which loans could be made would significantly improve participation by farmers?

Response	Frequency	Percentage
Yes	0	0%
No	2	66.6%
Don't Know	1	33.3%
	N=3	99.8%
Non-Response	1	25%

Table 24. What other equipment should be included in the list?

Equipment
Micro-Jet
Drip Systems

Table 25. Do you think making water conservation loans available under the direction of commercial lenders would significantly improve participation by farmers?

Response	Frequency	Percentage
Yes	2	66.6%
No	0	0%
Don't Know	1	33.3%
	N=3	99.9%
Non-Response	1	25%

Table 26. Please indicate your choice of commercial lender.

Response	Frequency	Percentage
Commercial Banks	0	0%
Equipment Dealers	1	50%
Both	1	50%
	N=2	100%
Non-Response	2	50%

Table 27. Do you think providing technical assistance for implementation of equipment bought under the conservation loan program would significantly improve participation by farmers?

Response	Frequency	Percentage
Yes	1	33.3%
No	1	33.3%
Don't Know	1	33.3%
	N=3	99.9%
Non-Response	1	25%

FARMERS, LENDERS AND WATER DISTRICTS RESPONSE TO TEXAS' LOW INTEREST LOAN PROGRAM FOR WATER CONSERVATION IN AGRICULTURE

THE TEXAS HIGH PLAINS

Texas Tech University

Table 1 presents the most important factors influencing participation in the Agricultural Water Conservation Loan Program in the Texas High Plains. In Table 2, the likely demand for water conservation loans in the Texas High Plains under alternative scenarios are presented.

Farmer Responses

As pointed out above, the "Water Conservation in Texas Agriculture" survey conducted in the High Plains included farmers in: Sandy Land UWCD, Mesa UWCD, North Plains GCD #2, High Plains UWCD #1 and Panhandle GCD #3. Only three of these five districts are currently participating in the Agricultural Water Conservation Loan Program: Sandy Land UWCD, High Plains UWCD #1, and Panhandle GCD #3.

Overall, 800 questionnaires were mailed to farmers in the five water conservation districts surveyed in the Texas High Plains. Table 1 in Appendix A presents the number of questionnaires sent, the number of questionnaires classified as undeliverable, and the number of questionnaires completed and returned (all Tables referred to in this section are in Appendix A). A total of 277 questionnaires were completed and returned for an overall response rate of 35.64 percent (Table 1).

Of the 277 responses, 227 came from the three districts currently participating in the Agricultural Water Conservation Loan Program, and 50 came from the two non-participating water conservation districts (Table 1). Of the 227 responses from the participating districts, 115 were from farmers who have participated in the Agricultural Water Conservation Program, 87 responses were from non-participating farmers, and 25 respondents did not indicate participation.

Tables 2 to 38 in Appendix A present the results of the farmer survey across water conservation districts. These Tables are presented in the order in which the questions were asked in the survey with the questions asked preceding the Tables. Farmers across the water conservation districts surveyed are in general agreement that water use efficiency and water conservation are important, and that benefits exceed the costs of implementation (Tables 2 to 7). However, farmers feel that the government should not take legislative action to encourage water conservation (Table 4).

Table 1. Most important factors influencing participation in the Agricultural Water Conservation Loan Program.

Farmers	Banks	Dealers	District Managers
Collateral requirements	Lend own money	Finance package	Banking type activities
Length of Loan	Intrudes on private enterprise	Untimely financing	District liabilities
tenant qualification	Concern by farmers	Farm debt	Amount of funds available
Farm debt	Future of farm program	Approved Equipment	Interest rate near commercial rate
Approved equipment	Don't know about AWCLP	Profit potential low	Adequate sources of commercial credit available

Table 2. Likely demand for water conservation loans.

Scenario	Sandyland UWCD	Mesa UWCD	North Plains GCD #2	High Plains UWCD #1	Panhandle GCD #3
Current AWCLP	Strong	None	None	Moderate	Strong
Current AWCLP with Increased Dist. participation	Strong	Very Weak	Strong	Moderate	Strong
Revised AWCLP[1] with-out increased Dist. participation	Very Strong	None	None	Very Strong	Very Strong
Revised AWCLP[2] with increased Dist. participation	Very Strong	Weak	Very Strong	Very Strong	Very Strong

1 AWCLP = Agriculture Water Conservation Loan Program

2 Revised AWCLP according to recommendations

As indicated in Table 8, a large percentage of the farmers surveyed in both participating and non-participating water conservation districts are aware of the existence of the Agricultural Water Conservation Loan Program. Farmers in participating districts who have not participated in the program pointed out that the main factors influencing their decision included: excessive paperwork, requirements to qualify too difficult, adopted conservation without the program, and financial situation of the farm (Table 11). It is important to point out that respondents in the High Plains UWCD #1 felt that being a tenant was a very important reason for them not to participate in the program (Table 11). In the Tables in the Appendices which follow the format of Table 11, the number in parenthesis following the item for a particular question represents the total number of respondents answering that question.

Farmers in participating districts who have participated in the program pointed out that the main factors influencing their decision included: low interest rates, reduced cost of irrigation, and reduced labor requirements (Table 12). In Tables 13 and 14, the number of water conservation loans taken under the program by the respondents in the participating districts, and the average amounts of these loans are presented. The Agricultural Water Conservation Loan Program has been much more widely used in the High Plains UWCD #1, when compared to the other two participating districts. The average number of acres per respondent affected by the water conserving equipment adopted is presented in Table 15. It is important to point out that the majority of the water conserving equipment adopted included sprinkler and LEPA irrigation systems, with few reporting the adoption of surge valves. As can be seen in Table 17, the average estimated water use efficiency improvement due to the adoption of water conserving equipment was estimated to be 46 percent or higher in each of the three districts. Also, the estimated average increases in crop yields, due to the adoption of water conserving equipment, varied from 24 to 60 percent (Table 18).

In section III of the survey all respondents, in participating and non-participating districts, were asked to express their opinion with respect to the features of the current program. Characteristics of the current program most liked by the respondents include: the existing interest rate relative to the commercial rate, personal investment requirements, the current list of approved equipment for which loans could be made, and the length of the loans (Tables 19 and 24). It is important to point out that one of the features of the current program that was either disliked or strongly disliked by the respondents was the paperwork involved to obtain a loan (Table 19).

A significant proportion of the respondents indicated that lower interest rates of loans would significantly improve farmer participation in the program (Table 21). Information with respect to the preferred level of interest rates of loans is provided in Table 22. When the respondents were asked if farmer participation in the program could be improved by channeling resources through commercial lenders to make water conservation loans, their opinion was divided (Table 25). In the Panhandle GCD #3 the respondents felt stronger about this issue and indicated that participation by farmers in the

program would not be improved if water conservation loans were to be handled by commercial lenders. However, it is important to point out that a significant number of respondents to this question (25 percent of respondents or more in each district) chose the "Don't Know" alternative (Table 25).

Tables 27 to 38 present general information regarding the farming operations of the respondents in the different water conservation districts. As indicated in Table 28, the Mesa UWCD is the only district which could be characterized as mostly non-irrigated. Overall, the average age of the respondents varied from 54 to 61 years, the average level of education was more than one year past high school, the average gross farm income varied between $119,000 and $280,000, the average gross off-farm income varied between $9,000 and $30,000, and the level of long term debt is greater than the level of short term debt across districts, except for the Mesa UWCD.

Given the farmers' responses to this survey across the Texas High Plains, it is felt that future demand for water conservation loans under the Agricultural Water Conservation Loan Program is likely to be strong. Farmers in the High Plains are aware of and concerned with the need to implement water conservation practices in agriculture. The current program seems to have many characteristics favored by most respondents. It seems safe to conclude that substantial demand for funds exists in the Sandy Land UWCD and the Panhandle GCD #3, based on the number of loans made and the potential for more loans in these districts (Table 13). Demand for funds in the North Plains GCD #2 appears sizable, if this district were to become a participant in the program.

Even though the number of loans made under the program in the High Plains UWCD #1 has been much higher than in other districts, an increase in the number of loans in this district could be experienced, if the regulations with respect to obtaining water conservation loans to improve water application efficiency in leased or rented land are relaxed somewhat. It is important to point out that respondents across districts felt that the availability of technical assistance, probably in the form of increased extension programs emphasizing water conservation, could significantly improve participation by farmers in the Agricultural Water Conservation Loan Program (Tables 23 and 26).

Water District Responses

The "Water Conservation in Texas Agriculture" water district survey conducted in the High Plains included five UWCD or GCD: Sandy Land UWCD, Mesa UWCD, North Plains GCD #2, High Plains UWCD #1, Panhandle GCD #3. As pointed out before, only three of these five districts are currently participating in the Agricultural Water Conservation Loan Program: Sandy Land UWCD, High Plains UWCD #1, and Panhandle GCD #3.

Tables 1 to 15 in Appendix B present the results of the water district survey. These Tables are presented in the order in which the questions were asked in the survey with the

questions asked preceding the Tables. Table 1 identifies participating and non-participating districts.

The non-participating districts were instructed to answer questions Q-2 through Q-5, which asked about the influence of several factors on their decision to not participate in the Agricultural Water Conservation Loan Program. The Mesa UWCD and the North Plains GCD #2 responded to these questions as follows: both districts were strong to moderately concerned for the district's liability on defaulted loans and the district's requirement to do banking type activities. Both indicated that the interest rates are too near commercial rates and that there is adequate sources of commercial credit available. They reported no effect as to interest shown by farmers, limited irrigation within sector, limited applicability to district water conservation programs, assistance from TWDB and a healthy tax base for the district (Table 2).

One district indicated that it did have the needed personnel to participate, whereas the other did not. Both agreed there are opportunities to improve water conservation of district facilities (Tables 3 and 4). Also, a reason for non-participation stated by one of the districts was that the Board of Directors did not want to compete with local lending institutions.

Section II was completed by districts that are participants in the Agricultural Water Conservation Loan program. These districts indicated the following factors as having a strong to moderate influence on their decision to participate in the program: to accelerate adoption of conservation equipment, interest shown by farmers, large irrigated agricultural sector in region, help fulfill district water conservation program, and felt moral responsibility to assist conservation. Encouragement from TWDB and a healthy tax base were rated as weak to not having an effect on their decision (Table 5).

The participating districts indicated that they had received 233 applications and approved 231 water conservation loans from 1988 through 1993. There was no loan activity in 1991. Total amount of funds requested for the five years was $7,905,707 with $7,445,135 being approved and loaned. There are currently 260 loans outstanding with a balance of $4,426,377. There were 28 loans paid off ahead of schedule. Currently, one application is pending funding in the amount of $27,575. Overall, the average improvement in water use efficiency was estimated to be 57.8 percent. Also, these districts indicated that if funds were available, they would continue to participate in the Agricultural Water Conservation Loan Program (Table 6).

One of the loan features preferred by participating water districts was the personal investment required by the farmer. They liked the administrative fee charged by the district as well as the collateral requirements required for a loan. Generally, they were indifferent to doing banking type activities and the paperwork involved. Disliked features of the current program include: approved equipment for which a loan could be made, the length of the loan and the collateral requirements for tenant farmers to qualify (Table 7).

Districts' opinion as to how farmers perceived the current program indicates that farmers typically like the amount of funds available, existing interest rates and length of loan. Half of the districts' managers thought that farmers liked the requirements for a tenant farmer to qualify for a loan and half disliked it. Their perception indicated that farmers were indifferent to the administrative fee charged by the district and collateral requirements of loan. They pointed out that farmers disliked the district being required to do banking type activities, paperwork involved and personal investment requirements (Table 8).

All the managers thought that reducing interest rates would improve farmers' participation. Most common interest rates ranged from 5 to 6 percent. They did not think that a farmer education program or expanding the list of approved equipment would enhance participation. However, they felt that loans made under the direction of commercial banks with technical assistance should improve farmer participation (Tables 9 through 15).

General observations made includes the desire to have more funds available at or below existing rates. Guaranteed loss to commercial banks, if a system evaluation is made by the water district or the Soil Conservation Service prior to loan approval. One manager suggested that they be able to use the escrow funds required by TWDB (5 percent) to promote and distribute water conservation fixtures among cities and public schools systems.

Commercial Lender and Dealer Responses

The "Water Conservation in Texas Agriculture" survey conducted in the High Plains included nine commercial banks and six commercial dealers of irrigation equipment. Banks and dealers are located within participating and non-participating water conservation districts and overlapping of these between districts were common.

Tables 1 to 17 in Appendix C present the results of the commercial lenders and dealers across the five water conservation districts on the Texas High Plains. The tables are presented in the order in which the questions were asked in the survey with the questions asked preceding the Tables. Survey participates did not respond to all of the questions.

The respondents indicated that water conservation was important and that benefits exceeded costs of implementing. However, there was a difference of opinion as to whether the government should take legislative action to encourage water conservation. The banks thought that the government should not initiate action and the dealers indicated that it should (Tables 1 to 4).

Bankers and dealers believe that an approach to increase water use efficiency was to adopt water conserving irrigation equipment and were aware that the Texas Legislature had enacted a loan program to expedite water use efficiency. Half of both respondents indicated the program did not have an effect on their business (Tables 5 to 7).

Table 8 presents the results pertaining to the features of the program as it exists. The number of responses to each item are indicated in parenthesis at the end of the question. Percentages were calculated according to the number of responses to each particular question. Banks strongly disliked the districts doing banking type activities, but liked the list of approved equipment, length of loans and collateral requirements. They were indifferent about the requirements for tenant farmers to qualify. Dealers generally liked the water districts making loans for water conservation equipment, but disliked the collateral requirements established by the districts. They liked or were indifferent to the list of approved equipment.

Banks thought that reducing interest rates would improve farmer participation, but only two of nine responded as to what they thought the maximum level of interest should be. Dealers indicated that an interest rate reduction was preferable and were evenly divided as to what that rate should be (Tables 9 and 10).

Banks and dealers thought that farmer education programs were desirable to improve participation, but were divided as to whether technical assistance for implementation should be provided. Banks indicated that technical assistance should be provided while dealers did not. Neither thought that the list of equipment should be expanded or did not know if it should (Tables 11 to 13). Banks and dealers generally make water conservation loans and thought that loans should be made under the direction of commercial lenders for purchase or modification of irrigation equipment (Tables 14 and 15).

Table 16 presents information with respect to the factors that influence decisions to finance irrigation activities. Bankers' opinions are most relevant in this section because only one dealer responded these questions. Bankers indicated strong to moderate influences in the improvements in profitability of agriculture and interest shown by farmers in purchasing irrigation equipment. Banks indicated they that are not effected by water conservation districts efforts to fulfill requirements of programs or the equipment assessed by the district. The responding dealer was moderately influenced by all items except being strongly influenced by a large irrigation sector in its area.

The Banks and the dealer providing amounts and levels of loans for irrigation equipment differed significantly. Data provided by the banks indicate an average loan being approximately $21,290, whereas the responding dealer's loans were estimated to be $74,762 per loan. The loans could be characterized different according to the institution. Center pivot systems was the most prevalent use of the loans.

Respondents generally require from 20 percent to 30 percent down payment, a seven years term and a 8.5 percent interest rate. Banks were moderately to weakly influenced by loans characterized as risky and were not generally influenced by water districts involvement. They were moderate to the benefits received exceeding costs and were influenced more by profit potential being limited. They were generally not affected by down payments or requirements for a farmer to qualify. Concern over future farm

programs coupled with water allocation rules and regulations in the region was a moderate concern. However, planning horizons of current farmers was considered weak.

Dealers were moderately influenced by requirements for a farmer to qualify and not affected by water districts involvement. They were strong to moderately influenced by benefits exceeding costs and thought future profit potential and financial distress of farmers to be weak or not to have an effect on their decision to participate in a loan (Table 17).

Section IV responses are included in Appendix C as received. In evaluating the responses from the banks, there seems to be some association with water districts. The banks would like to make as many loans as possible using their own funds, but would consider participating with a guaranty to the bank. The smaller the bank, the more likely they would benefit from participation. Banks did not associate any regional or district constraints that would limit involvement within their trade area.

Dealers were more receptive to participation with water districts. They are concerned with water districts being able to participate in financing the total package in a timely manner. It was suggested that water districts should close on loans by November, so that farmers could take advantage of off-season prices. Another concern pointed out by the dealers was that all counties are not part of a water conservation district, and this limits participation.

Water Districts Interviews

The purpose of the meetings was to discuss with district managers some of the problems that they have encountered enacting the low interest loans in their districts.

Overall, the participating districts indicated that they were pleased of the outcome because each district determines its loan policies by an elected board of directors within the district. However, the policies must by approved by the TWDB before they can be implemented.

A primary concern of the participating districts was to be able to obtain more funding at the existing or lower interest rates. The non-participating districts have not participated mainly because of lack of support from their board of directors. The primary concern of the non-participating districts were water quality and status of the water table.

HIGH PLAINS UWCD #1 (participating), Lubbock. Wayne Wyatt, Manager and Becca Williams, Administrative Assistant. Mr. Wyatt and Ms. Williams were at an organizational meeting prior to the beginning of this survey. They were aware of purposes of the survey and had no questions.

We sent 362 questionnaires to individuals in the district. This district covers 15 counties and required more questionnaires to be sent than other districts. Five

questionnaires were returned a undeliverable and we received 145 completed questionnaires. The districts' response rate was 40.62 percent (145/357). The highest response rate of all districts.

As of June 15, 1993, the water district had made 201[1] loans for water conservation purposes through the TWDB project. The total amount loaned was approximately $6.085 million. Approximately $5.410 million was from the initial pilot program going to 183 producers. The additional loans were made from funds generated by loan repayments.

The largest share of the program funds purchased center pivot sprinkler systems. Of the sprinkler systems, 22.6 percent were LEPA systems. A total of 50 surge values were purchased by farmers in Castro and Lubbock counties.

Acres affected by the loan program in eleven of fifteen counties in the district amounted to 36,576 with an estimated cumulative 20 year water savings of approximately 407,000 acre feet. This is sufficient saving to supply a city of 200,000 water for 10 years.[2]

MESA UWCD (non-participating), Lamesa. Harvey Everheart, Manager and Gail Boyd, Administrative Assistant. We mailed the manager a copy of the questionnaire and a draft letter that would accompany the questionnaire. We indicated in our letter that we would schedule an office visit so that we could pick up the completed questionnaire and a list of names and addresses.

Before we scheduled an office visit, Ms. Boyd called to ask if they could return the questionnaire without an office visit. She said that the district was not interested in the loan program.

We received the questionnaire without a list of names. We called Ms. Boyd and asked if we could come by and visit with the manager. We explained that we need both pros and cons about the program and that their opinions would be appreciated. A meeting was scheduled.

Our visit with the manager was brief. However, we were able to obtain a list of names that would enable us to send questionnaires.

We sent 100 farmer/landowners questionnaire. Of these, 14 were returned as undeliverable. We received 16 completed questionnaires that was to be used in the analysis. This district had our lowest response rate of 18.60 percent (16/86). This district is characterized as a dry land farming area.

SANDY LAND UWCD (participating), Plains. Gary Walker, Manager and Kathy Jones, Administrative Assistant. We mailed the manager a copy of the questionnaire

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[1]One borrower is in Chapter 12 bankruptcy proceedings.

[2]Information furnished by water district.

survey and a draft letter that would accompany the questionnaire. We indicated in our letter that we would schedule an office visit so that we could pick up the completed questionnaire and a list of names and addresses.

The scheduled office visit was attended by Mr. Walker, Ms. Jones, Darrell Barron and Brad Palmer. The last two individuals where members of the board of directors.

The questionnaire was completed and reviewed so that Mr. Walker could explain his answers. The office provided us with a list of names and addresses along with a copy of a letter indicating that the district supports the loan program. The letter was copied and sent along with the survey questionnaire to farmer/landowners.

We sent a total of 138 questionnaires to producers in this district. 100 of the questionnaires were sent to producers who had not participated in the loan program and the remaining 38 were sent to producers who had participated and had loans outstanding with the district.

Three of the questionnaires were returned as undeliverable. We received 45 completed questionnaires that would be used in the analysis. The district had a response rate of 33.33 percent (45/135).

PANHANDLE GWD #3 (participating), White Deer. C. E. Williams, Manager and Yvonne Thomas, Administrative Assistant. We mailed the manager a copy of the questionnaire survey and a draft letter that would accompany the questionnaire. We indicated in a letter that we would schedule an office visit so that we could pick up the completed questionnaire and a list of names and addresses.

At the scheduled office visit, Mr. Williams provided a completed questionnaire. He was not able to provide us with a complete list of names and addresses. He asked for additional time to secure the names and addresses from respective county ASCS offices. He had contacted the ASCS offices, but they had not responded.

He asked if he could obtain survey results as it related to his district. We told him that we did not know if the information would be available on individual districts. We could not release any information without approval from the TWDB. We suggested that he call Comer Tuck to find out. Comer Tuck told him that the information he requested would be available. It does not appear that he requires anything technical, just general information about his district so that he will know how to proceed with loan requests in future years.

We sent a 100 questionnaires to producers in this district. All of the questionnaires were delivered and 37 were returned that would be used in the analysis. The survey response was 37 percent (37/100).

NORTH PLAINS GCD #2 (non-participating), Dumas. Richard Bowers, Manager. We mailed the manager a copy of the questionnaire survey and a draft letter that would

accompany the questionnaire. We indicated in a letter that we would schedule an office visit, so that we could pick up the completed questionnaire and a list of names and addresses.

We met with Mr. Bowers at the district office and received the completed the questionnaire. He said that the district was a non-participating district because of the paper work required as a lender.

He had done surveys in the past and knew that producers were interested in water conservation. He expects to see an increase in the number of systems and supports that ideal.

A total of 100 questionnaires were sent to individuals in the district. One was returned as undeliverable and 34 were completed and returned that would be used in the analysis. The response rate was 34.34 percent (34/99).

Commercial Lenders Interviews

The purpose of the meetings was to ascertain ways that banks could participate in the Agricultural Water Conservation Loan Program with local water districts. We visited several banks to determine: (1) how the banks view the operation of the current program, and (2) ask for suggestions about how they could participate, i.e., if changes were made in the program and what types of a program would be necessary?

Bankers were generally aware of the state initiated program and had different opinions as to how they may participate. A majority indicated that they did not believe the program was necessary. Current interest rates received on alternative investments for banks is low, considering the rates the banks charge customers for water conservation loans.

Farmers are reluctant to apply for loans because they are mostly tenants. There is a substantial underground cost involved in setting up LEPA systems. The cash outlay for the tenant farmers require several years to recover and can only be recovered by increased profits through efficiency.

Landowners, even though they believe that water conservation is important, do not wish to mortgage their property to secure a loan. The costs associated with underground pipe and electrical wiring requires several years to recover through increased rental payments.

HIGH PLAINS UWCD #1 (participating). The banks interviewed were: 1ST STATE BANK OF DIMMITT, Ray M. Bain, President; MULESHOE STATE BANK, Robert

Montgomery, Exec. V.P.; and AMERICAN STATE BANK OF LUBBOCK, Deryl Bennett, Sr. V.P.

Ray Bain. The bank has participated with the water district by issuing letters of credit to the district as a surety. He indicated that usually the bank would held a first lien (deed of trust) on the property that a LEPA system would be installed and that issuing the letters of credit would not jeopardize the banks' position. He did not necessarily like the idea of issuing the letters of credit, because the bank had funds that could lend to individuals that qualified according to the districts' requirements.

Robert Montgomery. The bank has not participated directly with the water district. He was concerned with having to compete with the district, i.e., the State, in providing loans for LEPA systems. He indicated that the bank had funds to lend to qualified entities. The banks' terms consist of a 20 percent down payment, up to eight years for repayment with a 8.5 percent current interest rate that is variable. He indicated that the bank had made approximately 100 loans from 1988 to present with no loans in default.

He was aware of the districts' loan requirements and thought that the bank had better terms, especially the length of loan the bank is willing to make. When asked how the bank might participate with the district, he suggested that the district could offer referrals to those who did not qualify according to its' terms.

Deryl Bennett. The bank had made loans for LEPA systems in the past and that none of the loans were delinquent. He did estimate that the bank had made approximately 10 LEPA loans in the previous five years.

He was concerned that High Plains UWCD #1 had been making loans to farmers. We asked him how he thought the bank could participate with the water district? He said the bank would need to loan its money and the water district could act as a guarantor at 90 percent, after the loan is liquidated. This is basically how the Farmers Home Administration (FmHA) and Small Business Administration (SBA) provide services.

The bank currently makes loans with a 20 to 25 percent down payment for up to five years. The interest rate is variable depending on the prime rate. The banks' base rate is 6.25 percent with a 1.5 to 2.5 percent charged over that amount. This equates to 7.75 to 8.75 percent finance charged on LEPA loans.

MESA UWCD LENDERS (non-participating). The banks interviewed were: LAMESA STATE BANK, Elwood Freeman, President; and 1ST NATIONAL BANK OF LAMESA, Robert C. Henderson, Exec. V.P.

Elwood Freeman. He was aware the program existed, but had not been notified by the district manager about the specifics of the program. He indicated that the bank currently makes loans for pivot systems. The terms of the loan includes a three years term at a 9.5 percent interest adjusted annually. He did not indicate any down payment requirements.

He thought that the bank could make referrals to the district, if a farmer would qualify for a loan when a longer repayment period was necessary for cash flow purposes. Loans made for five to seven years would be advantageous to more farmers. He said the bank could handle most of the paperwork involved, if they could use their own forms and procedures. The bank participates with FmHA and the SBA in loan guarantees and does not want to get involved with the amount of forms required by those agencies.

Robert Henderson. He was not aware of the program as it existed. He said that he contacted the district manager for specifics. He was not very concerned about competition from the district making loans, because the bank has very few requests for irrigation loans. The bank makes irrigation loans with 20 percent down payment, three to four years payments at 10-10.5 percent interest. The loans are made to individuals who own the land and there is no problem with the financing the underground pipe.

The bank could probably participate with the district and handle the paperwork, if the district could give an 80 percent guaranty on the loan. This would be beneficial to farmers who are principally renters (crop share/cash lease tenants). He estimated that approximately 75 percent of the farmers do not own most of the land they farm. These farms can have good cash flow (repayment ability), but very little equity since most of their assets is composed of farm equipment. If loans were made based on net worth, these farmers would have a hard time qualifying.

SANDY LAND UWCD (participating). The banks interviewed were: PLAINS STATE BANK, Larry K. Mason, President; and YOAKUM COUNTY STATE BANK OF DENVER CITY, O. L. Cooper, President.

Larry Mason. He was aware that the program existed for it has had a negative impact on the banks' business. Prior to initiation of the loan program, the bank had made five loans for LEPA systems. This does not include loans made for conversion of old systems to LEPA systems. Those type of loans are normally included in annual operating loans and are not characterized separately. The bank has not made any loans for water conservation purposes since the program was initiated. The water district has made 44 loans for LEPA systems.

The bank has participated with the water district by loaning down payments to farmers so that they qualify under the district criteria. Also, the bank has released funds from crop sales so that farmers could make payments to the district. Essentially, farmers borrow money from the bank for annual farm operating expenditures. The bank files documentation (UCC-1) with the Secretary of State indicating a first lien position on growing/to be grown crops for the current year. If the farmers has not completed harvest and marketing activities before a loan payment is due to the water district, the bank, could release proceeds from the crops to make a payment to the water district. The bank has done this in the past.

The banks' conditions for a loan include a 20 percent down payment, up to seven years annual payment, and finance charges that currently range from 8 to 8.5 percent. The finance charge is variable from year-to-year. Mr. Mason indicated that he thought that the program in his county was infringing on the banks' ability to provide services in a private enterprise situation.

O. L. Cooper. He was aware of the program and was very careful not to say anything adverse about the water district. He thought the program had a negative impact on the banks' business. He also said that the program had been beneficial to local farmers. The adoption of LEPA systems were increasing the profitability of farmers, and in the long run would help the local economy.

PANHANDLE GWD #3 (participating). The banks interviewed were: FIRST NATIONAL BANK IN PAMPA, Don L. Babcock, President; and FIRST BANK & TRUST OF WHITE DEER, James A. Weese, President.

Don Babcock. He was unaware that the program existed within his area. He knew about the water district. We explained the program as it exists and some about the history of the pilot program. He was not sure if the program had affected the banks' business, because the bank is not into agricultural loans as much as in other business loans.

The bank had made three loans for LEPA systems in previous years. The conditions for the loans were a 25 percent down payment, up to five years, and usually an interest rate two percent above the prime rate. None of the loans were delinquent.

He was unsure as to how the bank might participate with the water district because of his limited knowledge about the districts' activities. He did indicate that the bank had funds to lend without support from the district.

James Weese. He was aware of the program and supported its' activities as a lender. The bank is characterized as a small bank and working jointly with the water district is better able to provide operating loans to farmers. Due to its size, the bank has loan limits which a producer could reach with a farm operating loan, leaving very little margin for the bank to make loans for capital purchases.

He indicated that the bank had acted with water district in providing information and expertise about borrowers. The district's manager uses this information in determining the eligibility of an applicant.

He hopes that the TWDB will continue to make available funds to the water district so that this kind of relationship continues. The bank has not made any direct loans for LEPA systems.

NORTH PLAINS GCD #2 (non-participating). The banks interviewed were: FIRST STATE BANK OF STRATFORD, B. A. Donelson, President; and SUNRAY STATE BANK OF SUNRAY, C. W. Bedwell, President.

B. A. Donelson. He was aware that the program existed and does not support it. He enclosed the letter with the survey questionnaire before we had a opportunity to visit with him. Emphasis of the letter indicated his assessment and thoughts. He did not see why the state of Texas was in the lending business or the guaranty business.

We were interested in his comments as to how the bank might participate with the water district in providing low interest loans to farmers? He had no comments.

The bank has actively participated in financing LEPA systems in the past. In 1992, there were approximately 40 applications made to the bank, with approximately 35 producers receiving loans. He indicated that there were no delinquencies with previous loans made. The bank requires a 20 to 40 percent down payment and usually allows four to seven years in a repayment schedule. Finance charges range from 7.5 to 9 percent.

C. W. Bedwell. He did not have time to visit with us.

APPENDIX A

FARMER SURVEY RESULTS
TEXAS HIGH PLAINS

TABLE: 1 Questionnaires mailed and returned

By District:	Mailed	Undeliverable	Completed and returned	Response (%)
	--- number ---			
Sandy Land UWCD	138	3	45	33.33
Mesa UWCD	100	14	16	18.60
North Plains GCD #2	100	1	34	34.34
High Plains UWCD #1	362	5	145	40.62
Panhandle GCD #3	100	0	37	37.00
Total	800	23	277	35.64

Section I
Information regarding your views about water conservation

Q-1. Do you believe that water has become a limited resource and there is an immediate need to emphasize efficiency in water use?

Choices: 1. Yes; 2. No; 3. Don't Know

TABLE: 2

By District:	YES	(%)	NO	(%)	DON'T KNOW	(%)
Sandy Land UWCD	38	88.4	1	2.3	4	9.3
Mesa UWCD	12	85.7	0	0.0	2	14.3
North Plains GCD #2	26	83.9	4	12.9	1	3.3
High Plains UWCD #1	137	95.1	3	2.1	4	2.8
Panhandle GCD #3	34	94.4	2	5.6	0	0.0

Q-2. In your opinion, who is most responsible for inefficient use and loss of water? (circle one)

Choices: 1. Commercial sector; 2. Agricultural sector; 3. Households (domestic water use); 4. Other (please specify)

TABLE: 3

By District:	COMMER.	(%)	AGRI	(%)	HOUSE.	(%)	OTH.	(%)
Sandy Land UWCD	52	52.5	23	23.2	9	09.0	15	15.6
Mesa UWCD	7	100.0	0	00.0	0	00.0	0	00.0
North Plains GCD #2	17	45.9	14	37.8	6	16.2	0	00.0
High Plains UWCD #1	23	13.9	68	41.2	61	37.0	13	7.9
Panhandle GCD #3	15	39.5	8	21.1	10	26.3	5	13.2

Q-3. Do you believe that the government should take legislative actions to encourage water conservation?

Choices: 1. Yes; 2. No; 3. Don't Know

TABLE: 4

By District:	YES	(%)	NO	(%)	DON'T KNOW	(%)
Sandy Land UWCD	11	26.8	26	63.4	4	9.8
Mesa UWCD	6	40.0	6	40.0	3	20.0
North Plains GCD #2	8	25.8	22	71.9	1	3.2
High Plains UWCD #1	30	21.0	97	67.8	16	11.2
Panhandle GCD #3	9	25.0	23	63.9	4	11.1

Q-4. Do you believe that benefits of water conservation, in general, exceed the costs of its implementation?

Choices: 1. Yes; 2. No; 3. Don't Know

TABLE: 5

By District:	YES	(%)	NO	(%)	DON'T KNOW	(%)
Sandy Land UWCD	16	39.0	15	36.6	10	24.4
Mesa UWCD	6	40.0	6	40.0	3	20.0
North Plains GCD #2	22	68.8	5	15.6	5	15.6
High Plains UWCD #1	92	63.5	35	24.1	18	12.4
Panhandle GCD #3	18	50.0	13	36.1	5	13.9

Q-5. Do you believe that benefits of agricultural water conservation exceed the costs of its implementation?

Choices: 1. Yes; 2. No; 3. Don't Know

TABLE: 6

By District:	YES	(%)	NO	(%)	DON'T KNOW	(%)
Sandy Land UWCD	23	53.5	14	32.6	6	14.0
Mesa UWCD	7	46.7	6	40.0	2	13.3
North Plains GCD #2	24	75.0	6	18.8	2	6.3
High Plains UWCD #1	92	63.5	39	26.9	14	9.7
Panhandle GCD #3	16	44.4	14	38.9	6	16.7

Q-6. Do you believe that one approach to increase water use efficiency in agriculture is to adapt water conserving irrigation equipment?

Choices: 1. Yes; 2. No; 3. Don't Know

TABLE: 7

By District:	YES	(%)	NO	(%)	DON'T KNOW	(%)
Sandy Land UWCD	39	92.9	1	2.4	2	4.8
Mesa UWCD	11	73.3	1	6.7	3	20.0
North Plains GCD #2	30	93.8	1	3.1	1	3.1
High Plains UWCD #1	142	98.6	1	0.7	1	0.7
Panhandle GCD #3	34	94.4	1	2.8	1	2.8

Q-7. Are you aware that the Texas Legislature has enacted an Agricultural Water Conservation Loan Program whereby low interest loans can be made available for the purchase of water conserving irrigation equipment?

Choices: 1. Yes; 2. No (**skip to Section III**)

TABLE: 8

By District:	YES	(%)	NO	(%)
Sandy Land UWCD	41	93.2	3	6.8
Mesa UWCD	8	61.5	5	38.5
North Plains GCD #2	17	54.8	14	45.2
High Plains UWCD #1	136	93.8	9	6.2
Panhandle GCD #3	29	78.4	2	21.6

(**IF YES**)

a. Is the program available in your district?

1. Yes
2. No (**skip to Section III**)

TABLE: 9

By District:	YES	(%)	NO	(%)
Sandy Land UWCD	39	100.0	0	64.7
Mesa UWCD	4	80.0	1	20.0
North Plains GCD #2	6	35.3	11	64.7
High Plains UWCD #1	135	100.0	0	0.0
Panhandle GCD #3	23	100.0	0	0.0

(**IF YES**)

b. Are you participating or did you in past participate in the Agricultural Water Conservation Loan Program?

1. Yes (**skip to Section II**)
2. No

TABLE: 10

By District:	YES	(%)	NO	(%)
Sandy Land UWCD	19	48.7	20	51.3
Mesa UWCD	0	0.0	5	100.0
North Plains GCD #2	0	0.0	14	100.0
High Plains UWCD #1	88	65.2	47	34.8
Panhandle GCD #3	8	28.6	20	0.0

(Q-7 Continued)

(IF NO, please answer Q-8 and Q-9 then skip to Section III)

Q-8. What type of irrigation equipment or method are you using, when was it installed (year) and what was the source of financing (personal savings, commercial bank, or dealer)?

The majority of the respondents to this question indicated that from 1985 through 1993 most of them installed sprinkler and LEPA systems, with few reporting surge valves.

Q-9. Please respond with your opinion regarding the influence of the following factors on your decision not to participate in the program. (Circle number for each item)

TABLE: 11

Sandy Land UWCD

Item	Degree of Influence: Strong	Moderate	Weak	No Effect
A. Involvement of district in the program (14)	7.1%	28.6%	21.4%	42.7%
B. Excessive paperwork (13)	15.4%	15.4%	7.7%	61.5%
C. Requirements to qualify too difficult (13)	15.4%	23.1%	15.4%	46.2%
D. Program's interest rate too high (13)	7.7%	7.7%	23.1%	61.5%
E. Limited funds available to farmers (13)	23.1%	15.4%	23.1%	38.5%
F. Financial situation of the farm (13)	38.5%	30.8%	7.7%	23.1%
G. Adopted conservation without program (13)	7.7%	38.5%	7.7%	46.2%
H. Too much in debt, do not want to increase it (13)	15.4%	30.8%	23.1%	30.8%
I. Satisfied with the existing irrigation equipment (12)	8.3%	33.3%	8.3%	50.0%
J. Non-farmer landowner (land rented or leased) (15)	20.0%	6.7%	0.0%	73.3%
K. Concern over the future of agriculture (13)	23.1%	23.1%	0.0%	53.9%

High Plains UWCD #1

Item	Degree of Influence: Strong	Moderate	Weak	No Effect
A. Involvement of district in the program (36)	5.6%	19.4%	5.6%	69.4%
B. Excessive paperwork (40)	42.5%	25.0%	7.5%	25.0%
C. Requirements to qualify too difficult (43)	41.9%	30.2%	11.6%	16.3%
D. Program's interest rate too high (41)	22.0%	22.0%	22.0%	34.1%
E. Limited funds available to farmers (40)	30.0%	15.0%	20.0%	35.0%
F. Financial situation of the farm (40)	20.0%	17.5%	17.5%	45.0%
G. Adopted conservation without program (39)	35.9%	15.4%	5.1%	43.6%
H. Too much in debt, do not want to increase it (40)	10.0%	25.0%	10.0%	55.0%
I. Satisfied with the existing irrigation equipment (38)	2.6%	7.9%	29.0%	60.5%
J. Non-farmer landowner (land rented or leased) (42)	73.8%	21.4%	2.4%	2.4%
K. Concern over the future of agriculture (39)	20.5%	25.6%	12.8%	40.0%

(Q-9 Continued)

Panhandle GCD #3

Item	Degree of Influence: Strong	Moderate	Weak	No Effect
A. Involvement of district in the program (13)	6.8%	16.0%	11.6%	65.6%
B. Excessive paperwork (10)	22.6%	20.1%	5.1%	52.2%
C. Requirements to qualify too difficult (11)	28.2%	17.8%	12.0%	42.0%
D. Program's interest rate too high (13)	22.7%	12.5%	17.6%	47.3%
E. Limited funds available to farmers (11)	26.8%	13.2%	20.4%	40.0%
F. Financial situation of the farm (12)	36.2%	21.7%	8.4%	33.8%
G. Adopted conservation without program (11)	23.6%	24.0%	7.3%	45.1%
H. Too much in debt, do not want to increase it (12)	25.1%	18.6%	17.8%	42.5%
I. Satisfied with the existing irrigation equipment (14)	10.8%	20.9%	14.8%	53.5%
J. Non-farmer landowner (land rented or leased) (10)	10.0%	30.0%	0.0%	60.0%
K. Concern over the future of agriculture (13)	32.5%	21.4%	4.3%	41.9%

Section II
Answer this section only if you have been or are currently a participant in the Agricultural Water Conservation Loan Program

Q-1. Please respond with your opinion regarding the influence of the following factors on your decision to participate in the program. (Circle number for each item)

TABLE: 12

Sandy Land UWCD

Item	Degree of Influence: Strong	Moderate	Weak	No Effect
A. Low interest rates relative to comm. rate (19)	94.7%	5.3%	0.0%	0.0%
B. Involvement of District in the program (19)	47.4%	31.6%	10.5%	10.5%
C. Benefits of conservation exceed costs (19)	31.6%	52.6%	5.3%	10.5%
D. Would have adopted conservation w/o program (18)	38.9%	27.8%	22.2%	11.1%
E. Investment to avoid income taxes (19)	10.5%	21.1%	10.5%	57.9%
F. Part of expansion of farm (18)	38.9%	33.3%	16.7%	11.1%
G. Reduce costs of irrigation (19)	68.4%	21.1%	5.3%	5.3%
H. Reduce labor requirements for irrigation (19)	79.0%	21.1%	0.0%	0.0%
I. Equipment replaced was worn out (19)	52.6%	21.1%	0.0%	26.3%

High Plains UWCD #1

Item	Degree of Influence: Strong	Moderate	Weak	No Effect
A. Low interest rates relative to comm. rate (86)	82.6%	16.3%	1.2%	0.0%
B. Involvement of District in the program (80)	28.8%	43.8%	18.8%	8.8%
C. Benefits of conservation exceed costs (84)	73.8%	21.4%	2.4%	2.4%
D. Would have adopted conservation w/o program (80)	26.3%	48.8%	21.3%	3.8%
E. Investment to avoid income taxes (77)	2.5%	9.9%	29.6%	58.0%
F. Part of expansion of farm (79)	11.4%	29.1%	19.0%	40.5%
G. Reduce costs of irrigation (84)	82.1%	11.9%	3.6%	2.4%
H. Reduce labor requirements for irrigation (84)	81.0%	14.3%	1.2%	3.6%
I. Equipment replaced was worn out (81)	66.7%	14.8%	14.8%	66.7%

Panhandle GCD #3

Item	Degree of Influence: Strong	Moderate	Weak	No Effect
A. Low interest rates relative to comm. rate (6)	83.3%	16.7%	0.0%	0.0%
B. Involvement of District in the program (6)	33.3%	33.3%	0.0%	33.3%
C. Benefits of conservation exceed costs (7)	57.1%	28.6%	14.3%	0.0%
D. Would have adopted conservation w/o program (7)	14.3%	57.1%	14.3%	14.3%
E. Investment to avoid income taxes (7)	0.0%	0.0%	28.6%	71.4%
F. Part of expansion of farm (7)	0.0%	28.6%	42.9%	28.6%
G. Reduce costs of irrigation (7)	85.8%	14.3%	0.0%	0.0%
H. Reduce labor requirements for irrigation (7)	85.8%	14.3%	0.0%	0.0%
I. Equipment replaced was worn out (7)	14.3%	0.0%	28.6%	57.1%

Q-2. How many water conservation loans have you taken?

TABLE: 13

By District:	Total No.
Sandy Land UWCD	21
High Plains UWCD #1	92
Panhandle GCD #3	10

Q-3. What was (were) the amount(s) of loan(s) and when did you take it (them)?

TABLE: 14

By District:	NO.	YEAR	Avg. Amount
Sandy Land UWCD	2	1991	$50,100
	9	1992	$31,400
	10	1993	$29,661
High Plains UWCD #1	20	1985-87	$24,736
	58	1988-89	$30,948
	14	1991-93	$30,417
Panhandle GCD #3	0	1991	$0
	4	1992	$31,375
	6	1993	$45,529

Q-4. How did you make use of the water conservation funds?

The majority of the respondents to this question indicated that they installed LEPA systems, with few reporting surge valves.

Q-5. How many acres of irrigated land were affected by the water conserving equipment?

TABLE: 15

By District:	Avg. Acres
Sandy Land UWCD	259.1
High Plains UWCD #1	225.4
Panhandle GCD #3	414.0

Q-6. What are the principal crop(s) grown using the water conserving equipment?

The main crop in the Sandy Land UWCD and in the High Plains UWCD #1 was cotton. In the Panhandle GCD #3 were corn and wheat.

Q-7. What type of irrigation equipment or irrigation method was replaced by the water conserving equipment?

Usually sprinkler systems or adoption of LEPA in areas previously under furrow irrigation

Q-8. What is your estimate of total cost (investment) incurred due to your participation in the water conservation loan program?

TABLE: 16

By District:	Avg. Investment
Sandy Land UWCD	$49,358
High Plains UWCD #1	$48,319
Panhandle GCD #3	$48,196

Q-9. Were there any water use efficiency improvements? (where efficiency is defined in terms of yield(s) obtained by the amount of water used)

1. Yes
2. No

(IF YES)

a. How much do you estimate the improvement in water use efficiency to be?

TABLE: 17

By District:	Yes	No	Avg. Improvement
Sandy Land UWCD	9	0	46.0%
High Plains UWCD #1	53	21	46.6%
Panhandle GCD #3	5	0	47.2%

Q-10. Were there any increases in yields in those acres in which the water conserving equipment was adopted?

1. Yes
2. No

(IF YES)

a. How much do you estimate the increase to be?

TABLE: 18

By District:	Yes	No	Avg. Improvement
Sandy Land UWCD	9	0	24.3%
High Plains UWCD #1	53	21	33.7%
Panhandle GCD #3	5	0	60.0%

Section III
Information regarding your views about Agricultural Water Conservation Loan Program

We encourage you to read the enclosed literature on the Agricultural Water Conservation Loan program before responding to questions in this section.

Q-1. Please give your opinion about the following features of the current program. (Circle number for each item)

TABLE: 19

Sandy Land UWCD

Item	Strongly Like	Like	Indifferent	Dislike	Strongly Dislike
A. District required to do banking type activities (39)	18.0%	33.3%	46.2%	2.6%	0.0%
B. Paperwork involved to obtain a loan (38)	7.9%	26.3%	55.3%	5.3%	5.3%
C. Amounts of funds available to loan (38)	10.5%	55.3%	21.1%	10.5%	2.6%
D. Existing interest rate relative to comm. rate (37)	29.7%	48.7%	16.2%	5.4%	0.0%
E. Personal investment requirement (37)	5.4%	51.4%	40.5%	2.7%	0.0%
F. Administrative fee charged by the district (37)	8.1%	29.7%	51.4%	5.4%	5.4%
G. List of approved equipments for which loans could be made (38)	7.9%	50.0%	34.2%	7.9%	0.0%
H. Length of loans (37)	8.1%	59.5%	29.7%	2.7%	0.0%
I. Collateral requirements of loans (37)	8.1%	48.7%	35.1%	8.1%	0.0%
J. Requirements for a tenant farmer to qualify (36)	8.3%	33.3%	47.2%	11.1%	0.0%

Mesa UWCD

Item	Strongly Like	Like	Indifferent	Dislike	Strongly Dislike
A. District required to do banking type activities (6)	16.7%	33.3%	0.0%	33.3%	16.7%
B. Paperwork involved to obtain a loan (6)	0.0%	0.0%	33.3%	33.3%	33.3%
C. Amounts of funds available to loan (6)	0.0%	50.0%	16.7%	16.7%	16.7%
D. Existing interest rate relative to comm. rate (6)	0.0%	66.7%	16.7%	0.0%	16.7%
E. Personal investment requirement (6)	0.0%	66.7%	16.7%	0.0%	16.7%
F. Administrative fee charged by the district (6)	0.0%	33.3%	33.3%	33.3%	0.0%
G. List of approved equipments for which loans could be made (6)	16.7%	33.3%	16.7%	16.7%	16.7%
H. Length of loans (6)	0.0%	50.0%	33.3%	16.7%	0.0%
I. Collateral requirements of loans (6)	0.0%	66.7%	16.7%	16.7%	0.0%
J. Requirements for a tenant farmer to qualify (6)	0.0%	33.3%	50.0%	0.0%	16.7%

(Q-1 Continued)

North Plains GCD #2

Item	Strongly Like	Like	Indifferent	Dislike	Strongly Dislike
A. District required to do banking type activities (27)	7.4%	25.9%	22.2%	33.3%	11.1%
B. Paperwork involved to obtain a loan (22)	4.6%	31.8%	27.3%	18.2%	18.2%
C. Amounts of funds available to loan (25)	8.0%	32.0%	28.0%	20.0%	12.0%
D. Existing interest rate relative to comm. rate (24)	12.5%	33.3%	20.8%	20.8%	12.5%
E. Personal investment requirement (21)	9.5%	42.9%	33.3%	4.8%	9.5%
F. Administrative fee charged by the district (22)	4.6%	22.7%	36.4%	22.7%	13.6%
G. List of approved equipments for which loans could be made (23)	26.1%	43.5%	13.0%	13.0%	4.4%
H. Length of loans (22)	22.7%	27.3%	36.4%	4.6%	9.1%
I. Collateral requirements of loans (22)	9.1%	40.9%	31.8%	13.6%	4.6%
J. Requirements for a tenant farmer to qualify (22)	4.6%	45.5%	31.8%	4.6%	13.6%

High Plains UWCD #1

Item	Strongly Like	Like	Indifferent	Dislike	Strongly Dislike
A. District required to do banking type activities (121)	12.4%	33.1%	43.0%	8.3%	3.3%
B. Paperwork involved to obtain a loan (123)	8.1%	28.5%	30.9%	22.0%	10.6%
C. Amounts of funds available to loan (123)	12.2%	39.8%	25.2%	19.5%	3.3%
D. Existing interest rate relative to comm. rate (121)	24.8%	38.0%	19.0%	14.9%	3.3%
E. Personal investment requirement (120)	9.2%	36.7%	34.2%	14.2%	5.8%
F. Administrative fee charged by the district (117)	6.8%	26.5%	53.0%	9.4%	4.3%
G. List of approved equipments for which loans could be made (119)	11.8%	44.5%	37.0%	6.7%	0.0%
H. Length of loans (117)	17.1%	57.3%	18.8%	5.1%	1.7%
I. Collateral requirements of loans (120)	6.7%	25.8%	27.5%	20.8%	19.2%
J. Requirements for a tenant farmer to qualify (112)	6.3%	16.1%	43.8%	21.4%	12.5%

Panhandle GCD #3

Item	Strongly Like	Like	Indifferent	Dislike	Strongly Dislike
A. District required to do banking type activities (21)	9.5%	23.8%	47.6%	14.3%	4.8%
B. Paperwork involved to obtain a loan (22)	13.6%	18.2%	36.4%	27.3%	4.6%
C. Amounts of funds available to loan (22)	13.6%	36.4%	36.4%	13.6%	0.0%
D. Existing interest rate relative to comm. rate (23)	30.4%	43.5%	17.4%	8.7%	0.0%
E. Personal investment requirement (23)	13.0%	34.8%	30.4%	21.7%	0.0%
F. Administrative fee charged by the district (21)	9.5%	19.1%	57.1%	14.3%	0.0%
G. List of approved equipments for which loans could be made (21)	19.1%	38.1%	38.1%	0.0%	4.8%
H. Length of loans (21)	28.6%	42.9%	28.6%	0.0%	0.0%
I. Collateral requirements of loans (23)	17.4%	30.4%	43.5%	4.4%	4.4%
J. Requirements for a tenant farmer to qualify (23)	13.6%	31.8%	40.9%	13.6%	0.0%

Q-2. Have you attended a program or demonstration addressing agricultural water conservation?

Choices: 1. Yes; 2. No

TABLE: 20

By District:	Yes	No
Sandy Land UWCD	22	20
Mesa UWCD	5	8
North Plains GCD #2	18	13
High Plains UWCD #1	78	63
Panhandle GCD #3	17	16

Q-3. Do you think that reducing interest rates of loans would significantly improve participation by farmers?

Choices: 1. Yes; 2. No; 3. Don't Know

TABLE: 21

By District:	Yes	No	Don't Know
Sandy Land UWCD	29	7	7
Mesa UWCD	6	3	4
North Plains GCD #2	20	4	7
High Plains UWCD #1	103	13	25
Panhandle GCD #3	16	5	8

(IF YES)

a. What is the maximum level of interest that would be acceptable? (Circle one)

Choices: 1. 3%-4% 2. 4%-5% 3. 5%-6% 4. 6%-7%

TABLE: 22

By District:	3%-4%	4%-5%	5%-6%	6%-7%
Sandy Land UWCD	6	7	8	10
Mesa UWCD	2	3	4	2
North Plains GCD #2	6	4	9	5
High Plains UWCD #1	13	25	48	27
Panhandle GCD #3	3	7	8	6

Q-4. Do you think a farmer education or extension program emphasizing the importance of water conservation and the provisions of water conservation loan program would significantly improve participation by farmers?

Choices: 1. Yes; 2. No; 3. Don't Know

TABLE: 23

By District:	Yes	(%)	No	(%)	Don't Know	(%)
Sandy Land UWCD	23	53.5%	8	18.6%	12	27.9%
Mesa UWCD	7	50.0%	2	14.3%	5	35.7%
North Plains GCD #2	17	54.8%	8	25.8%	6	19.4%
High Plains UWCD #1	73	52.1%	30	21.4%	37	26.4%
Panhandle GCD #3	12	38.7%	10	32.6%	9	29.0%

Q-5. Do you think that expanding the list of approved equipment for which loans could be made would significantly improve participation by farmers?

Choices: 1. Yes; 2. No; 3. Don't Know

TABLE: 24

By District:	Yes	(%)	No	(%)	Don't Know	(%)
Sandy Land UWCD	12	28.6%	9	21.4%	21	50.0%
Mesa UWCD	3	27.3%	4	36.4%	4	36.4%
North Plains GCD #2	5	16.1%	16	51.6%	10	32.3%
High Plains UWCD #1	35	25.4%	54	39.1%	49	35.5%
Panhandle GCD #3	5	16.1%	14	45.2%	12	38.7%

(IF YES)

a. What other equipment should be included in the list?

Pumps and motors.

Q-6. Do you think making loans available under the direction of commercial lenders would significantly improve participation by farmers?

Choices: 1. Yes; 2. No; 3. Don't Know

TABLE: 25

By District:	Yes	(%)	No	(%)	Don't Know	(%)
Sandy Land UWCD	11	25.0%	21	47.7%	12	27.3%
Mesa UWCD	5	41.7%	4	33.3%	3	33.3%
North Plains GCD #2	13	40.6%	9	28.1%	10	31.3%
High Plains UWCD #1	48	35.3%	53	39.0%	35	25.7%
Panhandle GCD #3	3	9.4%	16	50.0%	13	40.6%

Q-7. Do you think providing technical assistance for implementation of equipment bought under the conservation loan program would significantly improve participation by farmers?

Choices: 1. Yes; 2. No; 3. Don't Know

TABLE: 26

By District:	Yes	(%)	No	(%)	Don't Know	(%)
Sandy Land UWCD	21	47.7%	14	31.8%	9	20.5%
Mesa UWCD	5	45.5%	3	27.3%	3	27.3%
North Plains GCD #2	14	45.2%	11	35.5%	6	19.4%
High Plains UWCD #1	43	31.6%	46	33.8%	47	34.6%
Panhandle GCD #3	12	37.5%	13	40.6%	7	21.9%

Section IV
General information regarding you and your farming operations

Q-1. In which county do you live?

Q-2. How many acres of farmland do you own?

TABLE: 27

By District:	Avg. Acres
Sandy Land UWCD	984.7
Mesa UWCD	887.9
North Plains GCD #2	2439.0
High Plains UWCD #1	718.9
Panhandle GCD #3	873.5

a. irrigated; b. dryland

TABLE: 28

By District:	Avg. Irrigated	Avg. Dryland
Sandy Land UWCD	549.4	312.8
Mesa UWCD	146.0	697.9
North Plains GCD #2	1562.0	759.3
High Plains UWCD #1	546.9	160.6
Panhandle GCD #3	502.1	293.0

Q-3. How many acres of farmland do you lease?

TABLE: 29

By District:	Avg. Acres
Sandy Land UWCD	440.4
Mesa UWCD	594.3
North Plains GCD #2	1130.0
High Plains UWCD #1	667.3
Panhandle GCD #3	864.5

(Q-3 Continued)

a. irrigated; b. dryland

TABLE: 30

By District:	Avg. Irrigated	Avg. Dryland
Sandy Land UWCD	379.3	219.1
Mesa UWCD	22.9	571.4
North Plains GCD #2	785.3	280.8
High Plains UWCD #1	538.8	110.5
Panhandle GCD #3	405.5	459.0

Q-4. What is the main source of water to your farm?

Choices: 1. ground; 2. surface; c. both ground and surface

TABLE: 31

By District:	Ground	(%)	Surface	(%)	Both	(%)
Sandy Land UWCD	38	88.4%	2	4.7%	3	7.0%
Mesa UWCD	9	69.2%	2	15.4%	2	15.4%
North Plains GCD #2	28	57.8%	1	3.1%	3	9.4%
High Plains UWCD #1	123	91.1%	0	0.0%	12	8.9%
Panhandle GCD #3	33	94.3%	0	0.0%	2	5.7%

Q-5. How many wells do you have in your farm?

TABLE: 32

By District:	Avg. Number of Wells
Sandy Land UWCD	9.1
Mesa UWCD	2.6
North Plains GCD #2	10.7
High Plains UWCD #1	10.7
Panhandle GCD #3	4.2

Q-6. How many members of your family are working on your farm?

Choices: a. family members working full time; b. family members working part time

TABLE: 33

By District:	Avg. Full time	Avg. Part time
Sandy Land UWCD	0.61	0.71
Mesa UWCD	0.62	0.54
North Plains GCD #2	1.64	1.00
High Plains UWCD #1	0.95	0.62
Panhandle GCD #3	1.14	0.67

Q-7. What are the main crops produced in your farm?

Dependent upon location. More cotton on the Southern High Plains and more corn and wheat on the Northern High Plains.

Q-8. What is your age?

TABLE: 34

By District:	Avg. Age in Years
Sandy Land UWCD	54.23
Mesa UWCD	61.07
North Plains GCD #2	59.91
High Plains UWCD #1	53.00
Panhandle GCD #3	56.32

Q-9. What level of education have you completed?

TABLE: 35

By District:	Avg. Education in Years
Sandy Land UWCD	13.30
Mesa UWCD	13.43
North Plains GCD #2	13.73
High Plains UWCD #1	13.97
Panhandle GCD #3	14.14

Q-10. What is your average annual gross farm income?

TABLE: 36

By District:	Avg. Gross Farm Income
Sandy Land UWCD	$184,995
Mesa UWCD	$119,375
North Plains GCD #2	$280,652
High Plains UWCD #1	$222,538
Panhandle GCD #3	$169,483

Q-11. What is your average annual gross off-farm income?

TABLE: 37

By District:	Avg. Gross Off-farm Income
Sandy Land UWCD	$18,173
Mesa UWCD	$ 9,375
North Plains GCD #2	$30,674
High Plains UWCD #1	$24,616
Panhandle GCD #3	$10,630

Q-12. What is your debt load for the farming operation?

Choices: a. long term (land and/or machinery); b. short term (operating loan)

TABLE: 38

By District:	Avg. Long Term	Avg. Short Term
Sandy Land UWCD	$189,588	$ 91,097
Mesa UWCD	$ 37,875	$ 43,125
North Plains GCD #2	$177,003	$123,241
High Plains UWCD #1	$153,990	$118,703
Panhandle GCD #3	$111,185	$ 88,077

APPENDIX B

WATER DISTRICT SURVEY RESULTS
TEXAS HIGH PLAINS

Q-1. Is your district a participant in the Agricultural Water Conservation Loan Program?

Choices: 1. Yes; 2. No

TABLE: 1

Water Districts	Yes	(%)	No	(%)
	3	60%	2	40%

(IF NO, answer Q-2 through Q-5 then skip to Section III)

Q-2. Please respond with your opinion regarding the influence of the following factors on your decision to not participate in the program. (Circle number for each item)

TABLE: 2

Water Districts (2): Mesa UWCD & North Plains GCD #2

ITEM	Degree of Influence			
	Strong	Moderate	Weak	No Effect
A. District's liability on defaulted loans	50%	50%	0%	0%
B. District required to do banking type activities	50%	50%	0%	0%
C. Increased administrative paperwork	0%	0%	50%	50%
D. Limited funds available to loan	50%	0%	0%	50%
E. Interest rate too near commercial rate	100%	0%	0%	0%
F. Current adoption rate of conservation equipment adequate	0%	50%	50%	0%
G. Low interest shown by farmers (1)	0%	0%	0%	100%
H. Limited irrigated agricultural sector in region	0%	0%	0%	100%
I. Limited applicability to District water conservation program	0%	0%	0%	100%
J. Inadequate assistance from Texas Water Development Board	0%	0%	0%	100%
K. Tax base for the District	0%	0%	0%	100%
L. Adequate sources of commercial credit	100%	0%	0%	0%

Q-3. Does your district have the needed manpower to participate in the Agricultural Water conservation Loan Program?

Choices: 1. Yes; 2. No

TABLE: 3

Water Districts	Yes	(%)	No	(%)
	1	50%	1	50%

Q-4. Are there opportunities to improve water conservation of district facilities?

Choices: 1. Yes; 2. No

TABLE: 4

Water Districts	Yes	(%)	No	(%)
	2	100%	0	0%

(IF YES)

a. Why didn't your district participate in the program to improve water conservation of district facilities?

Responses:

1. See items A, B, E, and L above.
2. See items D, E, and L above.

Q-5. Please indicate if there are any other reasons that influenced your decision to not participate in the program.

Responses:

1. Board of Directors did not want to compete with local lending institutions.

Section II
Answer this section only if your district is currently a participant in the Agricultural Water Conservation Loan Program

Q-1. Please respond with your opinion regarding the influence of the following factors on your decision to participate in the program. (Circle number for each item)

TABLE 5:

Water Districts: (3) Sandy Land UWCD, High Plains GCD #1 and Panhandle GCD #3

ITEM	Degree of Influence: Strong	Moderate	Weak	No Effect
A. To accelerate adoption of conservation equipment	100%	0%	0%	0%
B. Interest shown by farmers	33.3%	66.7%	0%	0%
C. Large irrigated agricultural sector in region	100%	0%	0%	0%
D. Help fulfill District water conservation program	100%	0%	0%	0%
E. Felt moral responsibility to assist conservation	33.3%	66.7%	0%	0%
F. Encouragement from Texas Water Development Board	33.3%	0%	33.3%	33.3%
G. Healthy tax base for the District	33.3%	0%	33.3%	33.3%

Q-2. Please indicate the number of applications, the number of loans made, total amount requested, when implemented, and total amounts of the loan for each applicable year.

Year of Loans(s)	Number of Applications	# of Loans Made	Total Amount Requested	Total Amount Loaned
1988	44	44	$1,449,816	$1,449,816
1989	98	98	$3,153,514	$3,153,514
1990	27	26	$986,000	$757,923
1992	11	11	$368,341	$368,341
1993	53	52	$1,948,036	$1,715,541

Q-3. How many loans are in default? 0

Q-4. Amount of loans that are in default? $0.00

Q-5. How many loans are currently outstanding? 260

Q-6. How many loans were paid off early? 28

Q-7. What is the current outstanding loan balance? $4,426,377

Q-8. How many loan applications are currently pending? 1

Q-9. What is the total requested loan amount of the pending loan applications? $27,575

Q-10. Please provide a description of the use of loans (by equipment type) that have been implemented.

Loan (equipment type)	Type of equipment replaced	Total amount of loans ($)	Total applicable acres	Improvement in water use efficiency
Low Pressure Center Pivots (LEPA)	Various irrigation systems.	$9,123,010	13,430 acres reported; High Plains, no report	57.8%

Q-11. If funds are available, would your district continue to participate in the Agricultural Water Conservation Loan Program?

Choices: 1. Yes; 2. No

TABLE: 6

Water Districts	Yes	(%)	No	(%)
	3	100%	0	0%

(IF NO)
a. Please tell us why your district wouldn't participate?

No response to this question.

Section III

Q-1. Please respond with your opinion regarding the following features of the Agricultural Water Conservation Loan Program. (Circle number for each item)

TABLE: 7

ITEM	Degree of Influence: Strongly like	Like	Indifferent	Dislike	Strongly dislike
A. District's liability on defaulted loans	20%	20%	0%	40%	20%
B. District required to do banking type activities	0%	0%	60%	0%	40%
C. Paperwork involved to grant loan	20%	0%	60%	20%	0%
D. Amounts of funds available to loan	0%	20%	20%	40%	20%
E. Existing interest rate relative to comm. rate	0%	40%	20%	40%	0%
F. Personal investment requirement for the farmer	60%	40%	0%	0%	0%
G. Administrative fee charged by the district	0%	60%	40%	0%	0%
H. Approved equipments for which loans could be made	20%	0%	0%	80%	0%
I. Length of loan	20%	0%	0%	80%	0%
J. Collateral requirements of loan	20%	60%	20%	0%	0%
K. Requirements for a tenant farmer to qualify	20%	0%	0%	80%	0%

Q-2 Please give your opinion about how the farmers perceive the following features of the Agricultural Water Conservation Loan Program. (Circle number for each item)

TABLE: 8

ITEM	Degree of Influence: Strongly like	Like	Indifferent	Dislike	Strongly dislike
A. District required to do banking type activities	0%	25%	25%	50%	0%
B. Paperwork involved to obtain a loan	0%	25%	25%	50%	0%
C. Amounts of funds available to loan	0%	50%	25%	25%	0%
D. Existing interest rate relative to comm. rate	0%	50%	25%	25%	0%
E. Personal investment requirement for the farmer	0%	25%	25%	50%	0%
F. Administrative fee charged by the district	0%	25%	50%	25%	0%
G. Approved equipments for which loans could be made	25%	25%	25%	25%	0%
H. Length of loan	0%	50%	25%	25%	0%
I. Collateral requirements of loan	0%	25%	50%	25%	0%
J. Requirements for a tenant farmer to qualify	0%	50%	0%	50%	0%

Q-3. Do you think that reducing interest rates of loans would significantly improve participation by farmers?

Choices: 1. Yes; 2. No; 3. Don't Know

TABLE: 9

Yes	(%)	No	(%)	Don't Know	(%)
5	100%	0	0%	0	0%

a. What is the maximum level of interest that would be acceptable? (Circle one)

Choices: 1. 3%-4% 2. 4%-5% 3. 5%-6% 4. 6%-7%

TABLE: 10

3%-4%	4%-5%	5%-6%	6%-7%
	2	1	2

Q-4. Do you think a farmer education program emphasizing the importance of water conservation and the provisions of the water conservation loan program would significantly improve participation by farmers?

Choices: 1. Yes; 2. No; 3. Don't Know

TABLE: 11

Yes	(%)	No	(%)	Don't Know	(%)
2	40%	3	60%	0	0%

Q-5. Do you think that expanding the list of approved equipment for which loans could be made would significantly improve participation by farmers?

Choices: 1. Yes; 2. No; 3. Don't Know

TABLE: 12

Yes	(%)	No	(%)	Don't Know	(%)
0	0%	4	100%	0	0%

(Q-5 continued)

a. What other equipment should be included in the list?

None!

Q-6. Do you think making water conservation loans available under the direction of commercial lenders would significantly improve participation by farmers?

Choices: 1. Yes; 2. No; 3. Don't Know

TABLE: 13

Yes	(%)	No	(%)	Don't Know	(%)
3	60%	2	40%	0	0%

a. Please indicate your choice of commercial lenders.

Choices:

1. commercial banks
2. equipment dealers
3. both commercial banks and dealers

TABLE: 14

Commercial banks		Commercial banks and dealers	
2	66.7%	1	33.3%

Q-7. Do you think providing technical assistance for implementation of equipment bought under the conservation loan program would significantly improve participation by farmers?

Choices: 1. Yes; 2. No; 3. Don't Know

TABLE: 15

Yes	(%)	No	(%)	Don't Know	(%)
3	60%	2	40%	0	0%

Q-8. Please provide any general observations and input that would be useful to evaluate the success of the Agricultural Water Conservation Loan Program and to determine factors or changes that would lead to a more successful program and greater conservation of irrigation water in agriculture.

1. Please indicate if there are any specific changes needed in the Agricultural Water Conservation Loan Program or district requirements to increase district participation.

Answers:

(a) Cheaper interest and the ability to use escrow fund (5%) to promote water conservation in cities and public school systems at no cost to them, i.e., donating water efficient shower heads to individuals within the district.

(b) More funds available to the district at or below current rates of interest.

(c) Guarantee loss' made by commercial banks for the principal of the loan and require a system evaluation by water district or Soil Conservation Service before loan can be made by commercial bank to individual, i.e., indicate benefits in operation costs and benefits in water conservation over systems presently used.

2. Please indicate if there are any specific regional or district constraints that limit applicability of the Agricultural Water Conservation Loan Program regardless of program characteristics.

No response:

Suggested additional question for survey:

(a) Do you think loans should be made to individuals who are unable to secure a loan from their present lending institution?

APPENDIX C

COMMERCIAL LENDER AND DEALER SURVEY RESULTS TEXAS HIGH PLAINS

Section I
Information regarding your views about water conservation

Q-1. Do you perceive that water has become a limited resource and there is an immediate need to emphasize efficiency in water use?

Choices: 1. Yes; 2. No; 3. Don't Know

TABLE: 1

	Yes	(%)	No	(%)	Don't Know	(%)
Banks	9	100%	0	0.0%	0	0.0%
Dealers	6	100%	0	0.0%	0	0.0%

Q-2. Do you believe that the government should take legislative actions to encourage water conservation?

Choices: 1. Yes; 2. No; 3. Don't Know

TABLE: 2

	Yes	(%)	No	(%)	Don't Know	(%)
Banks	2	22.2%	4	44.4%	3	33.3%
Dealers	4	66.7%	2	33.3%	0	0.0%

Q-3. Do you believe that benefits of water conservation, in general, exceed the costs?

Choices: 1. Yes; 2. No; 3. Don't Know

TABLE: 3

	Yes	(%)	No	(%)	Don't Know	(%)
Banks	7	77.8%	1	11.1%	1	11.1%
Dealers	5	100.0%	0	0.0%	0	0.0%

Q-4. Do you perceive that benefits of agricultural water conservation exceed the costs?

Choices: 1. Yes; 2. No; 3. Don't Know

TABLE: 4

	Yes	(%)	No	(%)	Don't Know	(%)
Banks	7	77.8%	2	22.2%	0	0.0%
Dealers	4	80.0%	1	20.0%	0	0.0%

Q-5. Do you believe that one approach to increase water use efficiency in agriculture is to adopt water conserving irrigation equipment?

Choices: 1. Yes; 2. No; 3. Don't Know

TABLE: 5

	Yes	(%)	No	(%)	Don't Know	(%)
Banks	6	100%	0	0.0%	0	0.0%
Dealers	6	100%	0	0.0%	0	0.0%

Q-6. Were you aware that the Texas Legislature has enacted a program (Agricultural Water Conservation Loan Program) whereby low interest loans could be made available for the purchase of water conserving irrigation equipment?

Choices: 1. Yes; 2. No

TABLE: 6

	Yes	(%)	No	(%)
Banks	5	83.3%	1	16.7%
Dealers	6	100.0%	0	0.0%

(Q-6 continued)

a. Has this program had any impact on your business?

1. Yes -POSITIVE IMPACT
2. Yes -NEGATIVE IMPACT
3. No

TABLE: 7

	Yes-Positive	(%)	Yes-Negative	(%)	No	(%)
Banks	1	16.7%	2	33.3%	3	50.0%
Dealers	1	16.7%	2	33.3%	3	50.0%

Section II
Information regarding your views about the Agricultural Water Conservation Loan Program

We encourage you to read the enclosed literature on the Agricultural Water Conservation Loan program before responding to questions in this section.

Q-1. Please give your opinion about the following features of the current program. (Circle number for each item)

TABLE: 8

Banks

Item	Strongly like	Like	Indifferent	Dislike	Strongly Dislike
A. District req.to do banking type activities (8)	25.0%	00.0%	00.0%	12.5%	67.5%
B. Paperwork involved to obtain a loan (9)	11.1%	22.2%	22.2%	11.1%	33.3%
C. Amounts of funds available to loan (9)	00.0%	44.4%	33.3%	11.1%	11.1%
D. Existing Interest rate (9)	00.0%	22.2%	33.3%	22.2%	22.2%
E. Administrative fee charged by the district (8)	00.0%	12.5%	25.0%	25.0%	37.5%
F. List of approved equipments for which loans could be made (9)	00.0%	55.6%	33.3%	00.0%	11.1%
G. Length of loans (9)	0.00%	55.6%	33.3%	0.00%	11.1%
H. Collateral requirement of loans (9)	0.00%	44.4%	33.3%	0.00%	22.2%
I. Requirements for a tenant farmer to qualify (9)	11.1%	22.2%	44.4%	0.00%	22.2%

Dealers

Item	Strongly like	Like	Indifferent	Dislike	Strongly Dislike
A. District req.to do banking type activities (5)	00.0%	40.0%	20.0%	20.0%	20.0%
B. Paperwork involved to obtain a loan (6)	00.0%	50.0%	16.7%	33.3%	00.0%
C. Amounts of funds available to loan (6)	16.7%	33.3%	33.3%	16.7%	00.0%
D. Existing Interest rate (6)	16.7%	33.3%	16.7%	33.3%	00.0%
E. Administrative fee charged by the district (6)	00.0%	50.0%	33.3%	16.7%	00.0%
F. List of approved equipments for which loans could be made (5)	00.0%	40.0%	40.0%	20.0%	00.0%
G. Length of loans (6)	20.0%	20.0%	20.0%	40.0%	00.0%
H. Collateral requirement of loans (5)	0.00%	40.0%	00.0%	40.0%	20.0%
I. Requirements for a tenant farmer to qualify (5)	00.0%	40.0%	20.0%	20.0%	20.0%

Q-2. Do you think that reducing interest rates of loans would significantly improve participation by farmers?

Choices: 1. Yes; 2. No; 3. Don't Know

TABLE: 9

	Yes	(%)	No	(%)	Don't Know	(%)
Banks	3	33.3%	6	67.7%	0	0.0%
Dealers	4	66.7%	2	33.3%	0	0.0%

a. What is the maximum level of interest that would be acceptable? (Circle one)

Choices: 1. 3%-4%; 2. 4%-5%; 3. 5%-6%; 4. 6%-7%

TABLE: 10

	3%-4%	(%)	4%-5%	(%)	5%-6%	(%)	6%-7%	(%)
Banks	1	50.0%	0	00.0%	0	00.0%	1	50.0%
Dealers	1	25.0%	1	25.0%	1	25.0%	1	25.0%

Q-3. Do you think a farmer education program emphasizing the importance of water conservation and the provisions of water conservation loan program would significantly improve participation by farmers?

Choices: 1. Yes; 2. No; 3. Don't Know

TABLE: 11

	Yes	(%)	No	(%)	Don't Know	(%)
Banks	4	44.4%	3	33.3%	2	22.2%
Dealers	3	50.0%	1	16.7%	2	33.3%

Q-4. Do you think providing technical assistance for implementation of equipment bought under the conservation loan program would significantly improve participation by farmers?

Choices: 1. Yes; 2. No; 3. Don't Know

TABLE: 12

	Yes	(%)	No	(%)	Don't Know	(%)
Banks	3	66.7%	2	22.2%	1	11.1%
Dealers	1	16.7%	3	50.0%	2	22.0%

Q-5. Do you think that expanding the list of approved equipment for which loans could be made would significantly improve participation by farmers?

Choices: 1. Yes; 2. No; 3. Don't Know

TABLE: 13

	Yes	(%)	No	(%)	Don't Know	(%)
Banks	1	11.1%	2	22.2%	6	66.7%
Dealers	0	00.0%	4	66.7%	2	33.3%

a. What other equipment should be included in the list?

No responses to this question by banks.

One dealer responded as follows:

(a) Any sprinkle system which has very near the savings as LEPA. I understand High Plains Water District has changed their policy in 1993.

Q-6. Do you think making water conservation program loans available under the direction of commercial lenders would significantly improve participation by farmers?

Choices: 1. Yes; 2. No; 3. Don't Know

TABLE: 14

	Yes	(%)	No	(%)	Don't Know	(%)
Banks	6	66.7%	2	22.2%	1	11.1%
Dealers	3	50.0%	2	33.3%	1	16.7%

Q-7. Do you make loans for purchase or modification of irrigation equipment?

Choices: 1. Yes; 2. No

TABLE: 15

	Yes	(%)	No	(%)
Banks	7	87.5%	1	12.5%
Dealers	2	40.0%	3	60.0%

Section III
Answer this section if you have financed loans for the adoption or conversion of irrigation systems

Q-1. Please respond with your opinion regarding the influence of the following factors on your decision to finance irrigation activities. (Circle number for each item)

TABLE: 16

Banks

ITEM	Degree of Influence: Strong	Moderate	Weak	No Effect
A. Improvements in profitability of agricultural activities (7)	42.9%	57.1%	00.0%	00.0%
B. Interest shown by many farmers (7)	14.3%	85.7%	00.0%	00.0%
C. Large irrigated agricultural sector in region (7)	28.6%	28.6%	42.9%	00.0%
D. Help fulfill District water conservation program (7)	14.3%	14.3%	28.6%	42.9%
E. Felt moral responsibility to assist conservation (7)	00.0%	28.6%	42.9%	28.6%
F. Equipment applicability assessed by water district (7)	00.0%	14.3%	28.6%	57.1%
G. Good returns on loans (7)	57.1%	14.3%	28.6%	00.0%

Dealers

ITEM	Degree of Influence: Strong	Moderate	Weak	No Effect
A. Improvements in profitability of agricultural activities (1)	00.0%	100.0%	00.0%	00.0%
B. Interest shown by many farmers (1)	00.0%	100.0%	00.0%	00.0%
C. Large irrigated agricultural sector in region (1)	100.0%	00.0%	00.0%	00.0%
D. Help fulfill District water conservation program (1)	00.0%	100.0%	00.0%	00.0%
E. Felt moral responsibility to assist conservation (1)	00.0%	100.0%	00.0%	00.0%
F. Equipment applicability assessed by water district (1)	00.0%	100.0%	00.0%	00.0%
G. Good returns on loans (1)	00.0%	100.0%	00.0%	00.0%

Q-2. Please indicate the number of applications, the number of loans, total amount requested and total amounts of the loans made in the past five years for water conserving uses.

Five banks and one dealer responded as follows:

Year of Loan(s)	Number of Applications	# of Loans Made	Total Amount Requested	Total Amount Made
(1)	less than 10	less than 10	no response	no response
(2) 1988-present	100	90	no response	$1,750,000
(3) 1992	40	35	$1,200,000	$1,000,000
(4) 1989-present	5	5	$50,000	$50,000
(5) 1989-present	27	25	$500,000	$500,000
Dealer:				
(1) 1987-92	50	42	$3,140,000	$3,140,000

Q-3. Please indicate the proportion of loans that are in default. 0.0%

Q-4. Please indicate the proportion of the amount of loans that are in default 0.0%

Q-5. Please provide an approximate description of the use of loans (by equipment type or conversion) that have been given.

Three banks and one dealer responded as follows:

Type of Loan - Equipment type or	Total Amount Loans - $	Total Applicable
(1) Pivot systems: 1989-93	$500,000	Estimated 1000 acres per year
(2) Sprinkler, 1/4 & 1/2 mile systems	No response	No response
(3) Center Pivot Sprinkler Systems	$1,750,000	10,000 acres
Dealer:		
(1) Pivots and Accessories	All of above in Q-2	No response

Q-6. Please describe the general terms of the water conserving uses loans given (down payment, length of the loan, level of interest rate, etc.)

Four banks responded as follows:

(a) 20% down payment, up to 8 years; current rate 8.5% variable

(b) 20%-40% down payment, 4-7 years; 7.5% - 9.5% interest

(c) 20% down payment, 7 year annual pay; variable interest currently 8% - 8.5%

(d) 20%-25% down payment, up to 5 years; 1.5% to 2.5% over prime, variable: base rate currently 6.25%

Two dealers responded as follows:

(a) 20%-30% down payment, up to 7 years. We have lots of interest in these loans.

(b) 20%-25% down payment, 5 to 7 years; 8%-8.75% interest

Q-7. Please respond with your opinion regarding the following factors on your decision to participate in financing the adoption or conversion of irrigation equipment. (Circle number for each item)

TABLE: 17

Banks

Item	Degree of Influence: Strong	Moderate	Weak	No Effect
A. Loans too risky (7)	14.3%	28.6%	42.9%	14.3%
B. Involvement of water district (7)	00.0%	00.0%	57.1%	42.9%
C. Benefits of conservation exceed costs (7)	14.3%	42.9%	14.3%	28.6%
D. Financial distress of farmers too high (7)	28.6%	28.6%	28.6%	14.3%
E. Profit potential too limited (7)	28.6%	28.6%	00.0%	42.9%
F. Down payment required too high (7)	00.0%	28.6%	28.6%	42.9%
G. Requirements for farmers to qualify too difficult (7)	00.0%	14.3%	42.9%	42.9%
H. Concern over future of the farm program (7)	00.0%	42.9%	28.6%	28.6%
I. Planning horizon of current farmer (6)	16.7%	33.3%	50.0%	00.0%
J. Non-farmer landowner (land rented) (7)	42.9%	00.0%	28.6%	28.6%
K. Water allocation rules and regulations in the region (7)	14.3%	42.9%	14.3%	28.6%

(Q-7 continued)

Dealers

Item	Degree of Influence			
	Strong	Moderate	Weak	No Effect
A. Loans too risky (2)	00.0%	50.0%	00.0%	50.0%
B. Involvement of water district (2)	00.0%	00.0%	00.0%	100.0%
C. Benefits of conservation exceed costs (2)	50.0%	50.0%	00.0%	00.0%
D. Financial distress of farmers too high (2)	00.0%	00.0%	50.0%	50.0%
E. Profit potential too limited (2)	00.0%	00.0%	50.0%	50.0%
F. Down payment required too high (2)	00.0%	50.0%	50.0%	00.0%
G. Requirements for farmers to qualify too difficult (2)	00.0%	100.0%	00.0%	00.0%
H. Concern over future of the farm program (2)	00.0%	50.0%	50.0%	00.0%
I. Planning horizon of current farmer (2)	00.0%	00.0%	100.0%	00.0%
J. Non-farmer landowner (land rented) (2)	00.0%	50.0%	50.0%	00.0%
K. Water allocation rules and regulations in the region (2)	00.0%	00.0%	50.0%	50.0%

Section IV

General Response of Commercial Lenders and Dealers

Please indicate any general observations and input useful in evaluating your possible participation in the program.

1. Please indicate if there should be any changes in the Agricultural Water Conservation Loan Program for you to participate.

Six banks responded as follows:

(a) Require equity in pivot, require 90% guaranty to bank after liquidation: Basically operate program like an SBA or FmHA guaranteed loan.

(b) Not in small banks.

(c) There is no need for the program.

(d) Would welcome participation in center pivot sprinkler financing: Would take referrals from those that don't qualify under water district terms and conditions.

(e) More latitude for commercial lenders in handling loans.

(f) Our district does not participate, and we know nothing of the program.

Three Dealers responded as follows:

(a) District requirements and Deed of Trust on land. Finance total project, i.e., erection, pipe lines and electricity.

(b) Myself and other dealers presently having the greatest buying incentives, September-November each year. Monies need to be available by at least <u>November</u> so farmers can take advantage of best prices and dealers can install systems before the rush.

(c) In the Dumas area, the water district does not participate in this program. I would like to see them participate but they say they don't want to be in the business of banking and telling their neighbors and friends how to finance their irrigation equipment.

2. Please indicate if there are any regional or district constraints that limit you from becoming involved in the financing of irrigation related loans.

Six banks responded as follows:

(a) Irrigation is not used widely in our county; We have a very limited request for irrigation loans.

(b) None known.

(c) None.

(d) None.

(e) I have no problem within an area 75 miles of Lubbock.

(f) None.

Two dealers responded as follows:

(a) No.

(b) Briscoe, Swisher and parts of Hale counties are not in water districts.