

TAAPing the Sources: Santa Cruz Database Creation for the Transboundary Aquifer Assessment Program

Presentation for:
Santa Cruz River Researchers Day

Tucson, Arizona
March 27, 2009

Prescott Vandervoet
Udall Center for Studies in Public Policy and Water
Resource Research Center
University of Arizona
plv@email.arizona.edu

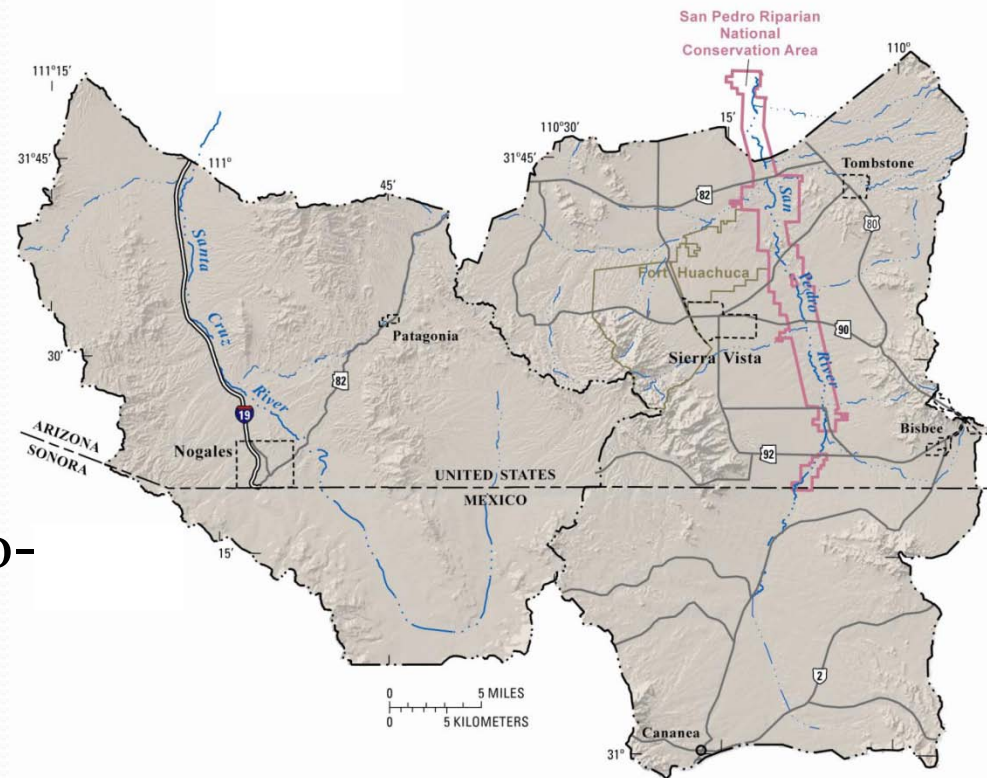
What is the Transboundary Aquifer Assessment Act?



- Authorizes the Secretary of the Interior to cooperate with the States on the border with Mexico and other appropriate entities in conducting a hydrogeologic characterization, mapping, and modeling programs for priority transboundary aquifers, and for other purposes.

What is the Transboundary Aquifer Assessment Act?

- In Arizona, both the Santa Cruz and San Pedro were designated as priority transboundary aquifers. The Act also designated the Mesilla Basin and Hueco Bolson (in the greater El Paso-Ciudad Juárez region) as priority aquifers.



Transboundary Aquifer Assessment Program- Arizona (TAAP-AZ)

- TAAP-AZ is a collaborative effort between the United States Geological Survey (USGS) and the Water Resource Research Center (WRRC), in conjunction with the Udall Center for Studies in Public Policy at the University of Arizona.
- TAAP-AZ (the transboundary Santa Cruz and San Pedro River aquifers) was recently designated a case study by the UNESCO International Shared Aquifer Resource Management (ISARM) program.
- A primary goal of TAAP-AZ has been to create a database of materials and references related to the Santa Cruz River transboundary aquifer.

The TAAP-AZ Database Project

- A stated objective of the Act is the evaluation of “*all available data and publications as part of the development of study plans*”.
- Thus, a first step in the assessment process has been the compilation of publications.
- The database is an inventory of reference materials, studies, reports, etc. related to the binational Santa Cruz River aquifer.
- Currently, the Santa Cruz database contains over 125 entries and is in the process of being fully translated (English/Spanish)

TAAP-AZ Santa Cruz Database Project

Themes of interest

- Hydrological Reports
 - Technical and Modeling
 - Aquifer properties and studies
- Geophysical/Geological
 - Mapping Products
- Quality Monitoring Reports
 - Industrial and urban development issues
- Management Studies
 - Water availability / budget

Keyword 1 ▾	Keyword 2 ▾	Keyword 3 ▾	Keyword 4 ▾
Riparian	Ecology	Botany	Effluent
Quality	VOC	PCE	
Quality	Bacteria	Nitrates	
Aquifer Properties	Pumpage		
Gravity	Geology	Storage	
Aquifer Properties	Pumpage		
Aquifer Properties	Pumpage		
Quality	Groundwater	Regulation	
Ambos Nogales	Soils	Geology	Erosion
Tumacacori	Geology	Petrography	Hydrothermal
Tubac	Soils	Geology	
Canelo Hills	Geology	Paleogeography	
Geology	Economics	Mining	
Sonoita Creek	Geology	Well Inventory	Alluvium Analysis
Atascosa Mountains	Geology	Mining	
Volcanism	Geology		
Ambos Nogales	Urban Growth	GIS	
Ambos Nogales	Watershed Analysis	GIS	
Sonoita Creek	Tectonism	Geology	Basin-Range
Mexico	Ejidos	Pumpage	
Mexico	Landsat	GIS	
Quality	GIS	Ecology	
Mexico	Modeling	Groundwater	
Quality	Quantity	Pumpage	Groundwater

TAAP-AZ Santa Cruz Database Project

Themes of interest- Examples of materials that fit specific themes

Hydrological Reports

- Shamir et al. 2005. “Generation and Analysis of Likely Hydrologic Scenarios for the Southern Santa Cruz River”. Hydrological Resource Center.
- Boyle et al., 2003. “Natural and anthropogenic factors affecting the structure of the benthic macroinvertebrate community in an effluent-dominated reach of the Santa Cruz River, AZ
- Earth Technology Corporation. 1990 “Water Quality Assurance Revolving Fund Phase I Report, Nogales Wash Study Area, Task Assignment E-3, Nogales, Arizona”.

TAAP-AZ Santa Cruz Database Project

Themes of interest- Examples of materials that fit specific themes

Geophysical/Geological

- Gettings et al., 1997. “Basin Geology of the Upper Santa Cruz Valley, Pima and Santa Cruz Counties, Southeastern Arizona”. USGS Open-File Report, 97-676
- Nelson, Keith. 2007. “Groundwater Flow Model of the Santa Cruz Active Management Area along the Effluent-Dominated Santa Cruz River, Santa Cruz and Pima Counties, Arizona”. Arizona Department of Water Resources.
- Comisión Nacional del Agua. 1997. “Diagnostico de las Condiciones Geohidrológicas de la zona Los Alisos-Santa Cruz, Nogales, Sonora”. Seismocontrol S.A. de C.V.

TAAP-AZ Santa Cruz Database Project

Themes of interest- Examples of materials that fit specific themes

Quality Monitoring Reports

- Hains, Charles. 1997. “Groundwater Quality Study of the Upper Santa Cruz Valley”. Arizona Department of Environmental Quality.
- International Boundary and Water Commission. 1998. “Binational Nogales Wash United States/Mexico Groundwater Monitoring Program”. <http://www.ibwc.state.gov/Files/Nogwashr.htm>
- Earth Technology Corporation. 1990 “Water Quality Assurance Revolving Fund Phase I Report, Nogales Wash Study Area, Task Assignment E-3, Nogales, Arizona”.

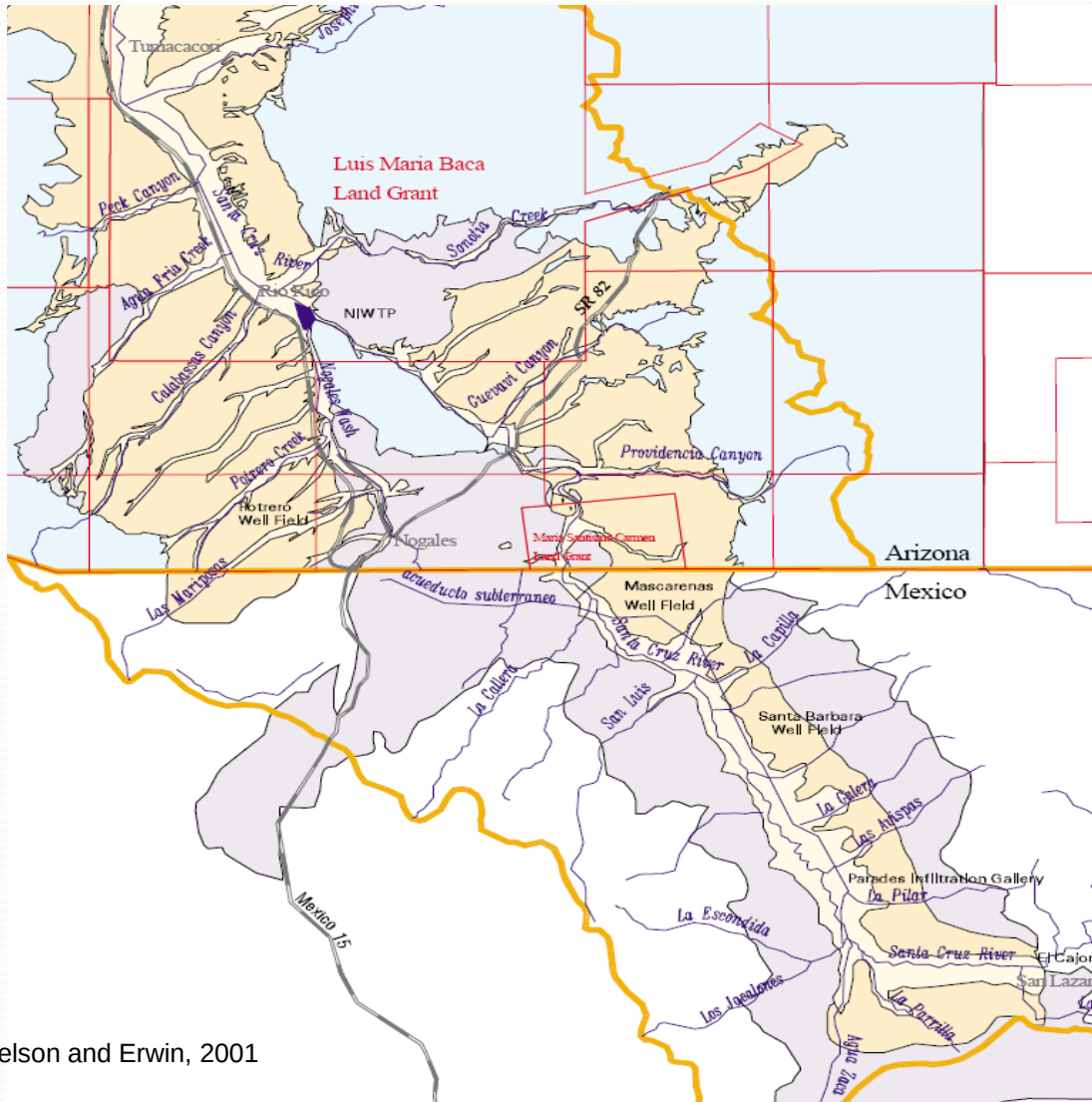
TAAP-AZ Santa Cruz Database Project

Themes of interest- Examples of materials that fit specific themes

Management Studies

- Gonzalez-Enriquez, Rodrigo. 1996. El Acuífero Transfronterizo de Ambos Nogales. Una Controversial Fuente de Abastecimiento de Agua Potable Compartida. IX Symposium Binacional de Geohidrología. Universidad Autónoma de Ciudad Juárez, Mayo 23 y 2 de 1996
- Halpenny, Leonard C. and Philip C. Halpenny. 1988. Review of the Hydrogeology of the Santa Cruz Basin in the vicinity of the Santa Cruz-Pima County line. Water Development Corporation, Tucson, Arizona.
- Sprouse, Terry W. 2003. Equitable Management of Mexican Effluent in Ambos Nogales. Journal of the Southwest 4(45).

TAAP-AZ Santa Cruz Database Project



- The majority of database materials collected so far focus on the following regions

- Paredes infiltration gallery
- Santa Barbara well field
- Mascareñas well field
- microbasins
- Nogales Wash
- Sonoita Creek
- Effluent reach

TAAP-AZ Santa Cruz Database Project

- The following locations have been visited
- 1. U of A Library and Academic Departments (Hydrology, Geosciences, etc.)
- 2. Arizona Department of Water Resources, Nogales, AZ
- 3. City of Nogales, Arizona
- 4. U.S. Bureau of Reclamation (Tucson office)
- 5. Friends of the Santa Cruz River
- 6. Organismo Operador de Agua Potable, Alcantarillado y Saneamiento (OOMAPAS), Nogales, Sonora
- 7. Comisión Internacional de Límites y Agua (CILA), Nogales, Sonora
- 8. Comisión Estatal del Agua (CEA), Hermosillo, Sonora
- 9. Universidad de Sonora, Hermosillo
- 10. Colegio de Sonora, Hermosillo
- 11. Comisión Nacional del Agua (CONAGUA), Hermosillo
- 12. Centro de Estudios Superiores del Estado de Sonora (CESUES), Hermosillo
- 13. plus a multitude of electronic (online) resources (ex. USGS publications)

Present status and next steps

- Draft database sharing has occurred
 - Potential collaboration with U.S.-Mexico Border Environmental Health Initiative (BEHI) of the USGS
- Database will continue to expand as more studies come to light
 - Ex. CONAGUA
- A product addressing similar topics in the binational San Pedro River is under development

TAAP-AZ Team Members

Dr. James Callegary
Arizona Water Science Center
United States Geological Survey
jcallega@usgs.gov

Dr. Sharon B. Megdal
Water Resources Research Center
University of Arizona
smegdal@cals.arizona.edu

Dr. Christopher A. Scott
Udall Center for Studies in Public Policy
and Department of Geography and
Regional Development
University of Arizona
cascott@email.arizona.edu

Prescott Vandervoet
Udall Center for Studies in Public Policy
University of Arizona
plv@email.arizona.edu