



Hays Trinity Groundwater  
Conservation District

Wimberley Valley Watershed Association



# Jacob's Well Monitoring Project

Measuring the quantity and quality of  
Jacob's Well Spring



# Jacob's Well Monitoring Project

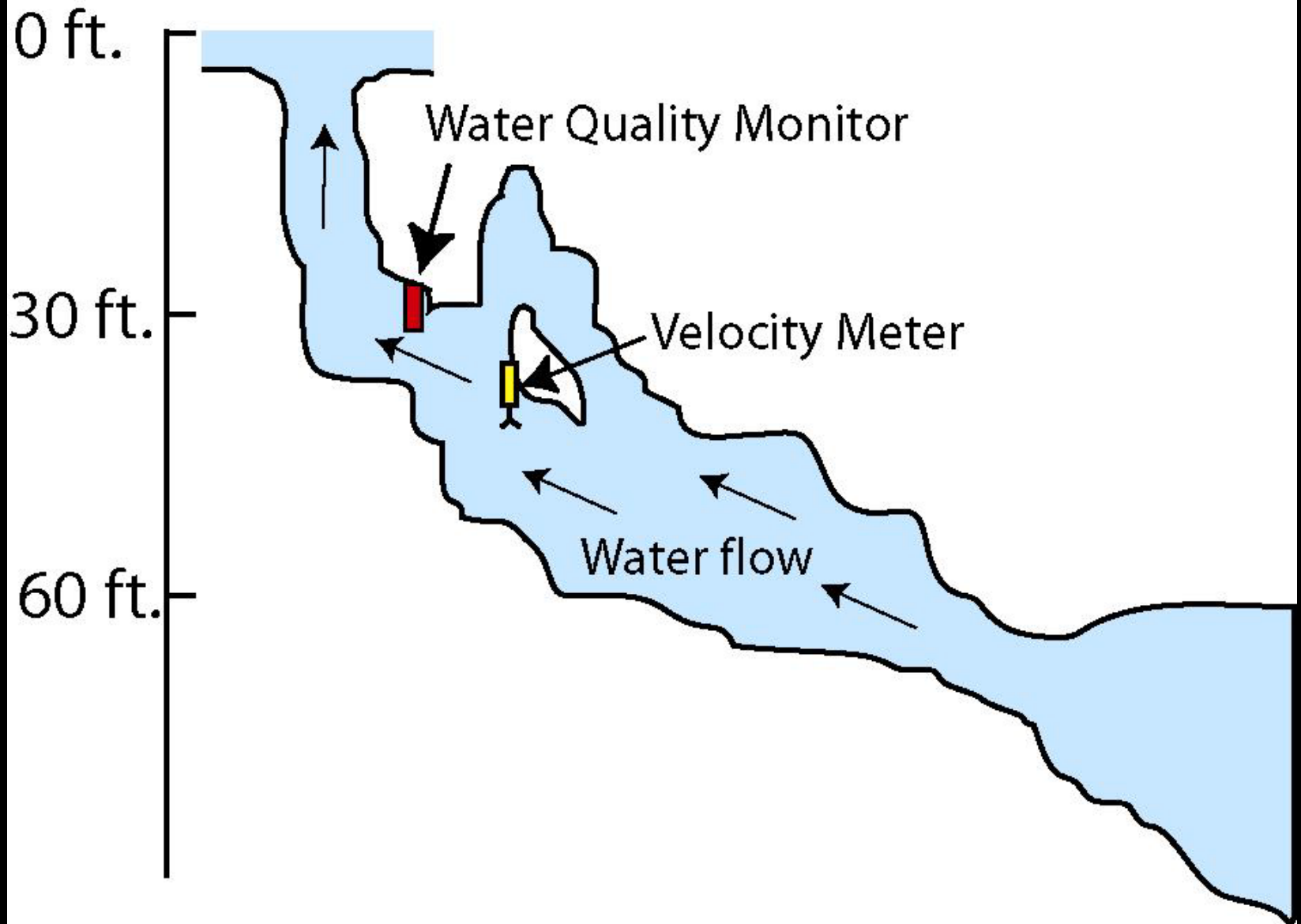
## Scope of project

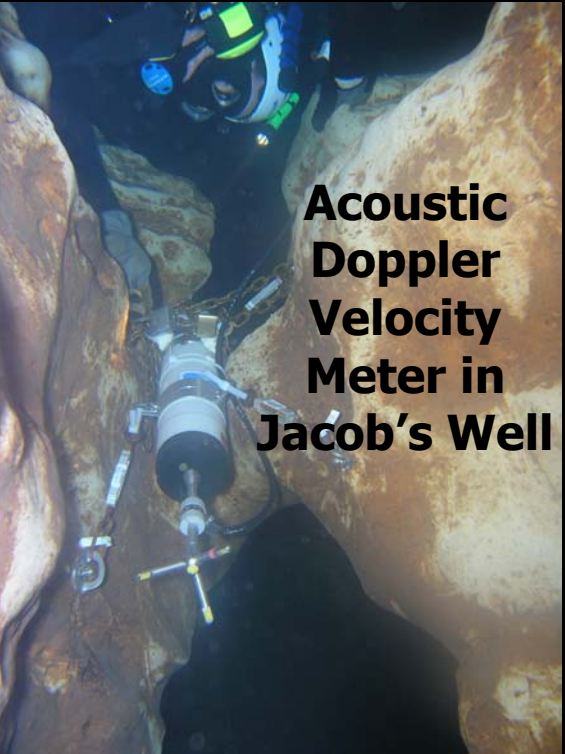
1. April 1, 2005 – September 31, 2006
2. Not yet funded beyond water year 2006

## Primary goals of the project

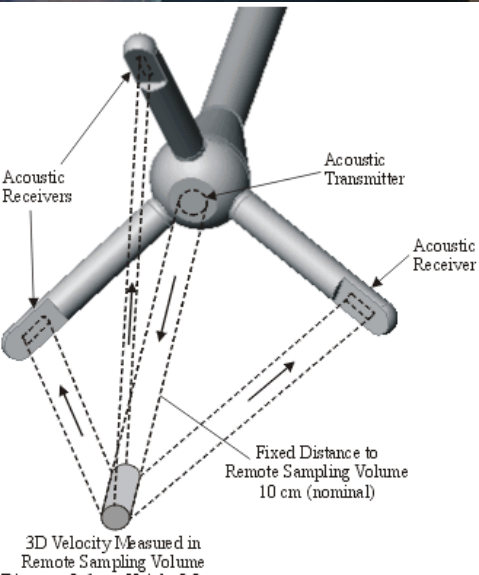
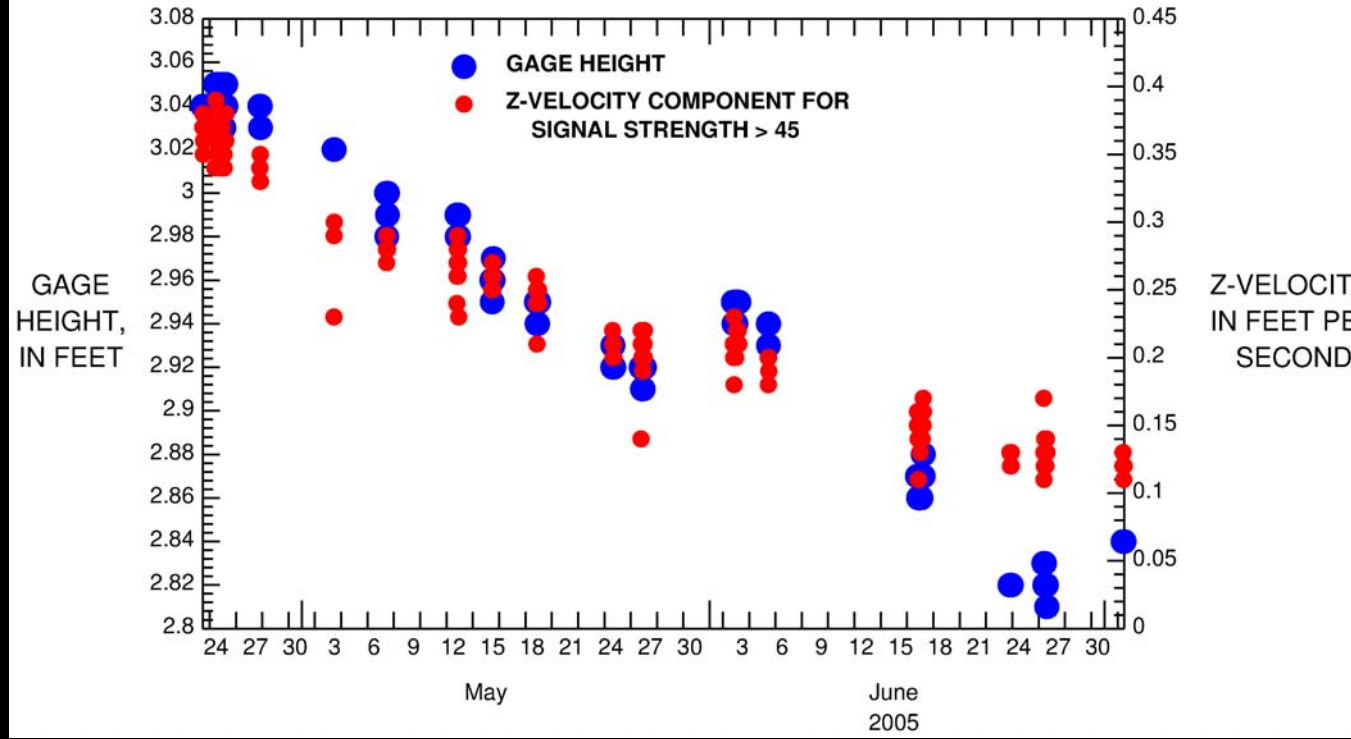
1. Install and maintain gaging station at spring.
2. Collect and publish discharge and water quality data
3. Identify baseline water quality of the spring.

# Jacob's Well Spring





# Acoustic Doppler Velocity Meter in Jacob's Well



$$Q = V * f(-)$$

$$Q = Q_d - Q_u$$

**Geometry only?**



“The karst spring is like a perfectly placed well in other aquifers. Water discharging from a karst spring carries an imprint of everything upstream in the aquifer.” White, 2002.

## Characterization Techniques for Karst Aquifers

1. Water budget
2. Tracer tests
3. Spring hydrographs
4. Spring water chemistry
5. Wise use of test wells
6. Modeling karst aquifers

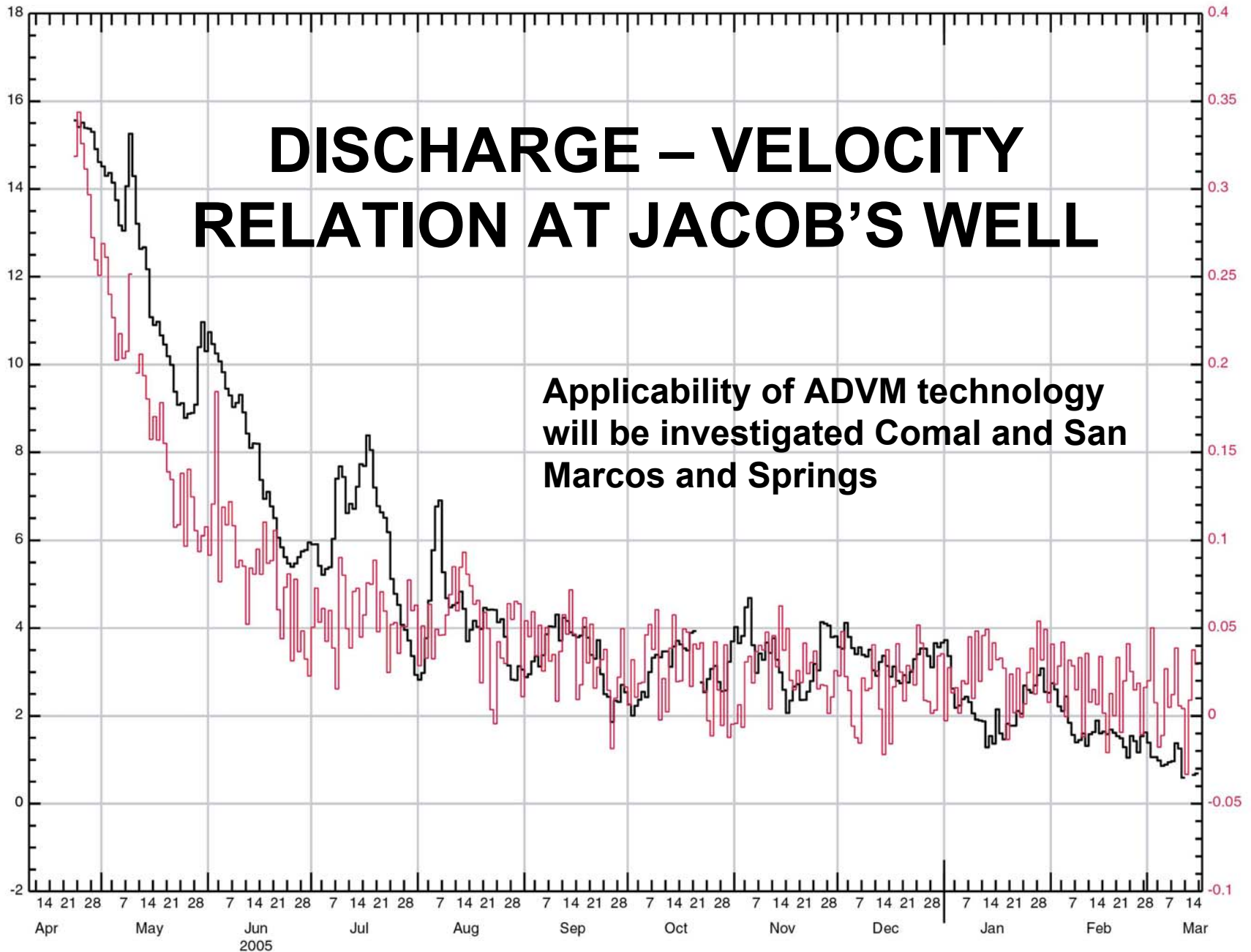
Continuous Data

# Data collected in the first 11 months of the project

- Real – time water data (7-day)
- Real – time water data (31-day)
- Daily mean values (330-day)
- Water Quality Sample – collected Nov. 17, 2005

# DISCHARGE – VELOCITY RELATION AT JACOB'S WELL

Applicability of ADV technology  
will be investigated Comal and San  
Marcos and Springs



— 08170990 Jacobs Well Spring nr Wimberley, TX  
— 08170990 Jacobs Well Spring nr Wimberley, TX

(DAILY MEAN Discharge FROM DCP, IN cfs) \* 1  
(DAILY MEAN Stream velocity Z VELOCITY, FROM ADV, IN feetsec) \* 1



More information found at USGS Texas  
Water Science Center webpage:

<http://tx.usgs.gov/>

Jacob's Well Project page:

<http://tx.usgs.gov/aquifer/projects/jacobswell.htm>