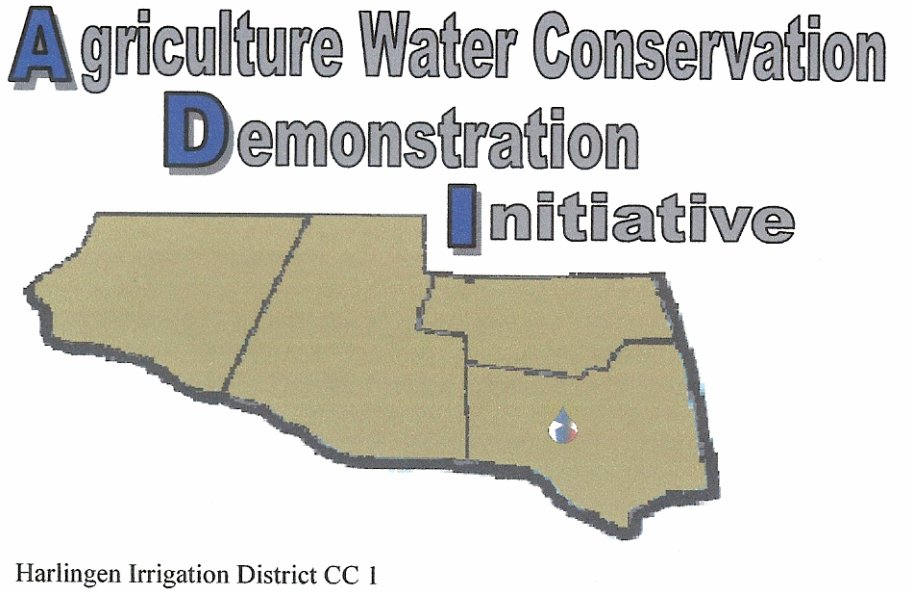
Annual Progress Report

For the

Texas Water Development Board



Maximization of On-Farm Surface Water Use Efficiency by Integration of On-Farm Application and District Delivery Systems

Submitted by:
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Cameron County #1
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Appendices

1. Executive Summary

The Harlingen Irrigation District-Cameron County No. 1, under the auspices of a grant from the Texas Water Development Board, is sponsoring the *Agricultural Water Conservation Demonstration Initiative (ADI)*, a multi-year project to conduct a study of the maximization of on-farm surface water use efficiency by integration of on-farm application and district delivery systems. The ten-year project includes participation by Harlingen Irrigation District Cameron County No. 1, Delta Lake Irrigation District, Texas A & M University-Kingsville, USDA-Natural Resources Conservation Service, Rio Farms, Inc, Texas Cooperative Extension Service and agricultural producers in Cameron, Hidalgo and Willacy counties. This Project proposes to assist in the implementation of the agricultural water conservation management strategies, as identified in the Region M Approved Regional Water Plan and the Texas State Water Plan and will further agricultural water conservation in Texas. The project supplements on-going conservation efforts in the Lower Rio Grande Valley

The District has formed an advisory committee consisting of growers, demonstration co-operators, scientists and representatives of grower organizations. The primary responsibilities of this committee are to offer guidance and perspective to the project as a whole. The committee meets on a quarterly basis to discuss the progress and goals of the project. Our hopes are for this committee to become one of the main conduits for disseminating information to the growers of the Rio Grande Valley.

1.1. Advisory Committee Members

Chris Allen – Cooperator
Leonard Simmons – Cooperator
Edward Bauer – Grower
Sam Morrow – Cooperator
Harold Siever - Cooperator
Troy Allen – Delta Lake Irrigation District Manager
Ray Prewitt – Texas Citrus Mutual
Dr.. Shad Nelson – Texas A&M Kingsville
Dr. Juan Enciso – Texas A&M Extension Service
Dr. Al Blair – Axiom-Blair Engineering
Dr. Steven Klose – Texas Cooperative Extension
Terry Lockamy – Texas Cooperative Extension
Enrique Perez – Cameron County Extension
Dean Santisteven – NRCS
Andy Garza – TSSWCB

2. Introduction

This report contains the annual update and progress made in the Agricultural Demonstration Initiative Project as indicated in the Scope of Work of the Contract between Harlingen Irrigation District – Cameron County No. 1 (HIDCC1 or the District) and the Texas Water Development Board (TWDB). A description of the overall progress, problems encountered delays in the timely completion of work, or change in the deliverables or objectives of the contract are discussed; as well as any corrective actions necessary.

Late in 2006 the advisory committee agreed that to better maintain anonymity of the cooperators information the demonstration sites would be assigned alpha numerical designations rather than be listed by grower name. This was done to help encourage participation by those growers who are reluctant to report yield, water use, and financial information about demonstration sites. From this point forward all demonstration sites will be referred to by site number. The site designation numbers are defined below: The first digit designates the entity responsible for the site. The second digit designates the grower. The third digit designates the field within the demonstration site. The entity designations are: 0 and 1 Texas A&M University Kingsville Dr. Shad Nelson, 2 and 3 Texas A&M Extension Dr Juan Enciso, 4 and 5 Harlingen Irrigation District.

3. Scope of Work

3.1. Subcontracting Contract Execution

The primary responsibilities for this task were contracted to Axiom-Blair Engineering. The subcontracts with Delta Lake Irrigation District, Texas A&M University Kingsville, Texas Cooperative Extension, and others to provide support and services to perform the work tasks listed below were completed for 2006 and work for the reissue of those contracts for 2007 is underway. This task is scheduled to be complete in March of 2007.

3.2. District and On-Farm Flow Meter Calibration and Demonstration Facilities

Appendix “E” contains a detailed account of the construction activity.

The District contracted the engineering and design for this facility to Axiom-Blair Engineering and a detailed report of this contract is located in appendix “F”.

3.3. District Dispatch and Irrigation Delivery Scheduling

This task is scheduled to begin in 2007.

3.4. On-Farm Flow Measurement Data Collection

Delta Lake Irrigation District has been contracted to perform the task of manual meter information collection. A detailed account of the collection methods and data is located in appendix "A". This information will be compared with the Harlingen Irrigation District's automated meter and telemetry system. The telemetry system to monitor deliveries of irrigation water through out the District was completed in late 2006. We will begin the comparison after the District has had ample time to evaluate its system and is confident in the data it provides.

3.5. District Facilities and Policies Required to Support On-Farm Water Conservation

This task scheduled to begin in 2007.

3.6. Economic Evaluation of Demonstrated Technologies

A significant component of the demonstration project is the economic evaluation of each on farm technology. The District contracted Texas Cooperative Extension service to perform this task through its FARM Assist program. Economic summaries of each site are included in the Demonstration Site Summary Report for sites that economic analysis has been completed. A more detailed report of the first year's evaluation, as submitted by Dr. Steven Klose, is located in appendix "B".

3.7. Demonstration of Internet Based Information Real-Time Flow, Weather, and Water User Accounting System

The bulk of this task is being performed by Axiom-Blair Engineering. The design and launch of the District's web page occurred in September of 2005. The web page allows us to publish information regarding demonstration sites as well as weather and irrigation water usage. A more detailed report of this task, as submitted by Axiom-Blair, is located in appendix "F".

3.8. Drip and Furrow Flood Irrigation in Annual Crops and Multi Year Crops

The majority of this task has been subcontracted to Texas A&M University - Kingsville under the direction of Dr. Shad Nelson. Dr. Nelson and his staff have been working since last spring to establish demonstration sites throughout the Valley. Dr. Nelson has also been working closely with Texas A&M Extension Service and Dr. Juan

Enciso. Dr. Nelson has been sharing resources and gathering data on sites established by Dr. Enciso. A summary report of all the sites associated with this scope of work is located in appendix C.

3.9. Surge, Automated Surface, and Precision Surface Irrigation

The District has maintained the following demonstration sites through out the 2006 growing season; 5 surge, 2 surface flood, and 1 subsurface low pressure drip. All of these sites will continue through the 2007 growing season.

A summary of the HID sites is located in Appendix D.

3.10. LESA/LPIC/LEPA Center Pivot Sprinkler Demonstration Sites

The District has two LESA center pivot sites. The first site is located at Rio Farms and has been in spring cotton, fall corn rotation for several years. Soil moisture is monitored during each of the growing seasons and irrigation water is measured with a McCrometer meter located on the center pivot. This site is scheduled to be planted in soybeans in the 2007 spring season.

The second site is a pasture irrigated with a mini-pivot. This pasture is divided into four separate pastures and the mini pivot is moved to each section for the duration of the irrigation. We monitor moisture in each pasture and the water is metered at the pumping site with a McCrometer meter. This pasture is used for a cow calf operation. This site demonstration was terminated in 2006 due to the replacement of the irrigation system. The grower installed a K-Line sprinkler system in place of his mini-pivot. We are currently determining the best method to monitor and demonstrate this irrigation system.

3.11. Automated and Manual On-Farm Measurements Systems

The District is in the process of installing a multi-million dollar automated meter and telemetry system that will allow for the monitoring and reporting of all water deliveries in the District. Upon completion of this installation in late 2006 the District will begin monitoring and reporting flows for evaluation purposes. Real time flow data will be made available to growers on the District's web site. The cost and efficacy of the automated collection of flow data with in the District will be compared to the manual collection taking place in the Delta Lake Irrigation District. This evaluation is expected to take place over several years and the results of this evaluation are not expected to be available until the evaluation process is complete.

3.12. Variable Speed Pump Control and Optimization of Delivery of On-Farm Demands

Delta Lake Irrigation District has installed three diesel driven pumps to supply water to a service canal. As part of their revised 2006 contract, Delta Lake Irrigation District will provide the hardware and Harlingen Irrigation District has contracted Axiom-Blair to provide engineering and design for the variable speed and control component of this project. A more detailed report of this task is included in the Delta Lake annual report in Appendix "A".

3.13. Field Demonstrations of Projects/ Field Days

In March of 2006 the Harlingen Irrigation District hosted representatives of the Texas Water Development Board and the Legislative Budget Board for a tour and progress presentation of the project. The presentation consisted of approximately one hour of project updates and information from every aspect of the project followed by a three hour tour of the demonstration sites and the Flow Meter Calibration Facility construction area.


LBB Tour of Surge site

In July of 2006 the Harlingen Irrigation District hosted representatives from the Texas Alliance for Water Conservation project in Lubbock Texas. The District presented information about the ADI project followed by a tour of the demonstration sites as well as many other farming interests across the Rio Grande Valley.

TAWC Tour of Pollock Farms and Sharyland Orchards

3.14. Workshops

The Harlingen Irrigation District has conducted many water related workshops through out the last year. In March of 2006 the District hosted the EPANET short course. This course was taught by Dr. Al Blair and included hands on training of the EPANET software and its usefulness in the design and installation of pipelines and pumps. The course participants were primarily engineers and representatives of irrigation districts throughout the Rio Grande Valley. In April of 2006 the District hosted its first Water Management workshop. This workshop was taught by Dr. Juan Enciso of TAMES and Dean Santisteven of USDA-NRCS. This course was used to introduce and teach water management techniques to growers and other water users. The information was based on the USDA requirements for participation in the EQIP Water Management payment incentive. In addition to hosting workshops the Harlingen Irrigation District has participated in many EQIP information meetings throughout 2006.

EPANET Workshop

The District will be hosting its second Water Management Workshop in February 2007 as well as participating in the Water Management/Canal Management workshop hosted by TAMES Dr. Guy Fipps.

3.15. Presentations at Water Conservation Meetings

The Harlingen Irrigation District made a presentation on the ADI project to the Texas Water Conservation Association in March of 2006. The district was able to convey the importance of the ADI project to the Rio Grande Valley and present some of the technologies being used in the District to encourage water conservation.

In November of 2006 the Harlingen Irrigation District along with Axiom-Blair Engineering occupied a booth at the 27th Annual Irrigation Show. A slide show and poster were presented and pamphlets summarizing the ADI project were handed out.

Project presentations were made at the Texas Citrus Association and the Texas Vegetable Association annual meetings.

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The District has published three news letters highlighting the Agricultural Water Conservation Demonstration Initiative and related topics. This news letter has been distributed to over seven hundred recipients across the state of Texas. Our goal is to publish the newsletter on a quarterly basis and use it as one of the conduits for disseminating information to the growers of the Rio Grande Valley as well as other interested parties across the state.

A fact sheet was created to introduce the ADI project to growers and agriculture leaders. This fact sheet was distributed at water conservation meetings, cotton gins and irrigation districts.

3.16. Quarterly Progress Report

Harlingen Irrigation District has completed and filed three quarterly progress reports and associated reimbursement requests.

3.17. Program Administrative Work

Harlingen Irrigation District has maintained the accounting records and files for the ADI project. The project's primary administration is handled by Tom McLemore the Project Manager. Together, with the Irrigation District's General Manger Wayne Halbert, we have issued and maintained subcontracts with Texas A&M University - Kingsville, Delta Lake Irrigation District, Texas Cooperative Extension and Axiom-Blair Engineering.

3.18. Report Preparation, Reproduction, and Distribution

The district has completed and filed three quarterly progress reports and the respective reimbursement request. The District has also completed their second annual report, reproduced and filed it with the Texas Water Development Board.

4. Financial Report by Task

TASK	TWDB	TWDB	Matching Funds				Source
	Feb 1, '05 Feb 15, 06	Feb 15, 06 Feb 28, 07	2003	2004	2005	2006	
A- Project Subcontracting							
Subcontracting Contract Execution	$6,710.00	$3,525.00					
Total A- Project Subcontracting	**$6,710.00**	**$3,525.00**					
B-Technical Management Support for Demos						$2,799.80	HID
District and On-Farm Flow Meter Cal	$143,528.71	$346,379.15			$20,000.00		
On-Farm Flow Meas. Data Collection			$123,608.59	$175,842.95	$214,098.25	$108,845.20	HID/BOR
					$115,671.10	$259,496.69	HID/2025
				$4,220.00	$271,839.73	$144,616.13	BOR/2025
	$9,990.62	$14,646.69		$376,981.31	$17,254.62		NADB
Dist Facilities and Policies	$116.26						
Economic Eval of Demo Tech FARM ASSIST	$1,656.21	$55,526.47					
Technical Management Support for Demos -Admin	$26,664.82	$31,207.69					
Total B-Technical Management Support for Demos	**$181,956.62**	**$447,760.00**	**$123,608.59**	**$557,044.26**	**$638,863.70**	**$515,757.82**	
C-Demonstration Projects						$6,214.70	HID
Demo of Internet Based Information	$14,862.15	$84,856.66			$3,323.00		ABE
					$2,267.30	$4,250.00	NETAFIM
					$5,283.00		EQIP
On Farm Drip,Flood,and Surge Demo	$44,298.78	$54,027.00			$24,095.00	$119,086.07	TAMUK
VS Pump Control and Optimization		$7,640.93				$131,102.31	DLID
Demonstration Projects - Admin	$19,822.96	$65,615.71					
Total C-Demonstration Projects	**$78,983.89**	**$212,140.30**			**$34,968.30**	**$260,653.08**	
D- Public Field Days and Demonstrations							HID
Presentations at Water Con. Meetings	$3,161.97	$995.76					
Total D- Public Field Days and Demonstrations	**$3,161.97**	**$995.76**					
E-Project Administration and Report Prep					$121,498.53	$148.49	HID
Program Administrative Work	$57,710.25	$21,461.66					
Report Prep. Repro. and Distribution	$3,021.58	$1,726.64					
Project Administration and Report Prep - Admin	$16,287.98	$21,258.16					
Total E-Project Administration and Report Prep	**$77,019.81**	**$44,446.46**			**$121,498.53**	**$148.49**	
Sub total by Year	**$347,832.29**	**$708,867.51**	**$123,608.59**	**$557,044.26**	**$795,330.53**	**$776,559.39**	
Total Matching Funds	**$1,475,983.38**	**$776,559.39**	**$2,252,542.77**				
Project Total by Year	**$1,823,815.67**	**$1,485,426.90**					