



Pecos River Heliborne Electromagnetic Survey

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Need for this Work

- WPP identified the need for additional work to identify and evaluate the sources of salt entering the river between Coyanosa and Girvin
 - Limited knowledge of specific salt sources
 - Salt intrusion points not known
 - Can't evaluate management options until the source is understood
- Ideas for collecting needed information
 - Intensive water quality monitoring
 - Float the river and collect samples
 - Airborne hydrogeological assessment

Preferred Approach

- Heliborne Electromagnetic (HEM) Survey paired with ground-based hydrogeological assessment
- Pairs currently available, rough scale groundwater and geology data with high resolution, rapidly collected electromagnetic (EM) data
- Groundwater and geology data will indicate what EM data is telling us
- Will yield 3-D maps of groundwater quality from the surface down to approximately 150 meters deep

Project Proposed

- TWRI worked with Texas A&M AgriLife Research at El Paso to develop project proposal to provide this needed information
- Submitted to TSSWCB for funding consideration in their Clean Water Act, Section 319 Grant Program
- Project awarded and began on November 1, 2012
 - TWRI will manage the project; provide local coordination
 - Local coordination subcontracted to Upper Pecos SWCD
 - Texas A&M AgriLife Research, El Paso will provide technical expertise and conduct hydrogeological assessment
 - SkyTEM and Aarhus Geophysics contracted to perform HEM data collection, processing and analysis

What is a Heliborne Electromagnetic Survey

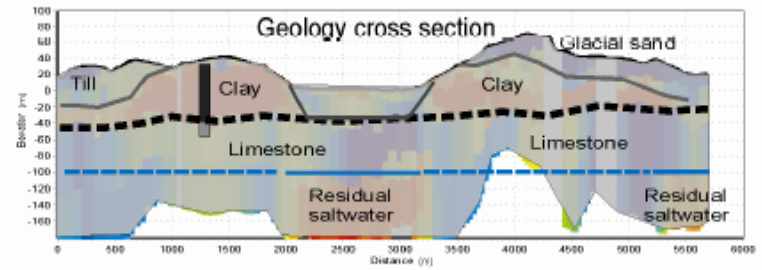
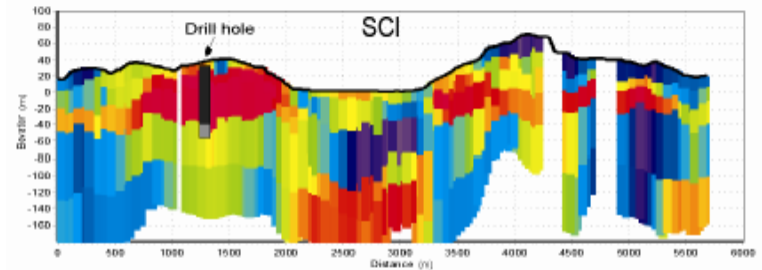
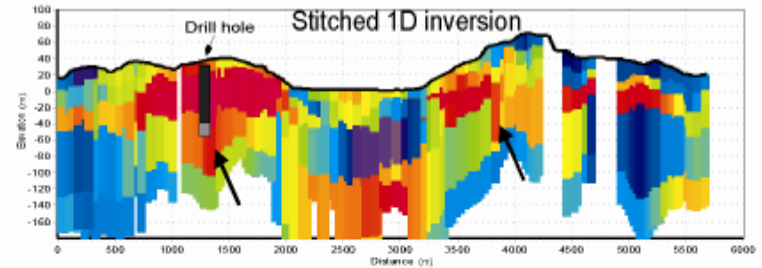
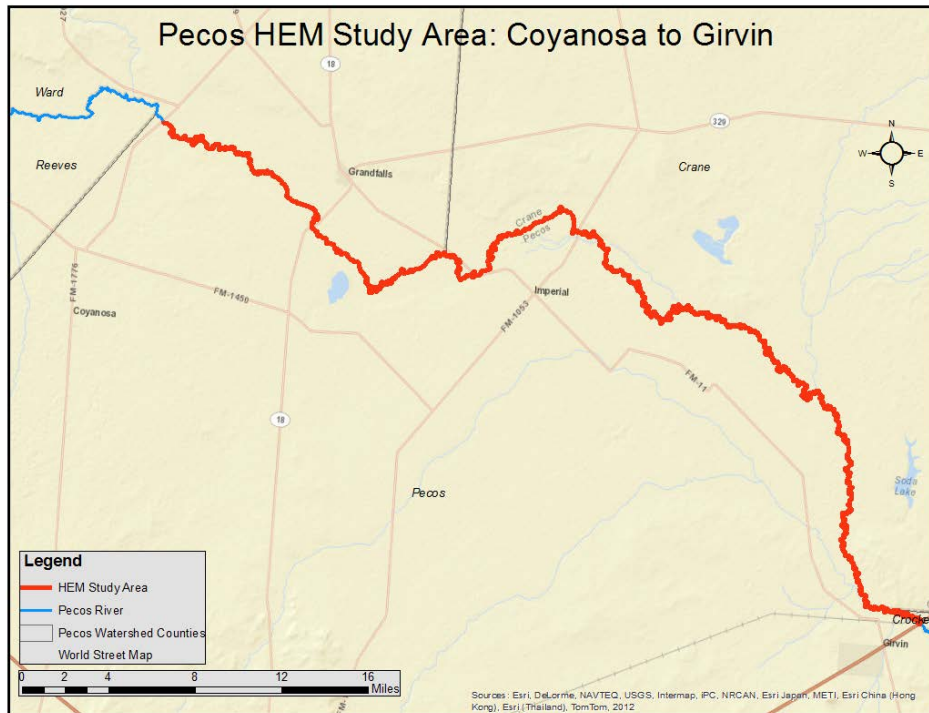
- Similar to a CAT scan
 - Electromagnetic (EM) field is transmitted into the ground
 - The response of this EM field is measured
 - Different types of rocks and soil reflect the EM field back to the receiver at different rates
- System flies about 30 meters above the surface at about 50 mph



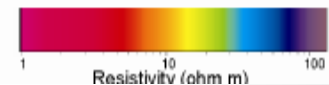


HEM Survey Equipment Demo

Heliborne Electromagnetic Survey



- Drill-hole legend**
- Gravel
 - Sand
 - Clay
 - Limestone



Project Timeline

- Start Date: Nov. 1, 2012
- Hydrogeological Data Gathering: Nov. 12 – May 13
- Bid Process for HEM Contractor: Jan. 13 – Mar. 13
- HEM Data Collection: Fall 13
- Merging HEM Data with Hydrogeological Data:
Jan. 14 – June 14
- Complete Salt Source Assessment: Oct. 31, 2014



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