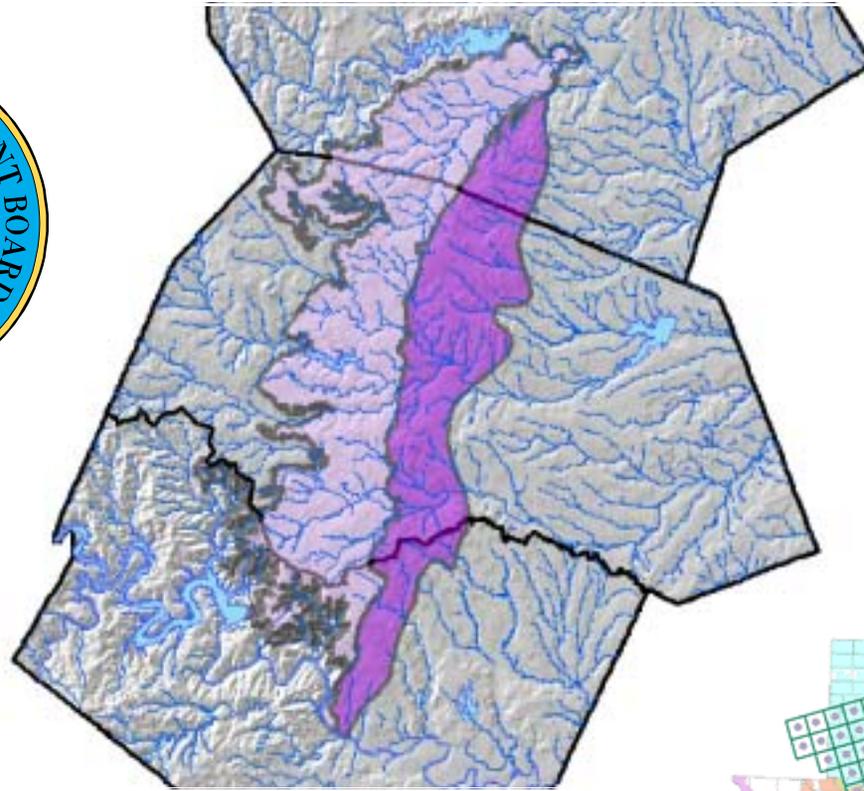


NORTHERN EDWARDS AQUIFER



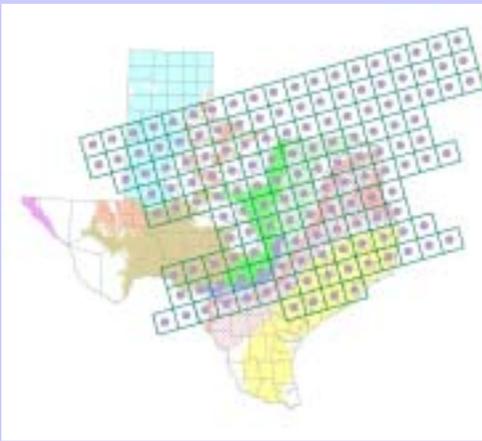
Fifth Stakeholder Advisory Forum
April 24, 2003



texas water development board

OUTLINE

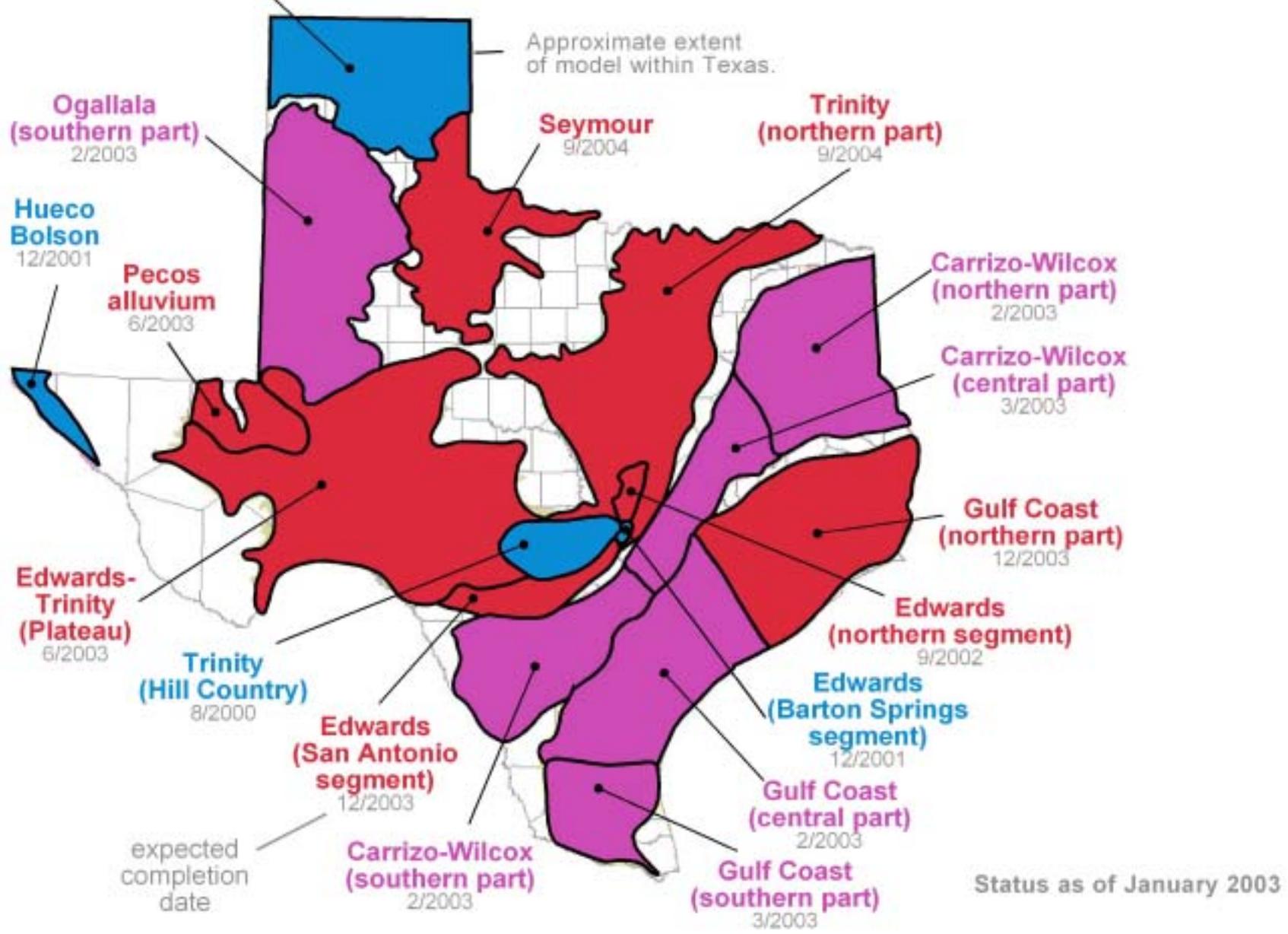
- Review of GAM program
- Review of hydrogeology of aquifer and modeling process
- Transient model calibration results
- Revised GAM schedule



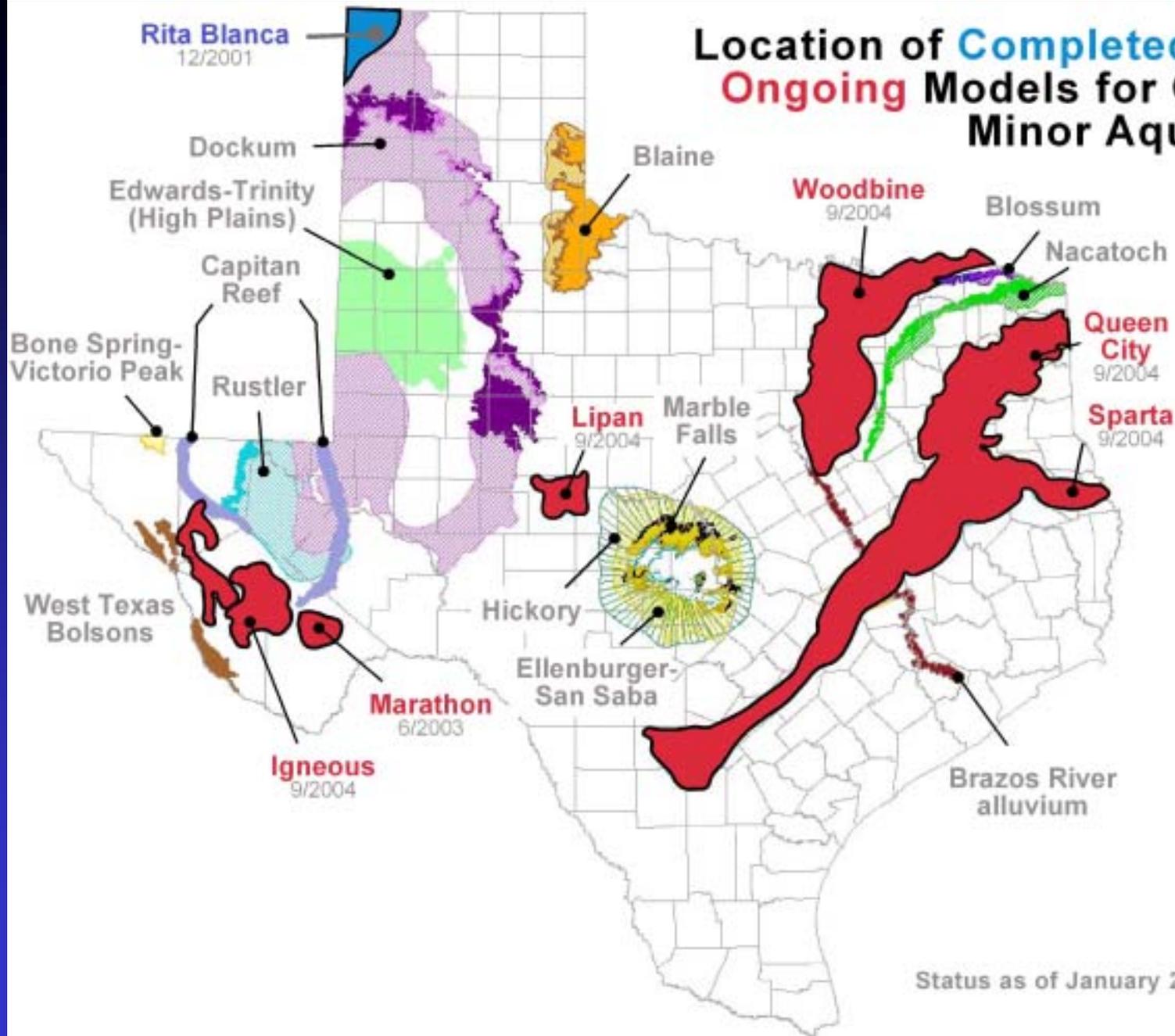
GAM

- Purpose: to develop the best possible groundwater availability model with the available time and money.
- Public process: you get to see how the model is put together.
- Freely available: standardized, thoroughly documented, and available over the internet.
- Living tools: periodically updated.

Location of Completed, Near-Completed, and Ongoing Models for GAM

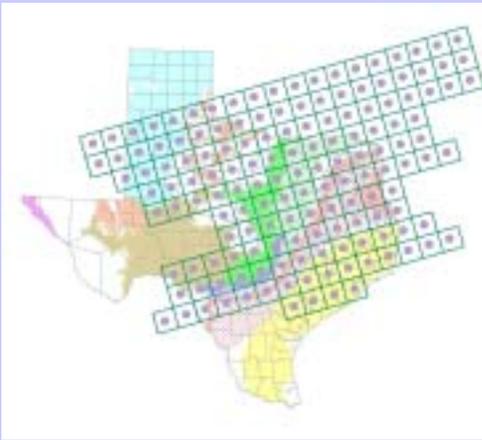


Location of Completed and Ongoing Models for GAM: Minor Aquifers



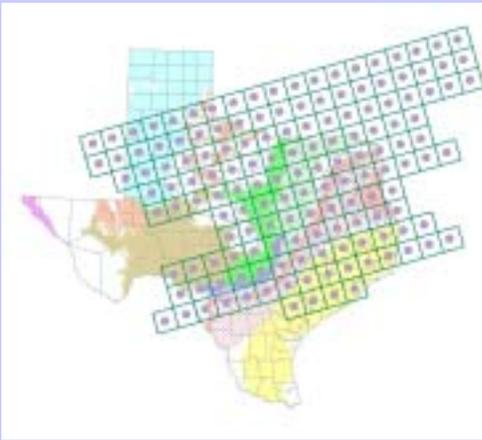
Status as of January 2003

What is groundwater availability?



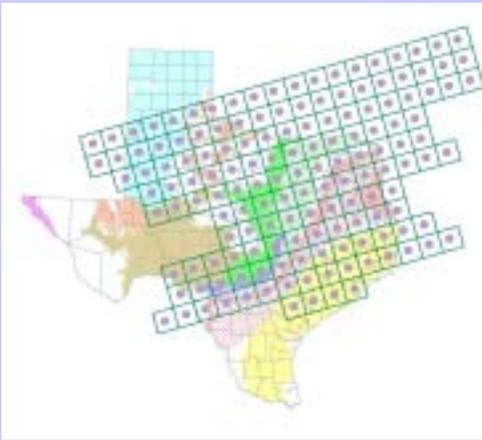
- ...the amount of groundwater available for use.
- The State does not decide how much groundwater is available for use: GCDs and RWPGs decide
- A GAM is a tool that can be used to assess groundwater availability once GCDs and RWPGs decide how to define groundwater availability.

Do we have to use GAM?

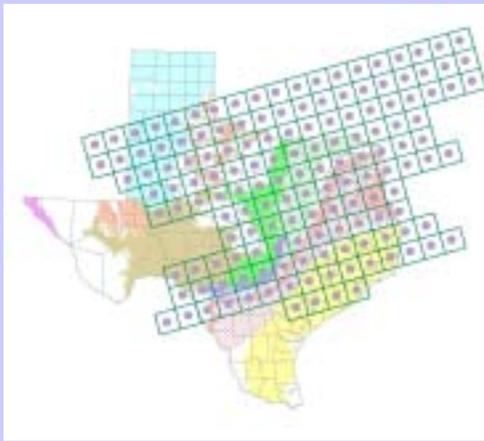


- Water Code & TWDB rules require that GCDs use GAM information. Other information can be used in conjunction with GAM information.
- TWDB rules require that RWPGs use GAM information unless there is better site specific information available

How do we use GAM?

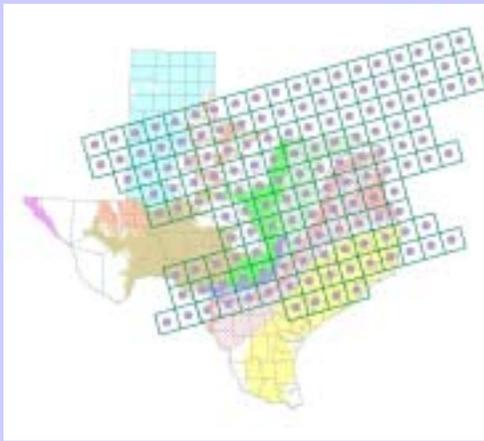


- The model
 - Predict water levels and flow in response to pumping and drought
 - Effects of well fields
- Data in the model
 - Water in storage
 - Recharge estimates
 - Hydraulic properties
- GCDs and RWPGs can request runs



Living tools

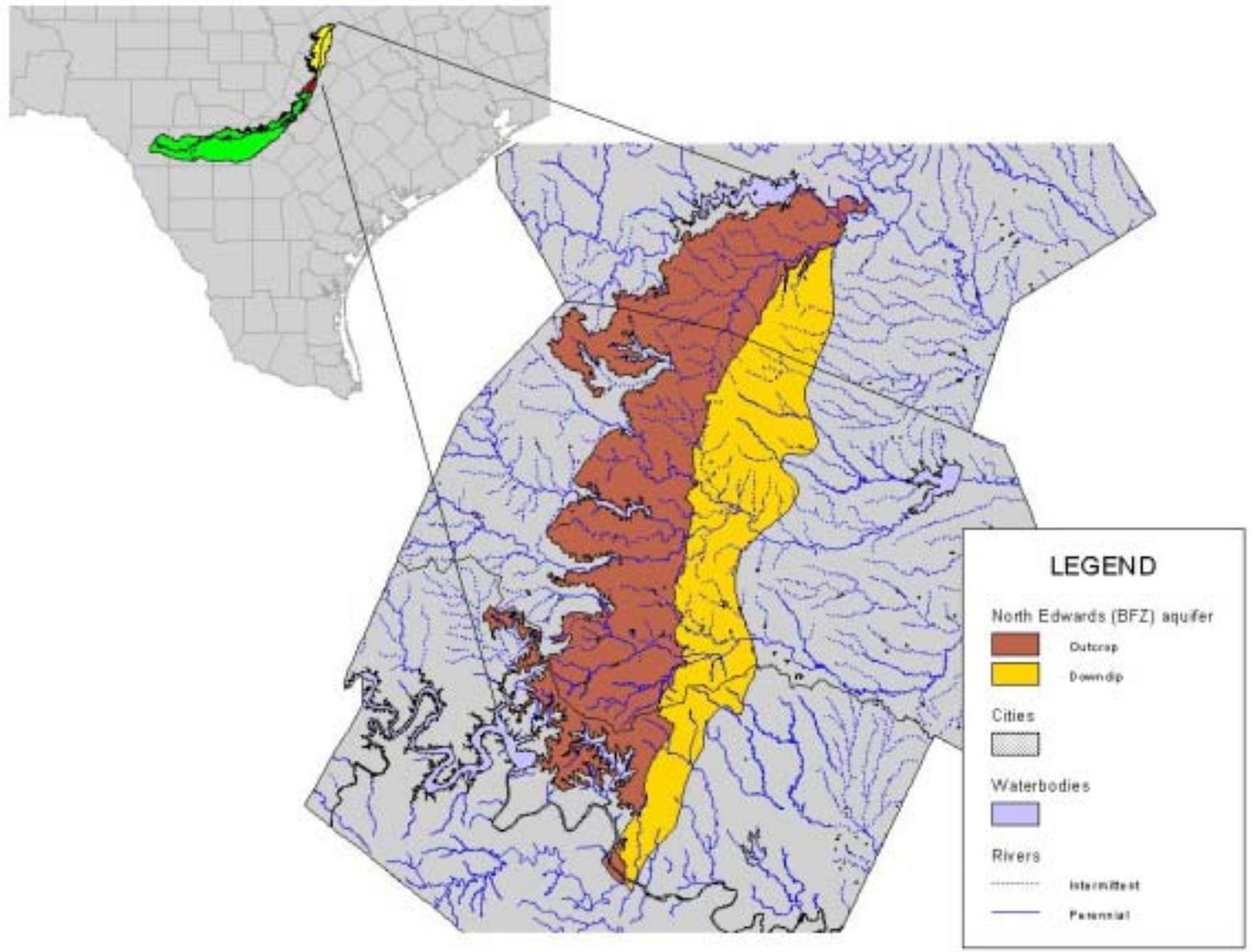
- GCDs, RWPGs, TWDB, and others collect new information on aquifer
- This information can enhance the current GAMs
- TWDB plans to update GAMs every five years with new information
- Please share information and ideas with TWDB on aquifers and GAMs



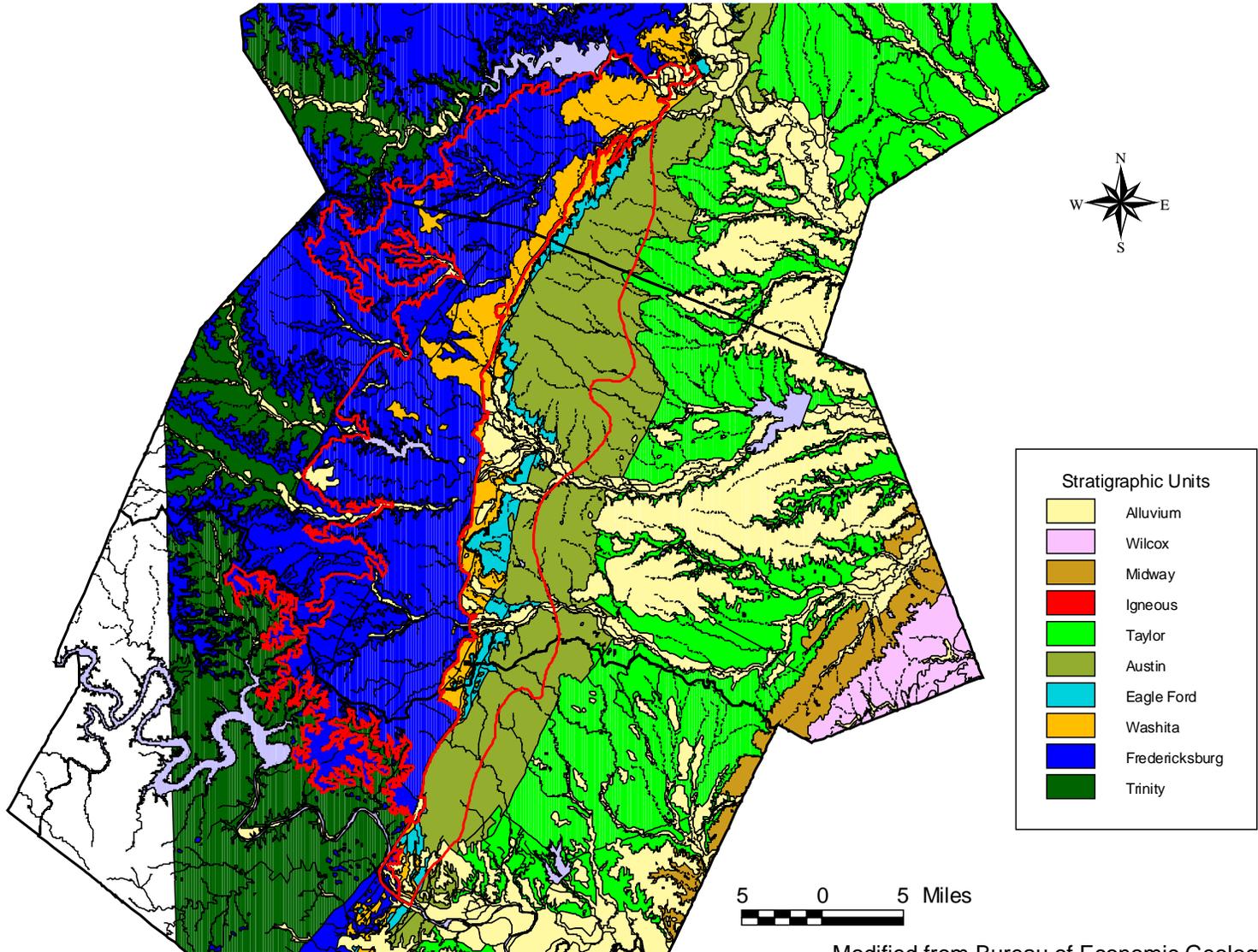
Participating in the GAM process

- SAF meetings
 - hear about progress on the model
 - comment on model assumptions
 - offer information (timing is important!)
- Report review
 - at end of project
- Contact TWDB
 - Robert Mace
 - Ian Jones

HYDROGEOLOGY



LOCATION MAP

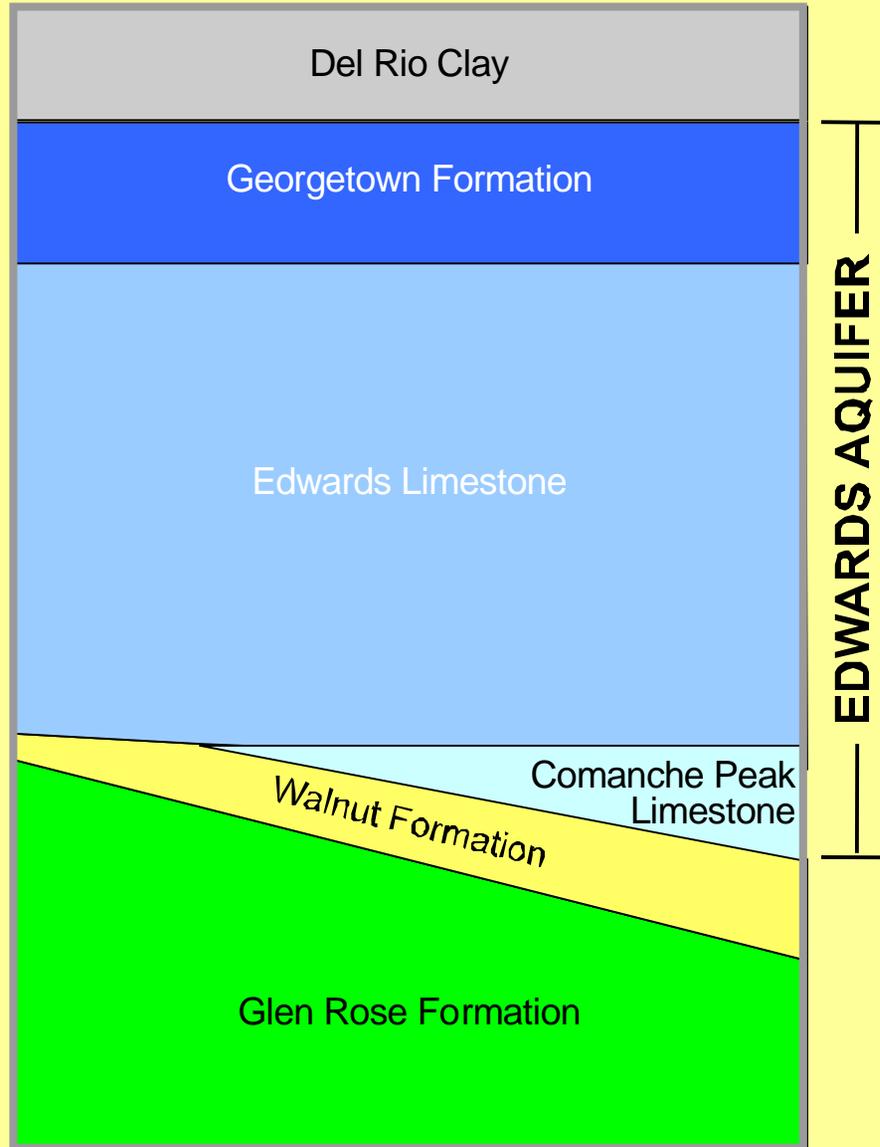


Modified from Bureau of Economic Geology
Geologic Atlas of Texas

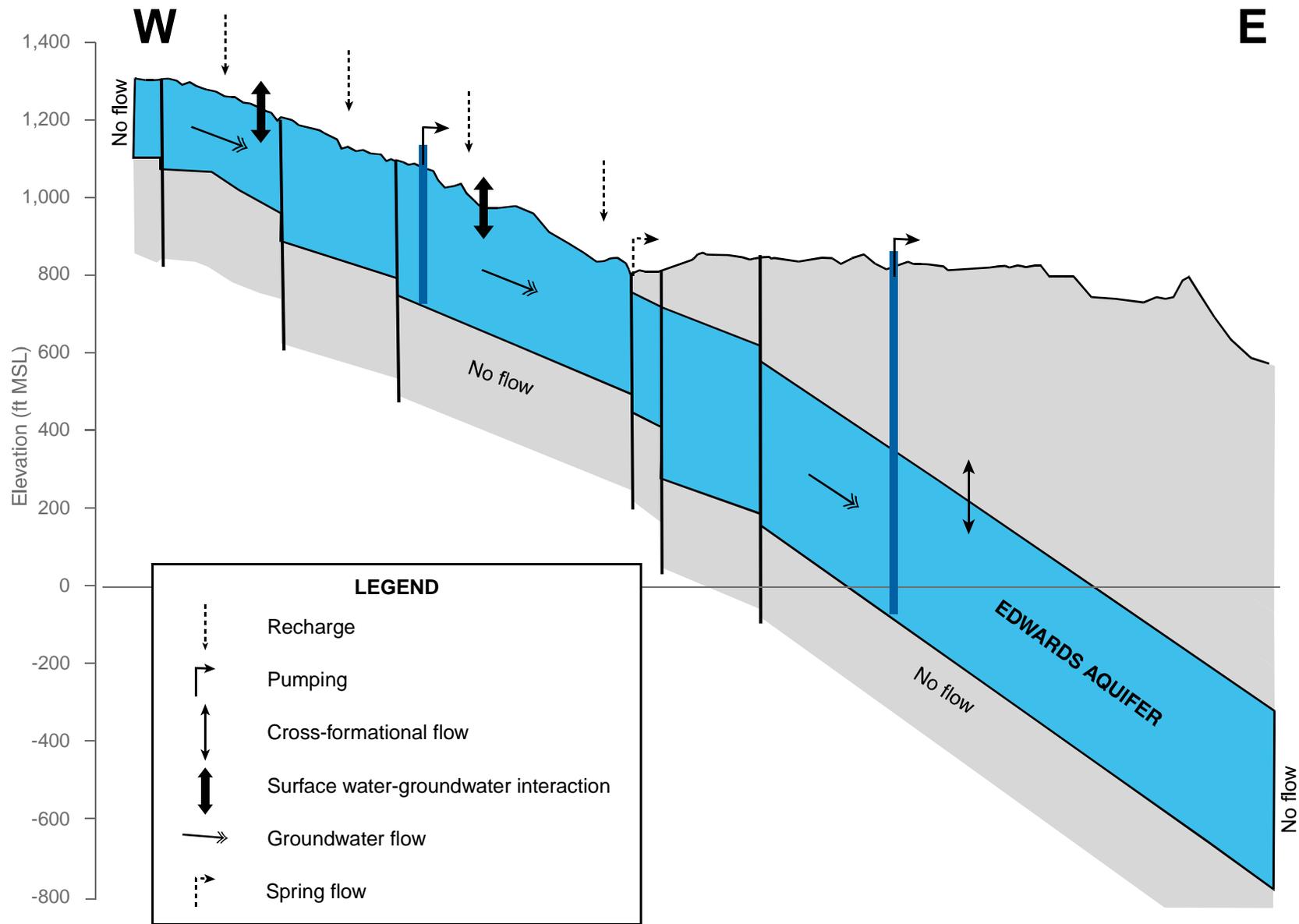
SURFACE GEOLOGY

S

N



GEOLOGIC AND HYDROGEOLOGIC UNITS



CONCEPTUAL MODEL

MODELING PROCESS

- Define model objectives
- Develop conceptual model
- Design model
- Calibration and verification modeling
 - Comparison with observed data
- Predictive modeling
 - Predict impacts of projected growth
 - 2000 - 2050

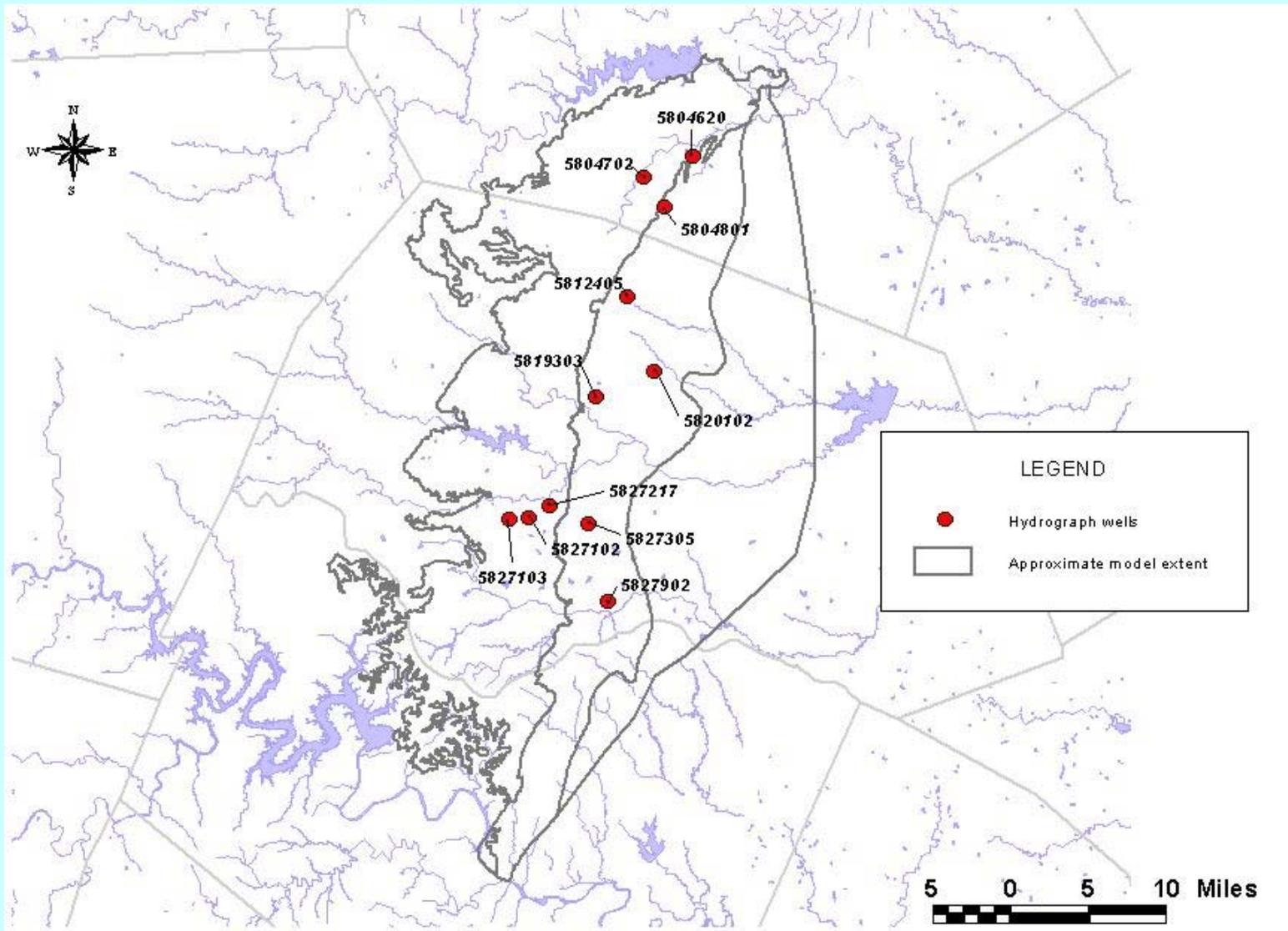
MODELING PROCESS

- Three models
 - Steady-state
 - **Transient (historic)**
 - Transient (predictive)

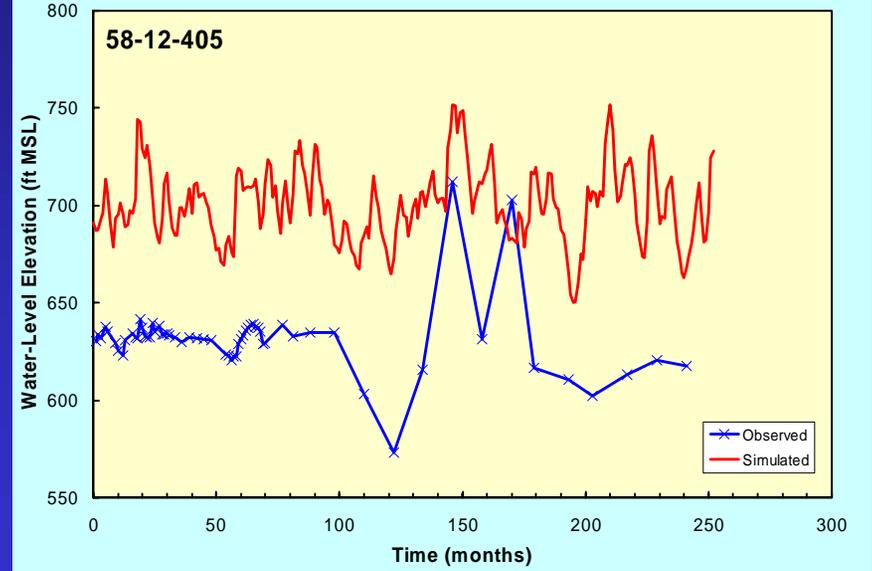
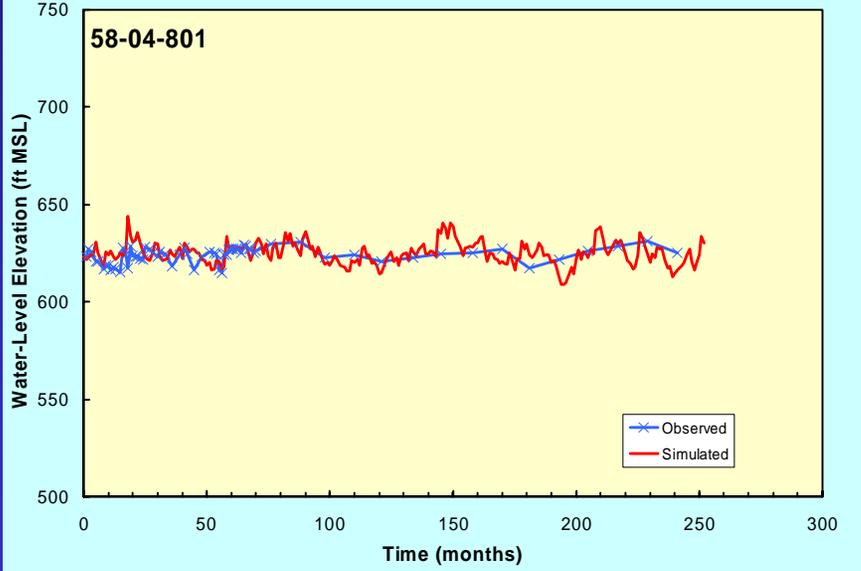
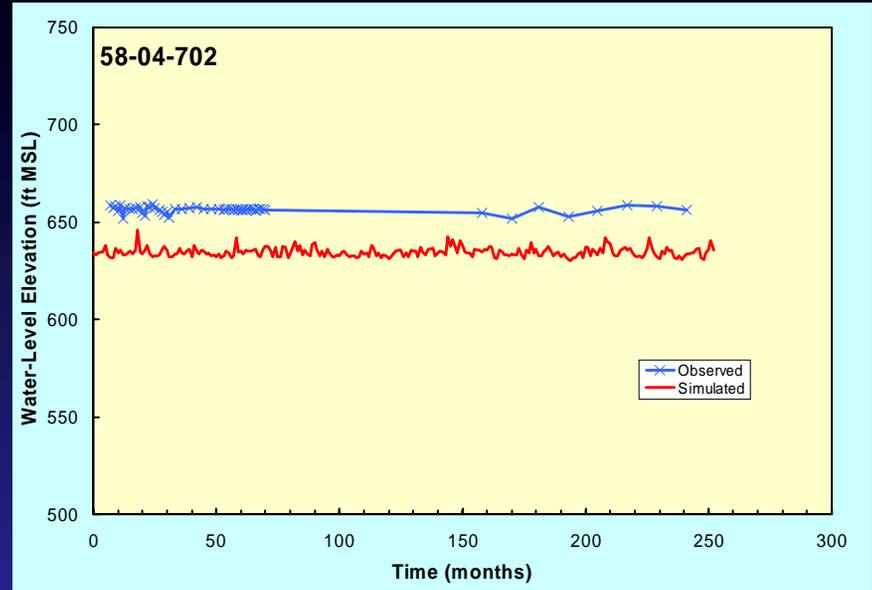
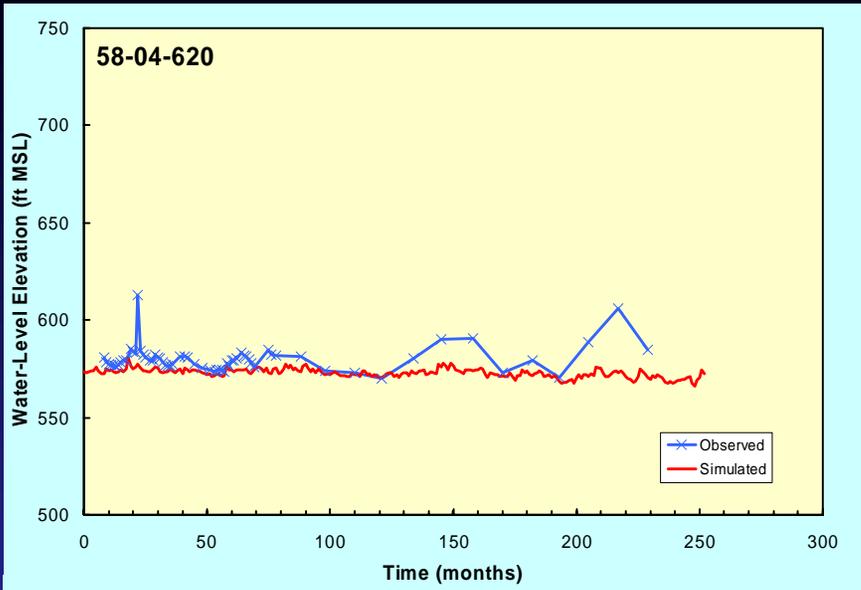
TRANSIENT CALIBRATION

- Time-related parameters
 - Water-level fluctuations
 - Stream discharge

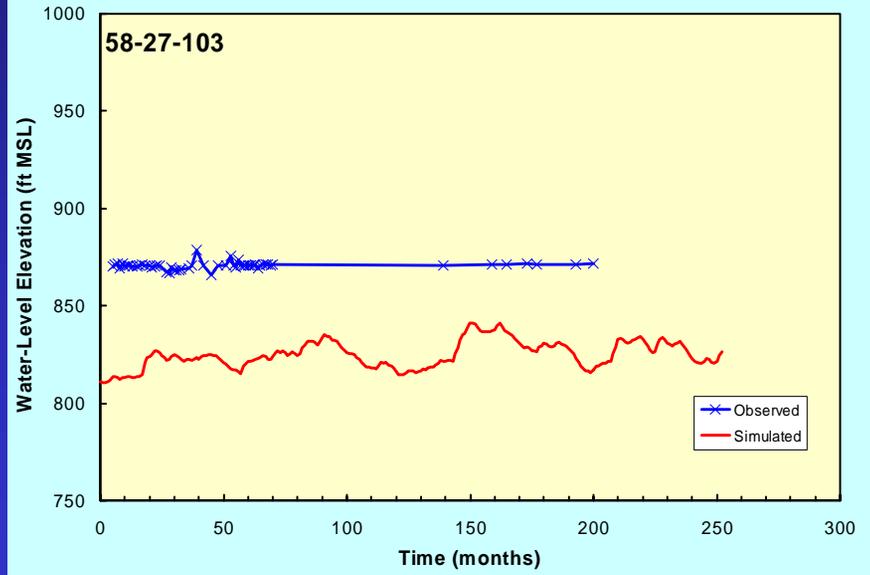
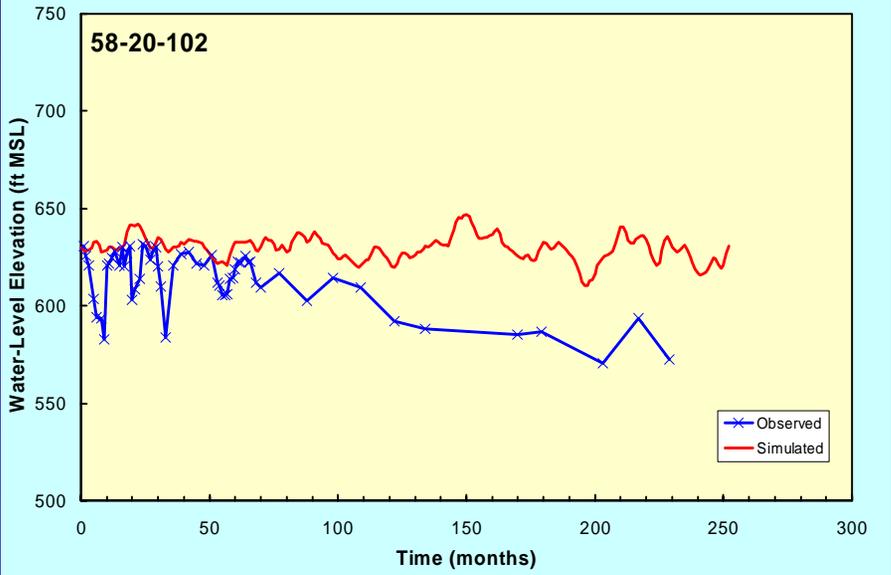
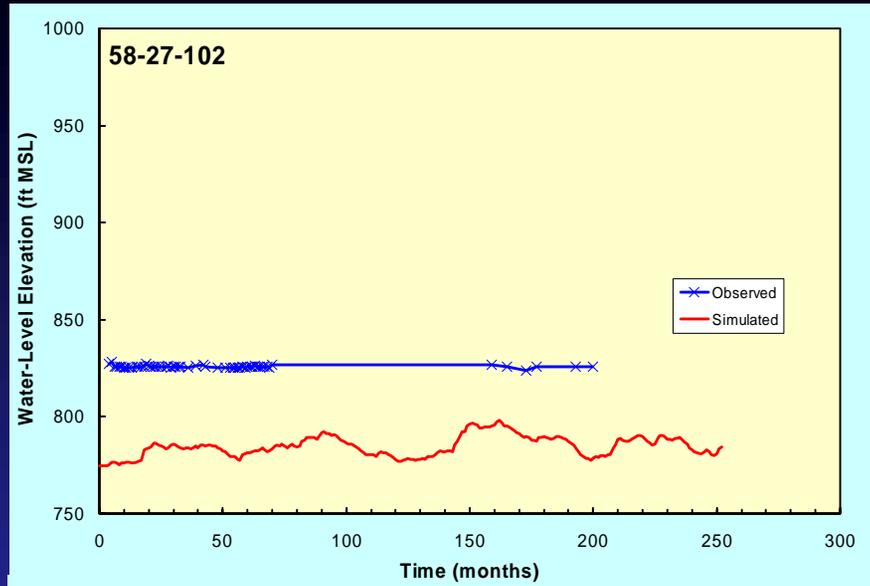
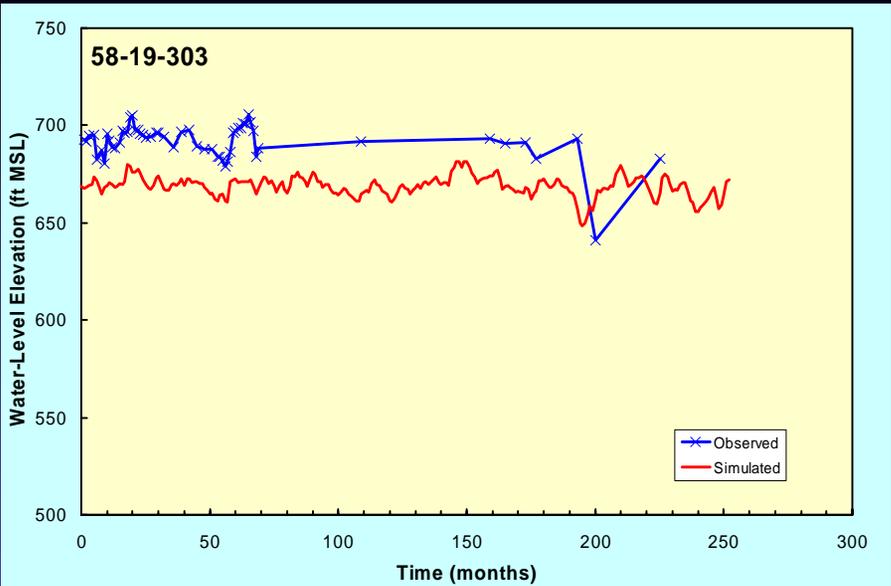
MODEL RESULTS



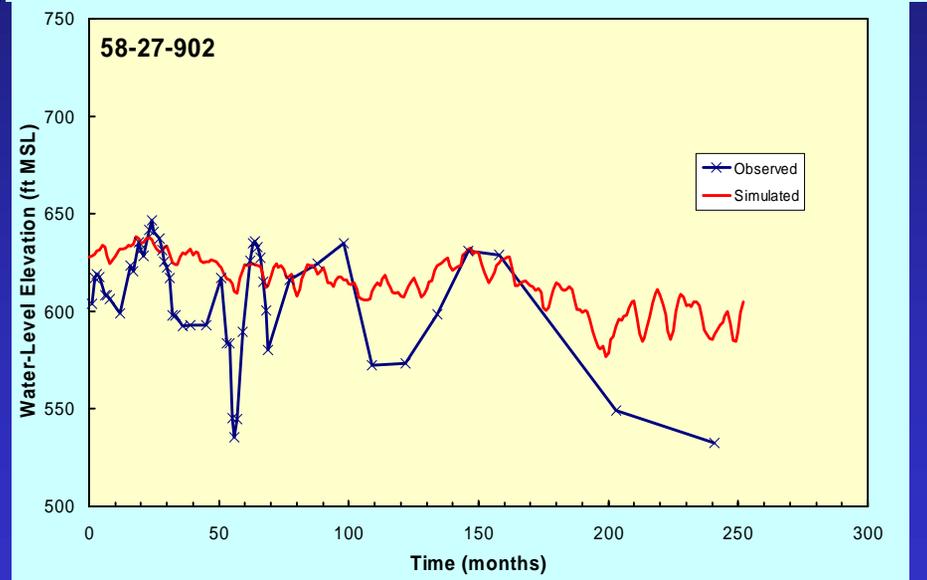
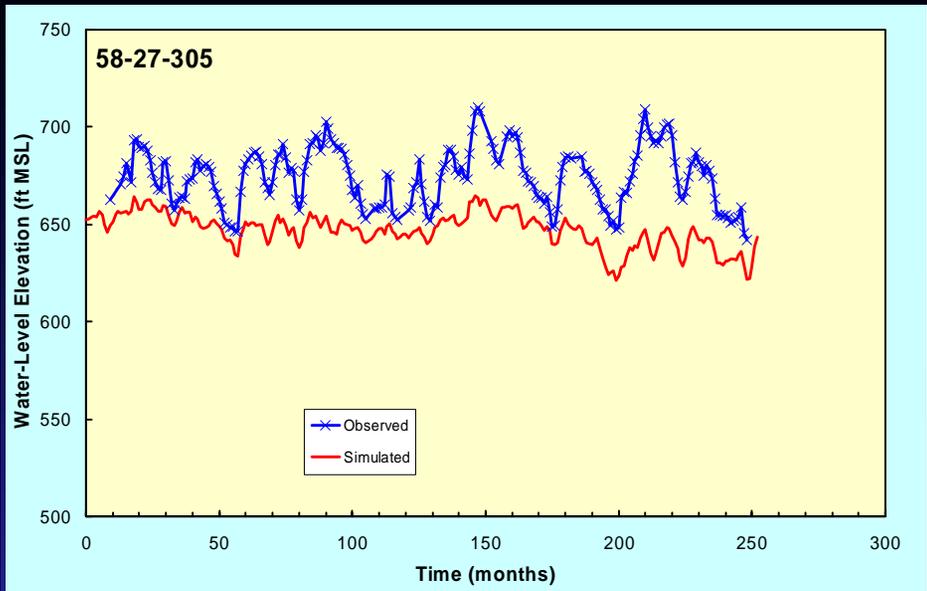
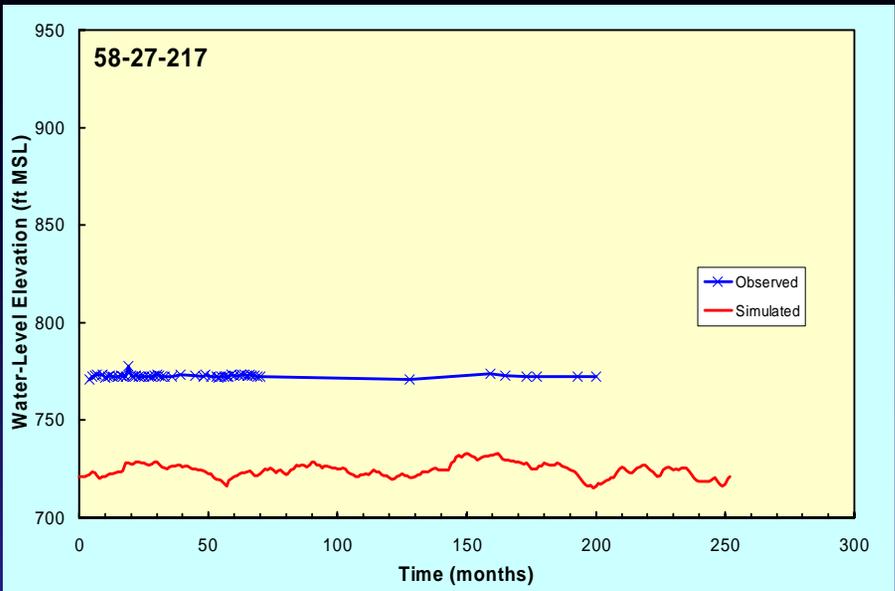
HYDROGRAPH LOCATIONS



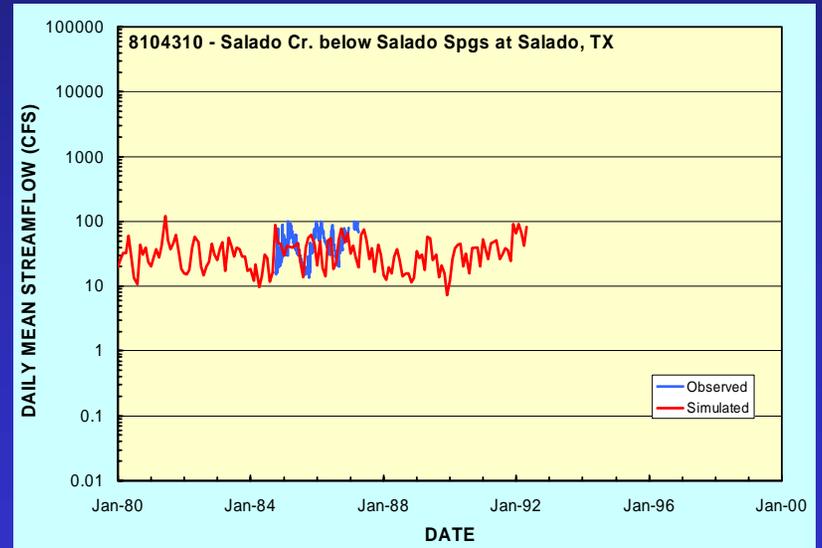
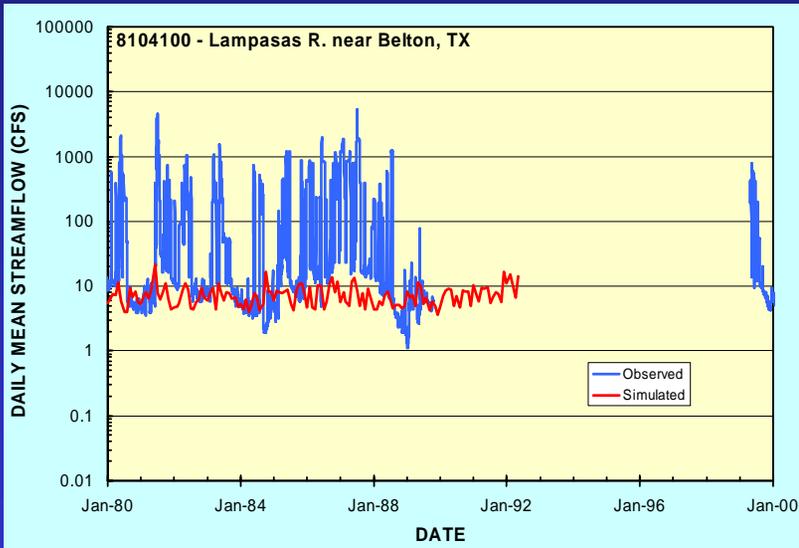
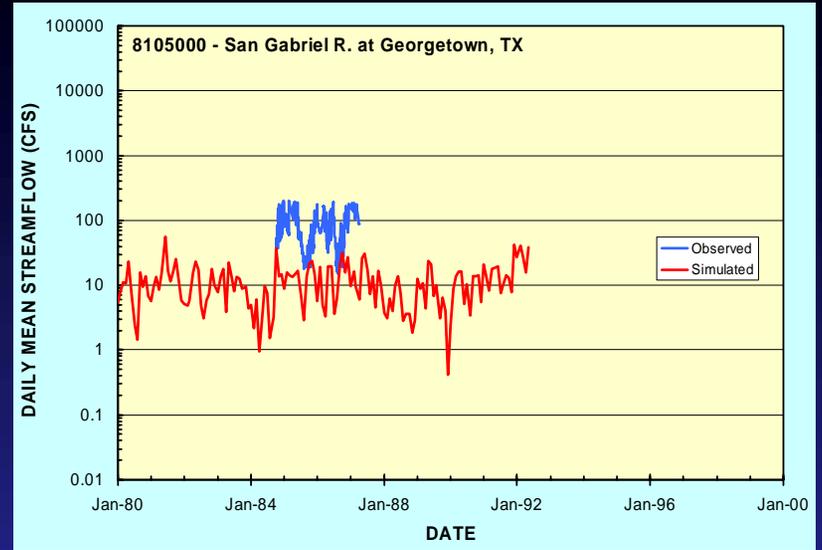
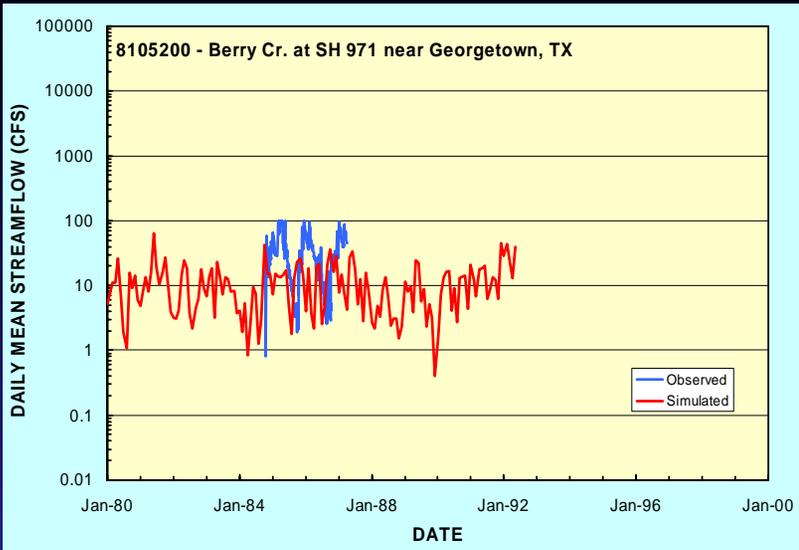
MEASURED v. SIMULATED WATER LEVELS



MEASURED v. SIMULATED WATER LEVELS



MEASURED v. SIMULATED WATER LEVELS



MEASURED v. SIMULATED STREAM DISCHARGE

GAM SCHEDULE

SCHEDULE

SAF Meeting 1— Mar. 18 ■

SAF Meeting 2 — June ■ ● June —Draft conceptual model

SAF Meeting 3— Sept. ■ ● Sept. —Initial model design

SAF Meeting 4 — Dec. ■ ● Dec. —Calibrate steady-state model

SAF Meeting 5 — Apr. ■ ● Apr. —Calibrate transient model

● May. —Complete model predictions

● Jun. —Prepare draft report

SAF Meeting 6— Jul. ■

● Aug. —Present SAF Model Seminar

▲ Deliver Final Product

2002

2003



**Northern Segment of the Edwards Aquifer
Stakeholder Advisory Forum 5
April 24, 2003**

Name		Affiliation
1	Horace Grace	Clearwater UWCD
2	James Sloan	TCEQ
3	Ricky Preston	Salado WSC
4	R. David Cole	Central Texas WSC
5	Ethan Ham	Clearwater UWCD
6	Cheryl Maxwell	Clearwater UWCD

**NORTHERN SEGMENT OF THE EDWARDS AQUIFER GROUNDWATER
AVAILABILITY MODEL**

Stakeholder Advisory Forum #5, April 24, 2003

Six people attended the fifth Stakeholder Advisory Forum for the northern segment of the Edwards aquifer groundwater availability model. This meeting was held at the Salado Civic Center, Salado, TX. The stakeholders present represented the Texas Commission on Environmental Quality, Clearwater UWCD, Salado WSC, and Central Texas WSC.

At the meeting, Dr. Ian Jones outlined the work conducted to calibrate the transient model. The presentation also included a brief review of the GAM program, hydrogeology of the aquifer and the modeling process, in addition to discussion of the transient model calibration results.

Questions asked during the presentation pertained to how calibration of the transient model was quantified, as well as, how the model would be used to aid GCDs in determining groundwater availability.