HARLINGEN IRRIGATION DISTRICT

Water Conservation Projects
Tom McLemore
HID Project Manager

HARLINGEN IRRIGATION DISTRICT HISTORY
- Established on May 13, 1914
- 38,000 acres within the boundaries of the Texas Water Development Board’s Rio Grande Regional Water Planning Group (Region M)
- The Rio Grande serves as the only water source
- “Class A” irrigation water right is 98,232 acre-feet per year
- Authorized to divert an additional 20,488 acre-feet per year for municipal water used by the City of Harlingen
- Average annual water diversion is 52,000 acre-feet per year for irrigation and 15,000 acre-feet per year for municipal and domestic use.
- The District reports the estimated water delivery efficiency in the 75-80% range.

CONSERVATION PROJECTS
- Lower Rio Grande Valley Water Conservation Program
  - BOR/NADB
- 2025 Western Water Initiative Challenge Grant
  - BOR
- Agricultural Water Conservation Demonstration Initiative
  - TWDB
- Innovative Technologies for Agriculture
  - TWDB
- Water for America
  - BOR

LOWER RIO GRANDE VALLEY WATER CONSERVATION PROGRAM
- Texas Water Development Board provided SECO funds for project planning.
- North American Development Bank provided 1.7 million in matching funds.
- BOR funds provided 1.6 million in matching funds.
- HID provided over $750,000 of its own money to the projects.
2025 WESTERN WATER INITIATIVE
CHALLENGE GRANT

- Began August 1, 2004, completed Feb. 2008
- BOR provided $300,000 in 50/50 matching funds.
- 4 Sub networks for on-farm deliveries
- 100 on-farm meters and remote telemetry units (RTU-AMR)
- Nine flow metering bridges with remote telemetry units.

AGRICULTURAL WATER CONSERVATION
DEMONSTRATION INITIATIVE

- Began Feb. 2005 due to complete in 2014
- Texas Water Development Board provided 3.7 Mil dollars over a ten year period
- 8 Tasks
  - Flow Meter Calibration and Training Facility
  - On-Farm flow measurement data collection (Manual) (DLID)
  - District Facilities and Policies, (required to maintain meter program)
  - Demonstration of Internet Information, (www.hidcc1.org)
  - On-Farm demonstration of Drip, Microjet, Sprinkler, Surge, and flood irrigation systems, (TAMUK, TAES, HID)
  - Economic evaluation of demonstration sites, (TAES Farm Assist)
  - Variable speed pump, control and automation, (DLID, ABE)
  - Public field days and demonstrations to pass information to growers.

INNOVATIVE TECHNOLOGIES FOR
AGRICULTURE

- $250,000 matching Grant from the Texas Water Development Board
- Low Cost Automated Canal Gates
- Low cost Water Level Sensors and RTU
- Low Cost Soil Moisture Monitor

AUTO GATE COMPONENTS

- Aluminum Gate Designed and Built by HID
- Low Cost 12 volt Actuator from Venture Manufacturing
- Gate Controller Developed by A.W. Blair Engineering
- Flowline Water Level Sensor
- SCADA Pack LP and Supporting Hardware

Total Gate Cost = $6000.00 plus installation
ONE OF FIVE GATES INSTALLED

WIND AND SOLAR GENERATION

GATE CONTROLLER AND SUPPORTING SCADA

HMI MONITORING PAGE
GATE CONTROL PAGE

Downstream Control Gate

Low Cost Water Level Sensor and RTU

WATER LEVEL SENSOR RTU COMPONENTS

- 8-bit PIC18F258 microcontroller
- Modtronix SBC28DC compact single board computer
- PIC unit provides us with five analog inputs to be used as sensor inputs
- Digi (formerly MaxStream) 9XTend 900 MHz 1W transceiver

ULTRASONIC SENSOR

MaxBotix LV-MaxSonar-WR1 Low-Voltage Weather-Resistant Ultrasonic Range Finder (12 to 254 inches out with a one inch resolution)
WATER LEVEL MEASUREMENT USING LCRTU

LOW COST SOIL MOISTURE SENSOR AND RTU

SOIL MOISTURE SENSORS CHOSEN FOR PROJECT

- Decagon 10 HS Large Volume Soil Moisture Sensor
- AquaSpy Sensor

BOR-WATER FOR AMERICA GRANT

- $162,000 Matching Grant
- Install 15 Automated Gates at 12 Sites in Main Canal
- Integrate Automation Into Existing Telemetry System
- 3 Wind Generation Sites and 4 Solar Sites
CITY WATER WORKS DIVERSION GATE

WIND GENERATORS

QUESTIONS?

TEXAS IRRIGATION EXPO

October 20-22, 2010
Rio Grande Valley Livestock Show Grounds
Mercedes, TX