

Big Bend Conservation Cooperative (BBCC)

Project Introduction and Description

Hot Springs

Approximately 1936

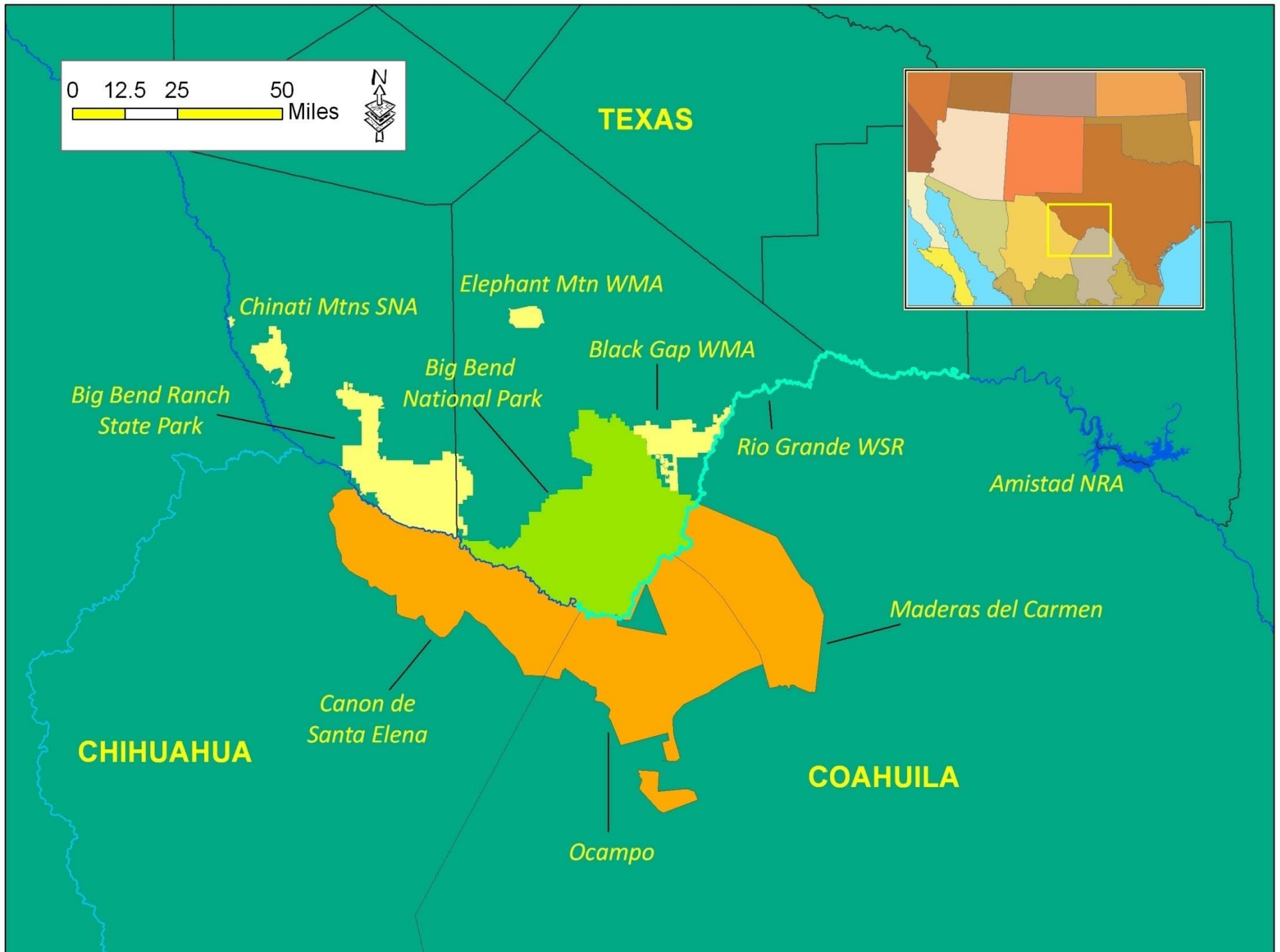




Initial Cooperative Projects(2003-)

- Saltcedar Management:
 - Low-tech methods - MX partners
 - Upland springs
 - Bi-national Boquillas Canyon with NGO and MX partners
- Cooperative Agreements with NGOs

Hotsprings, August, 2006



Borderland and Rio Grande Ecosystem: Threats and Management Challenges

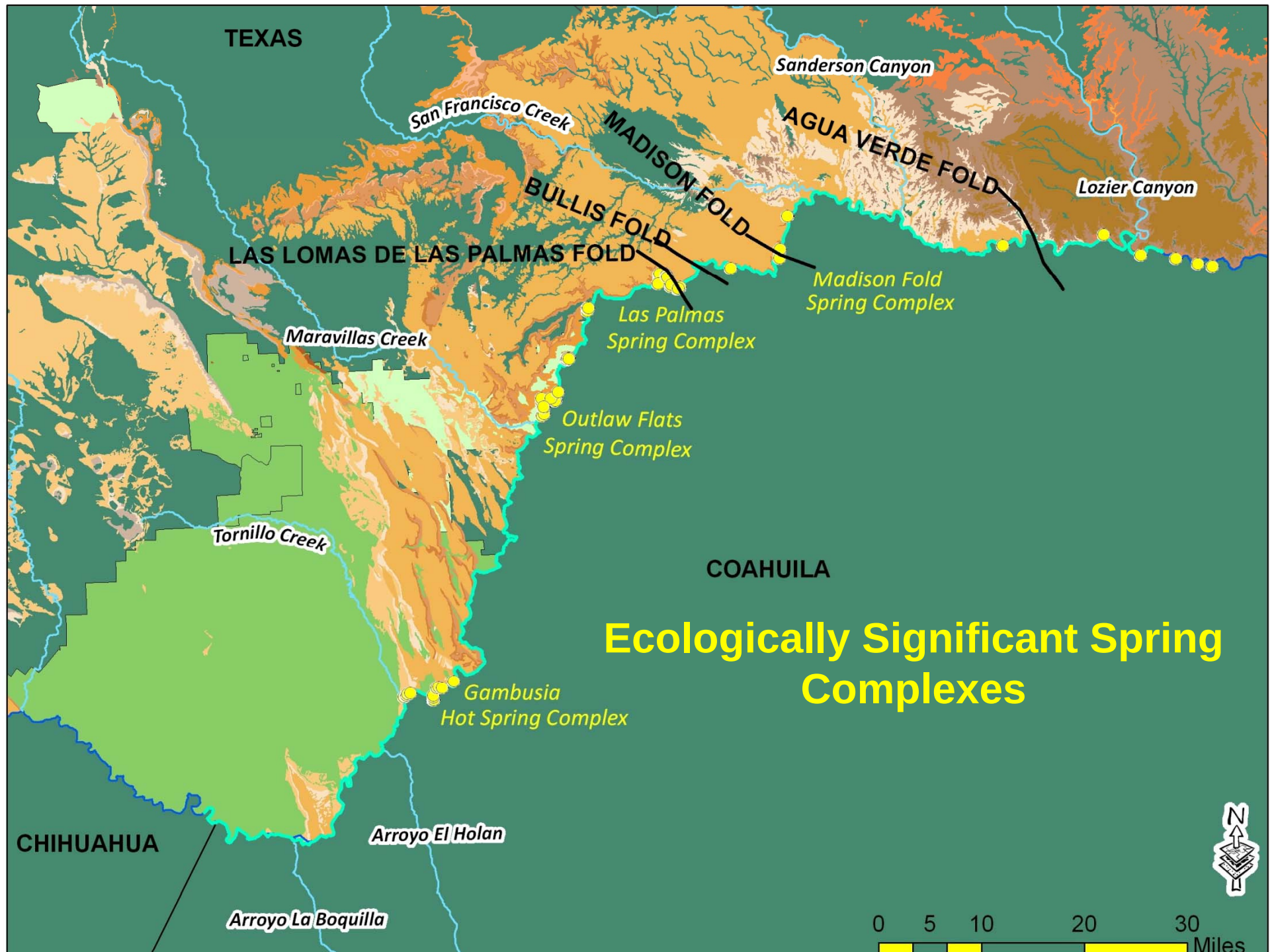
- Declining flow, channel change, water quality
- Groundwater management
- T&E species – Silvery Minnow
- Exotic species and habitat improvement
- Grassland restoration
- Cross-border cooperation obstacles
- Cooperation with private land owners
- Climate change

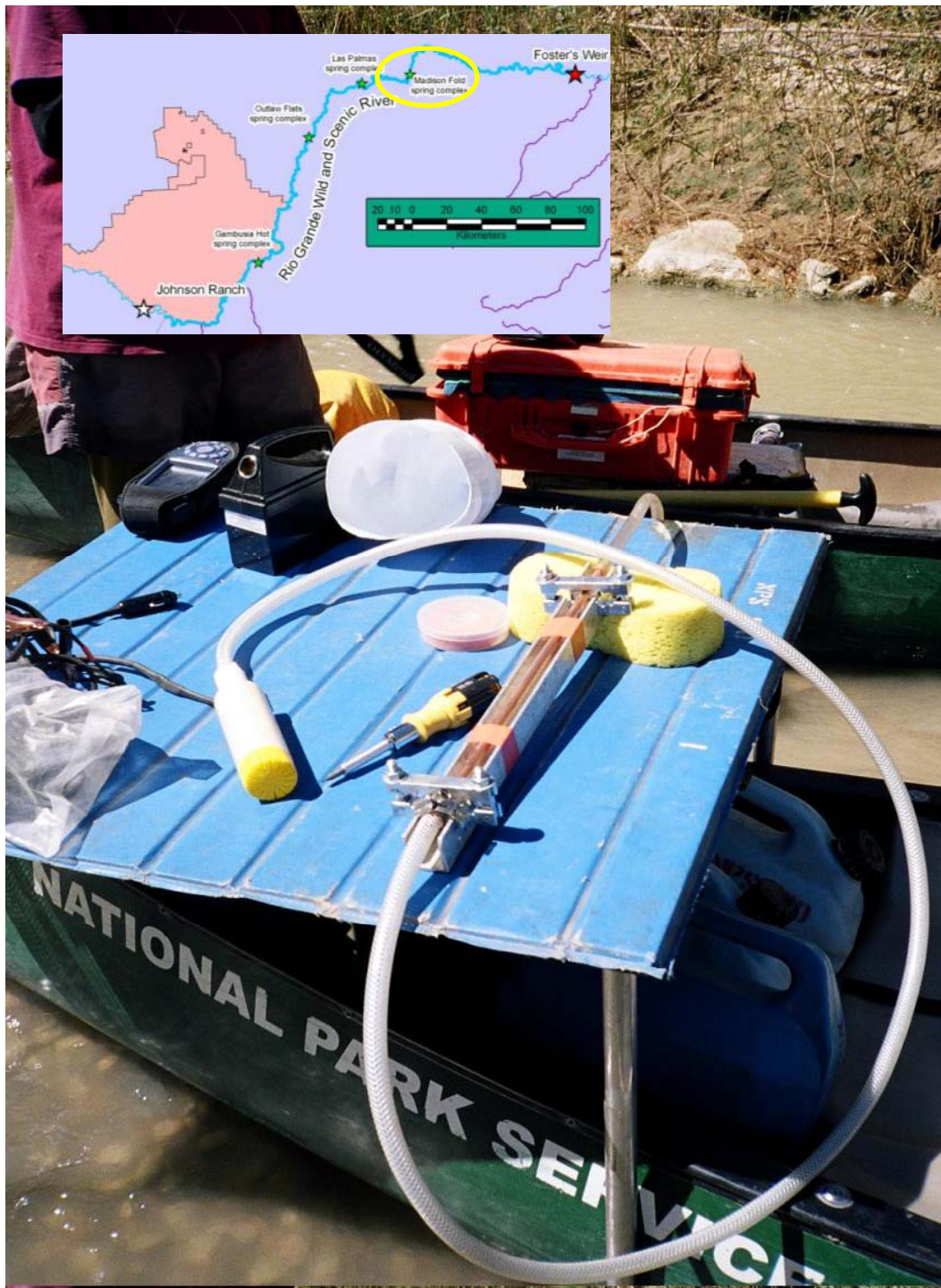
BBCC Science, Monitoring, and Management Examples

- **Pine Canyon Watershed**
- **Texas recognizes Rio Grande springs as “Ecologically Significant” as recommended by BBCC**
- **Spring inventory and geochemical tracers – NPS, SRSU, TX State, USGS**
- **Grasslands restoration and outreach**
- **Coordination with Mexican partners**

Pine Canyon Watershed: Long-term BIBE/TTU/SRSU research

- Part of several long-term networks – Small Reference Watershed Program, PrecipNet, Primenet
- Monitoring data since 1995:
 - Watershed hydrology
 - Soil and air temp
 - PPT
 - Soil nutrient and microbial dynamics
- Manipulative experiments on ecological and watershed effects of:
 - seasonal and annual variation in PPT
 - atmospheric N deposition
 - Soil temperature
- Results indicate long-term and pulsed changes in soil pH, soil microbial dynamics, nutrient cycling, and plant physiology
- Dr. John Zak, Dr. David Tissue, Dr. Kevin Urbanczyk





MADISON FOLD SPRING COMPLEX

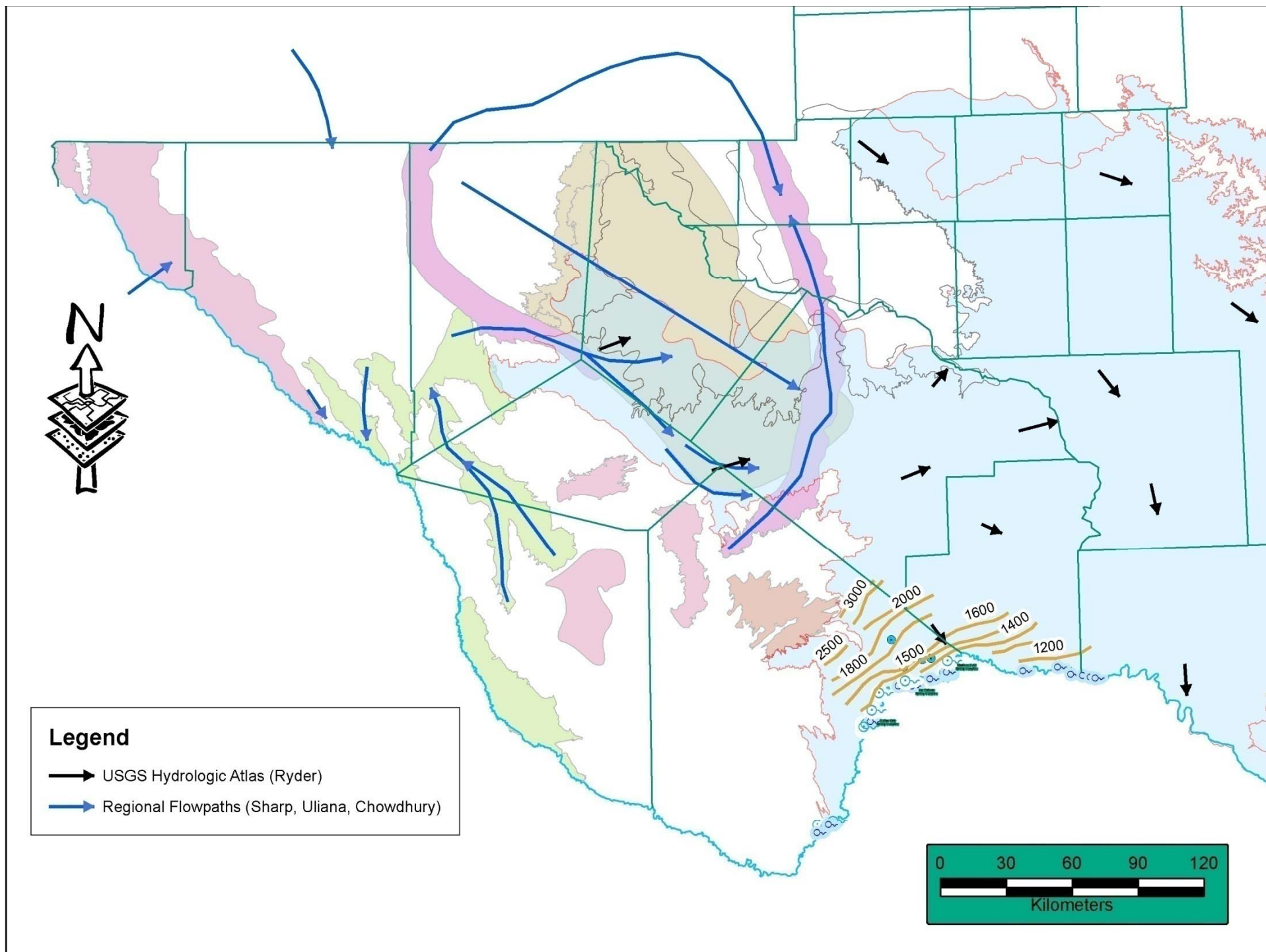
Lower Madison Spring
Texas side

Average Temperature = 29.92 °C,
SD = 2.06

Conductivity = 476 $\mu\text{S}/\text{cm}$

Glen Rose Limestone
(IBWC, 1951)

Important water
source for boaters



A photograph of a desert landscape. In the foreground, a wide, light-colored dirt path or road stretches from the bottom center towards the middle ground. On either side of this path, there are rows of dark, leafy shrubs or small trees, possibly planted in a reforestation or restoration project. The ground to the left of the path is sandy and dotted with small, dry bushes. To the right, the terrain is flatter and more sandy. In the background, there are several low, rounded hills or mountains under a clear, pale blue sky. A few utility poles with power lines are visible in the distance on the left side.

**Santiago Site
July 20, 2004**

Santiago Site
October 8, 2004



BBCC at Luis Leon Dam, Chihuahua, December 2009



Near-term objectives

- In-stream flow program w/ MX
- Additional MOUs and Cooperative Agreements
- Conventional and biological exotics management
- Uplands conservation plan – USFWS/NPS
- Climate change research and response
- Continue ecological/physical monitoring

BBCC Strategic Goals

taken from Memorandum of Understanding

- Promote collaborative relationships to advance monitoring and science-based conservation
- Further scientific understanding of the effects of climate change and flow regime on the Rio Grande and its watersheds
- Active conservation and restoration of Chihuahuan Desert resources – Rio Grande watershed, groundwater, and uplands
- Develop a watershed planning and restoration toolbox for public and private landowners and resource managers

List of Partners

- Big Bend Ranch State Park [Texas Parks & Wildlife Department (TPWD)]
- Black Gap Wildlife Management Area (TPWD)
- Área de Protección de Flora y Fauna [Secretaría de Medio Ambiente y Recursos Naturales (SEMARNAT)]:
 - Cañon Santa Elena
 - Ocampo
 - Maderas del Carmen
 - Monumento del Rio Bravo del Norte
- International Boundary and Water Commission (IBWC/CILA)
- State of Texas (TCEQ, TWDB, TPWD)
- Comisión Nacional del Agua (CONAGUA)
- Proyecto El Carmen, Maderas del Carmen (CEMEX)
- Adams Ranch (El Carmen Land and Conservation Company, LLC)
- World Wildlife Fund
- The Environmental Defense Fund
- Trans-Pecos Land and Water Trust
- Rio Grande Institute
- University Partners - SRSU, Utah State, TX State, Antonio Narro, TX Tech
- U.S. Fish and Wildlife Service
- U.S. Geological Survey
- Los Diablos bi-national fire crew
- NPS – Chihuahuan Desert I&M, Water Resources Division, AMIS, BIBE, RIGR,

