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Useful Lessons from Transboundary Water Efforts along the United States-Mexico Border

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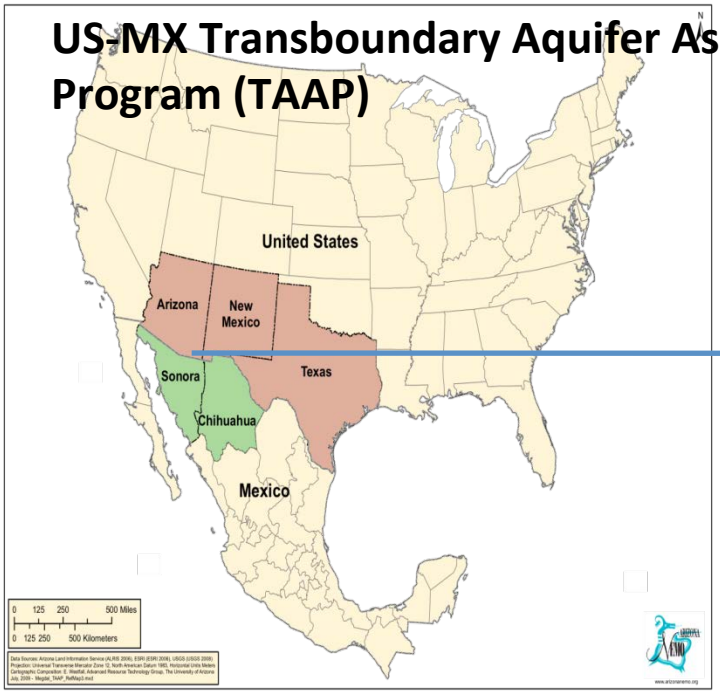
WATEC 2013 – 22 October 2013
Session on Managing the National Water Sector
Tel Aviv, Israel

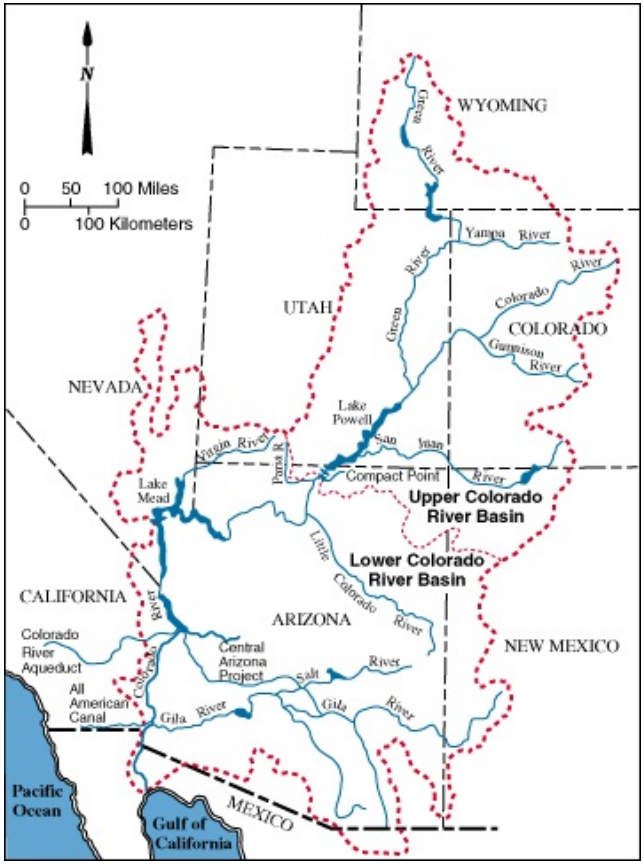
AZ transboundary aquifers and rivers

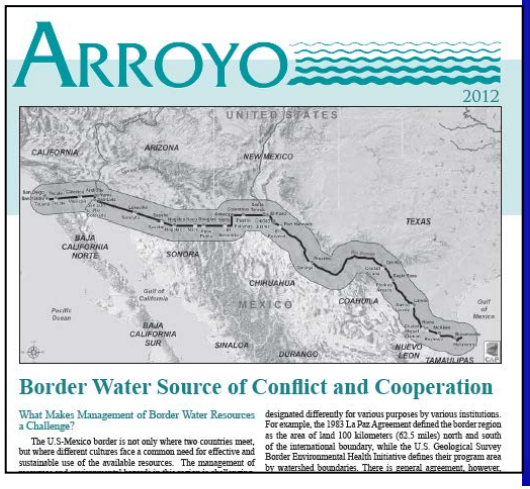
US-MX Transboundary Aquifer Assessment Program (TAAP)



My role…

Colorado River Basin



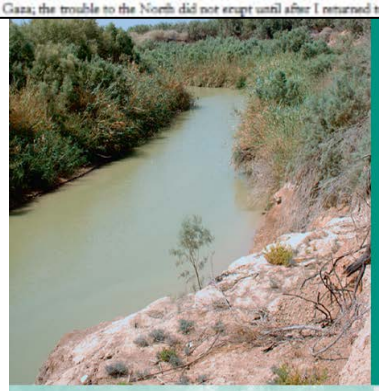


Transferability of water management and policy approaches and lessons learned (both + and -)

Public Policy Review by Sharon Megdal

Visit Shows Israel Faces Similar Water Management Issues as Arizona

I traveled to Israel this summer to present a paper at a conference and to meet with researchers and other water professionals to learn about Israeli water management and policy. My perception was that, while quite a bit of Arizona-Israeli collaboration on technical water issues seemed to have occurred, less had taken place in the social science and policy arenas. I hoped to build upon recent collaboration with an Israeli resource economist. My trip was extremely productive. Fortunately my travels were unaffected by the violence in Gaza; the trouble to the North did not erupt until after I returned to nation. I explained that desalination along coastal California has the potential to enable landlocked Arizona to gain more Colorado River water. Israel, like the United States, has long considered seawater desalination. Repeated droughts there have prompted a program to construct several plants over a five-year period to eventually deliver 315 million cubic meters of freshwater. With construction having begun in 2003, the plant in Ashkelon was built through a public-private partnership as a build-operate-transfer (BOT) facility. Fully operational in 2005, the plant produces 100 million cubic meters (approximately 81,100 af) of desalted water per year. It is a 20-minute process to produce fresh water. Also Israel shares Arizona's interest in removing salts from brackish groundwater, with projects underway in the south-



Shared Borders Shared Waters

Israeli-Palestinian and Colorado River Basin Water Challenges

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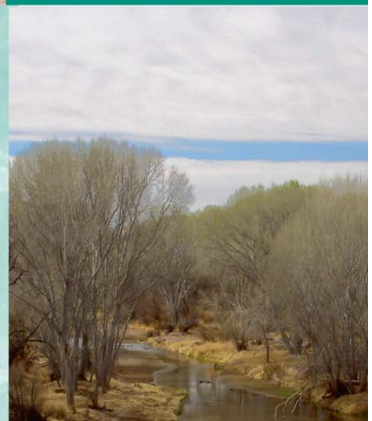


PUBLIC POLICY REVIEW

By Sharon B. Megdal

Israel Water Management Program Provides Rich Learning Experience

As regular readers of this column know, I've been speaking to the benefits of learning first-hand about water management in other parts of the country and world. During the first half of November, I had the pleasure of exploring water management in Israel with nine others from our region. Through seven days of site visits and interaction with top water experts, we learned about the region's successes as well as challenges. This uniquely designed Israel Water Management Program included stops at sites of historical water significance, tours of state-of-the art water treatment facilities, and stops at areas of environmental restoration and/or concern. The program

A major issue associated with inland desalination is disposal of the brine. The brine from the Granot plant is transported to the Mediterranean Sea. However, a plant located close to the conference site in the middle of the Negev desert far from the Mediterranean pumps the brine to evaporation ponds, which I saw during a field trip associated with the DDD conference. I was the only one on the tour bus super-excited to take a photo of the setting sun's reflection in the evaporation ponds; I've already used the photo in multiple presentations! The Yuma Desalting Plant was predicated on discharge of the brine to what is now known as the Ciénega de Santa Clara. As additional plants are built, Arizona will have to consider its options for brine disposal, which could include evaporation ponds. Time will tell if a possible disposal alternative is well injection, the mechanism employed at the Kay Bailey Hutchinson desalination facilities in El Paso, Texas, which I visited in late September.

US-MX Border Water Governance

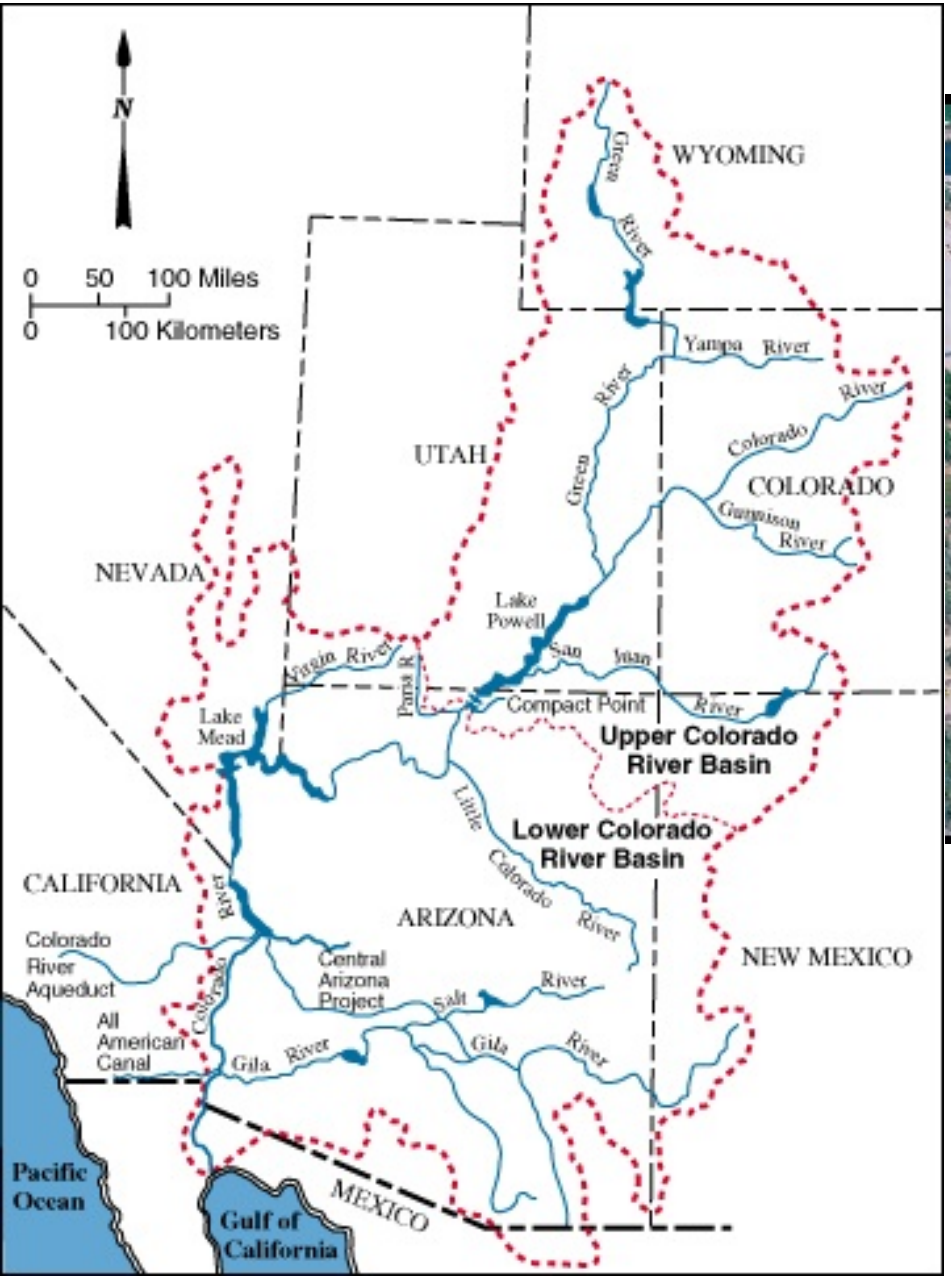
- US water governance is decentralized
  - By jurisdiction (federal government versus states)
  - By type of water
- MX water governance is centralized
- History of working two countries working together on surface water through the International Boundary and Water Commission (IBWC)
  - Example: Colorado River water management pursuant to the 1944 Water Treat and Minutes (clarifications) to it
- Transboundary wastewater treatment plants
  - Example: Nogales International Wastewater Treatment Plant, located in AZ, 2/3 of the wastewater being treated at the plant originates in Sonora, MX
- Less history working together on transboundary aquifers. The US-MX Transboundary Aquifer Assessment Program (TAAP) began in 2007.

The International Boundary and Water Commission (ibwc.gov)

MX Commissioner
Roberto Salmon

US Commissioner
Edward Drusina

Colorado River Basin



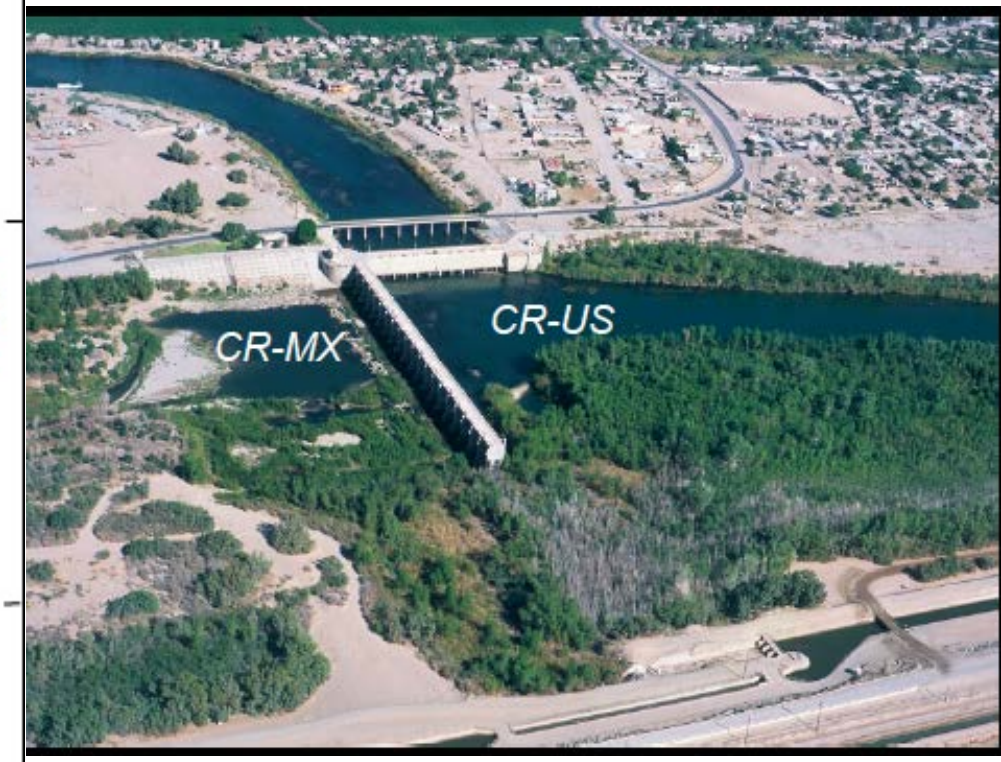


Photo – Courtesy of Yamilett Carillo

Map – Courtesy of the US Bureau of Reclamation

Minute 319: Historic agreement signed in November 2012 to share Colorado River shortage and surplus and address Colorado River Delta ecosystem

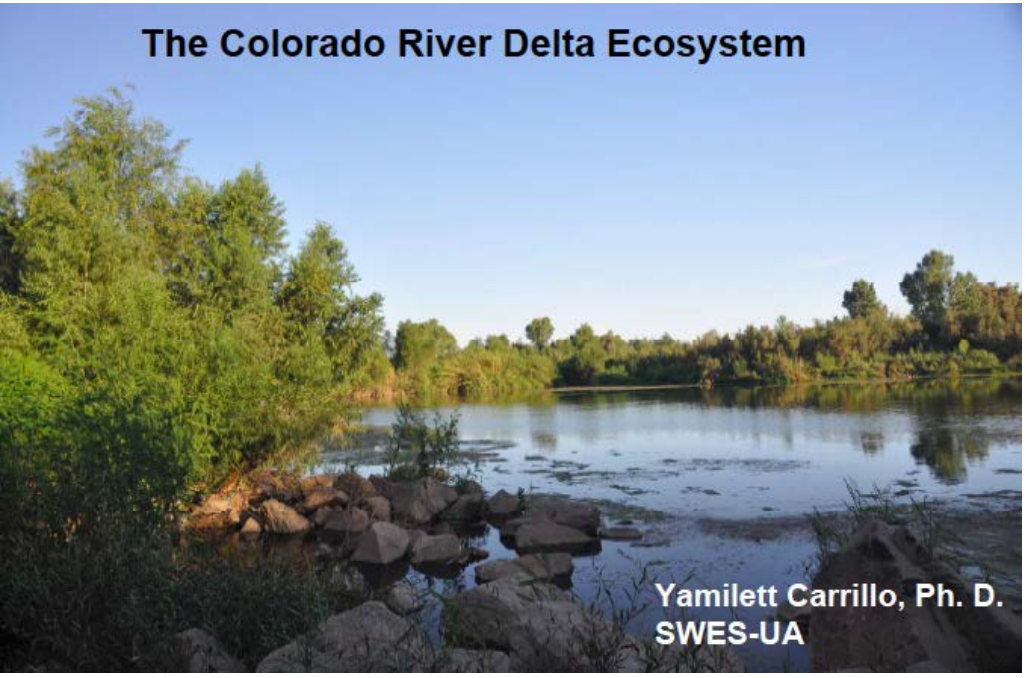


Photo Courtesy of Bryce Emily Megdal

Binational Colorado River issues are addressed through working groups at multiple levels

- Federal governments in lead role through IBWC
- US States advise US federal government
  - States receive advice from organizations within their states
- Working groups include environmental NGOs, who have particular interest in the health of the Colorado River Delta
- Decisions become official upon the signature of a Minute by the US and MX Commissioners of the International Boundary and Water Commission. Minute 319 is the most recent. Minutes 316, 317 and 318 also important.

What about Binational Groundwater Management and Governance?

The Arizona-Sonora portion of the Transboundary Aquifer Assessment Program (TAAP) includes two transboundary aquifers

Cooperative framework adopted by the IBWC in August 2009 has guided development of aquifer reports for the Santa Cruz and San Pedro aquifers

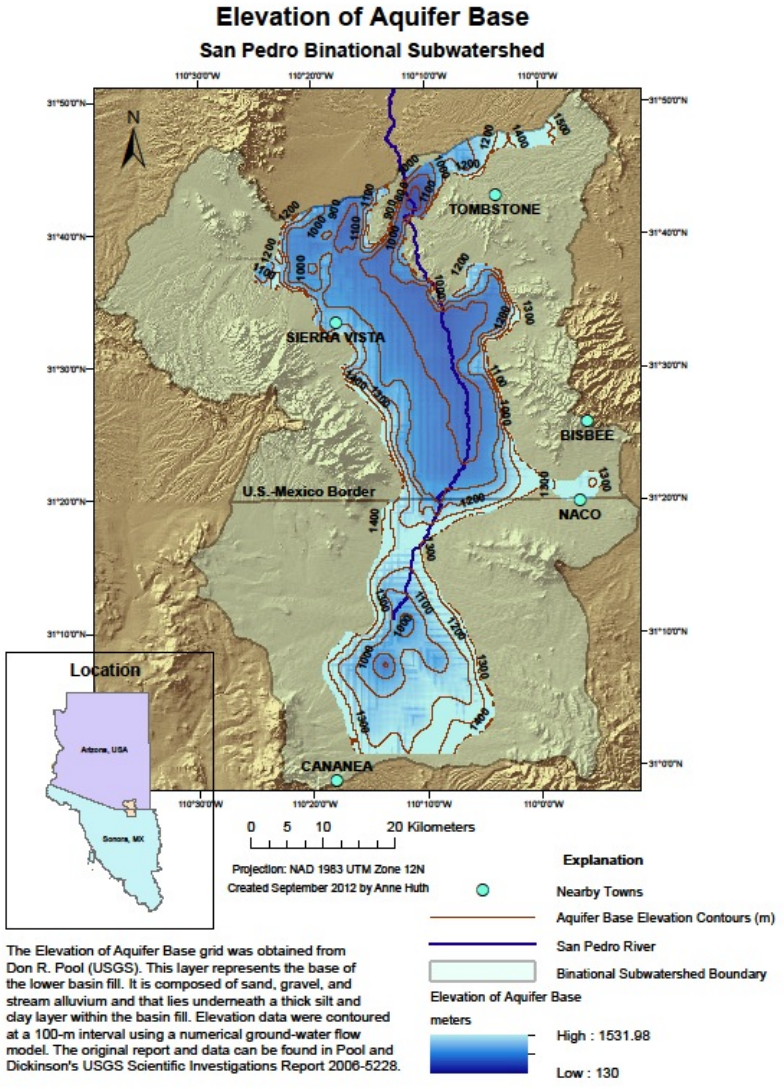
Development of the cooperative framework took considerable time.

Photo taken 19 August 2009

TAAP Workshop and Binational Advisory Committee meeting

Status of the binational reports

- Major technical reports for both aquifers along the Arizona-Sonora Border have been drafted. This, too, is historic.
  - Written as an integrated report, not side-by-side reports for the US and for MX (all written in Spanish first and now being translated to English)
  - Major collaborative mapping effort
  - Reviews will be completed before report is finalized and accepted for distribution by the IBWC
- Funding constraints on US side are hampering additional work



Cover page for English language version of one of two reports. Note logos.

www.arizona.edu/TAAP

SAN PEDRO RIVER AQUIFER BINATIONAL REPORT

July 22, 2013

CONAGUA

ARIZONA

USGS

The Transboundary Aquifer Assessment Program (TAAP) in Arizona-Sonora

Programa para la Evaluación de Acuíferos Transfronterizos en Sonora-Arizona

A U.S.-Mexico Scientific Collaboration

Una Colaboración Científica entre México y los Estados Unidos

The San Pedro River – El Río San Pedro
Source: Tana Koppel © The Nature Conservancy

Enhancing knowledge of binationally-shared water resources in the Arizona-Sonora Border Region

Mejorando el conocimiento de recursos hidraúlicos compartido binacionalmente en la Región Fronteriza Sonora-Arizona

THE UNIVERSITY OF ARIZONA · USGS · CONAGUA · UNIVERSIDAD DE SONORA

What is on the horizon for binational groundwater management?

- Several additional efforts, including work looking at climate change uncertainty and surface water-groundwater interactions, have been completed or are ongoing.
- Will the collaborative approach resulting in the preparation of the binational TAAP reports be helpful in managing the scarce groundwater resources in the border region, where there is less history of stakeholder engagement and joint management (no treaty)?
- Recognizing that some of the actors will differ, jurisdictions of different types/scales and/or addressing a different water sources (groundwater versus surface water) could benefit from the intensive and inclusive stakeholder engagement efforts employed for the Colorado River.
- Governance asymmetries make it difficult but not impossible to improve groundwater governance in this binational setting.

Some Lessons/Conclusions

- We all have complicated national water management situations that are more complicated by trans-jurisdictional boundaries. Commitment to resolving issues in a collaborative approach is important and was not always present in the past.
- There have been real changes in approach.
  - Sharing of surplus and shortage through Minute 319 on a trial basis (five years)
  - The environment is receiving more attention
  - More involvement of different stakeholders
- The importance of drivers and stresses
  - April 2010 earthquake
  - Shortage conditions along the Colorado River
- The importance of institutional mechanisms for interaction and collaboration

We would be happy to host or collaborate on a workshop/visit where we could get into these issues in greater detail.

Thank you!