



Little Colorado River



Cottonwood



Aravaipa Creek

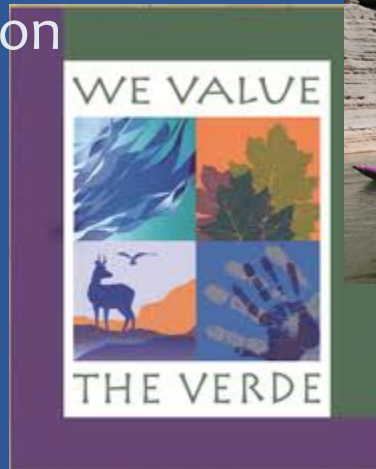
# WATER SECURITY CHALLENGES

Groundwater, rivers, environment



# ENVIRONMENTAL BENEFITS

- Arizona Heritage – tribal, ranching, farming, communities
- Ecosystem services
- Economic – recreation, tourism, fishing, etc.
  - \$3.4B generated from wildlife based recreation and birding
  - Increased land value near rivers
  - Sustainable economic development
    - Protection and conservation



Verde River

Photo courtesy of Verde Valley Wine Trail

# “The forgotten sector”

- ENVIRONMENTAL DEMANDS OVERLOOKED IN ARIZONA WATER LAW
  - INSTREAM FLOW RIGHTS – JUNIOR
  - SEVER AND TRANSFER – UNTESTED; PENDING APPLICATIONS
- ESA and FEDERAL RESERVED WATER RIGHTS
  - SAN PEDRO RIPARIAN NATIONAL CONSERVATION AREA
- DIFFICULT TO INCLUDE ENVIRONMENTAL DEMAND IN PLANNING AND WATER BUDGETS
- MODELING, MONITORING, COMPLEX GW/SW INTERACTIONS



Gila River - Gila Box Riparian  
National Conservation Area

# WHAT KEEPS ME UP AT NIGHT?

- HOW CAN THE NEEDS OF RIVERS AND RIPARIAN AREAS BE MET GIVEN INCREASING URBAN GROUNDWATER DEMAND, ESPECIALLY IN AREAS OF LIMITED ALTERNATIVE SUPPLIES



San Pedro River (photo courtesy of TNC) and Fort Huachuca



# CURRENT MECHANISMS

- DEMAND MANAGEMENT, EFFICIENCY, EFFLUENT REUSE
- LOCAL MANAGEMENT AND PLANNING
- SPATIAL MANAGEMENT THAT CONSIDERS VULNERABLE AREAS
- MITIGATION TO OFFSET REDUCTIONS IN GW BASEFLOW

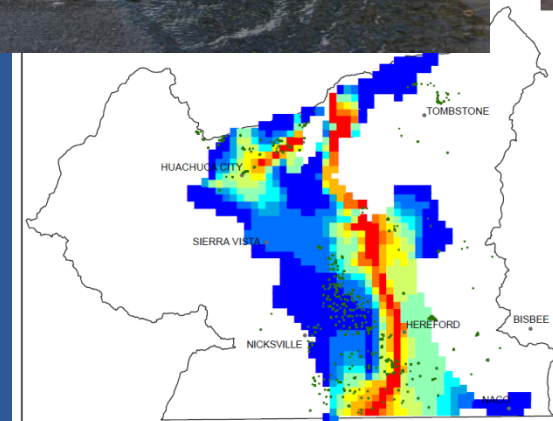


# REDUCING PUMPING/STRETCHING SUPPLIES - EFFICIENCY, DEMAND MANAGEMENT

- ARE “ALTERNATIVE SUPPLIES” HERE NOW THROUGH EFFICIENCY AND CONSERVATION?
  - STILL LOW HANGING FRUIT (pre-plumbing code houses, commercial)
  - “HARD-WIRED” CONSERVATION e.g. HE TOILETS
- RAINWATER HARVESTING
- URBAN RUNOFF
- SYSTEM EFFICIENCY
- FULL WASTEWATER UTILIZATION
- STRATEGIC PROGRAMS



Rainwater harvesting tank. Photo: Christina Bickelmann



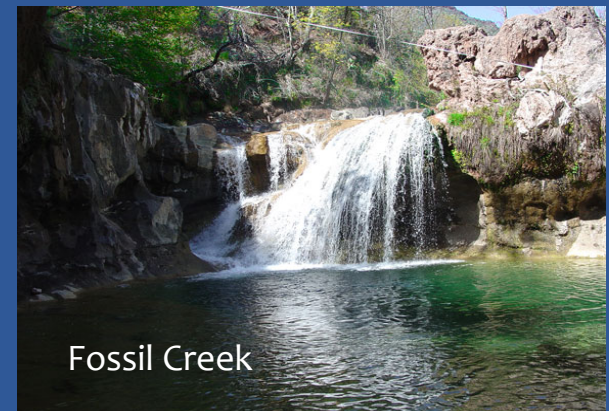
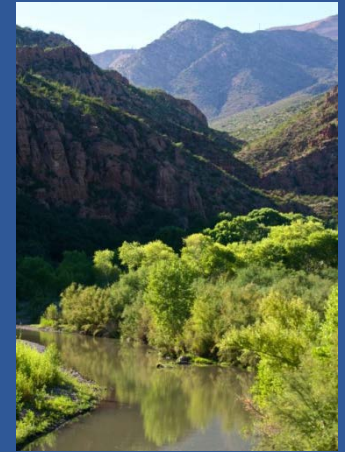
# ASSIGNING CONSERVATION SAVINGS TO THE ENVIRONMENT

- CONSERVE TO ENHANCE - Tucson
  - Pilot program allows customers to dedicate saved \$ from conservation to environmental restoration project
- RUSHING RIVERS - Colorado
  - Pilot program ties conserved water directly to increased stream flow
- WATER DEMAND OFFSET - Santa Fe
  - New development offsets demand >1:1
  - Water Bank
  - Some offsets could be assigned directly to benefit aquifer/river



# MANAGEMENT AND PLANNING

- CONSERVATION EASEMENTS
  - San Pedro River ag pumping and diversions
- LAND AND WATER TRUSTS and PRIVATE/PUBLIC AGREEMENTS
  - Willing landowner agreements e.g. forbearance, well location
- LOCAL PLANNING
  - Land use plans that preserve sensitive areas - SDCP
  - Sierra Vista Subwatershed Overlay Zone
  - Sustainability Goals



Fossil Creek



# MITIGATION/RESTORATION LOCALIZED ACTIONS

- *STRATEGIC RECHARGE*
  - Sierra Vista Effluent Recharge
    - 2000 af/yr buffers river from cone of depression
    - Improved river flow
  - Stormwater
    - Cochise County Palominas Recharge Project + others
- *IMPROVED OPERATIONS and RESTORATION*
  - Invasive species removal
  - Diamond S Ditch system automation @ Camp Verde/TNC
    - Improved safety and efficiency, reduced labor
    - Keeps more water in river, potential economic benefits to community

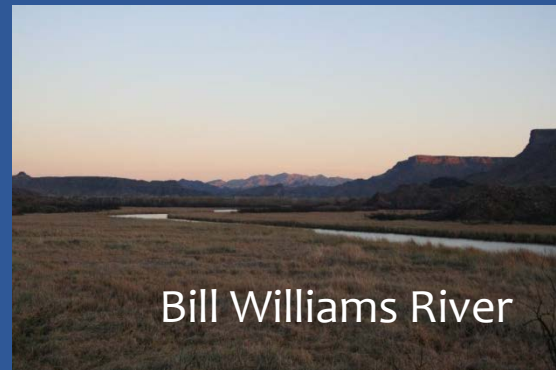


# IMPROVING SECURITY

- STREAMLINE/PROGRESS ON CURRENT WATER TRANSACTIONS (Sever and transfer) and PENDING INSTREAM FLOW APPLICATIONS
- PROCESS FOR WATER RIGHTS SETTLEMENT OUTSIDE ADJUDICATION
- INCLUDING ENVIRONMENTAL NEEDS IN PLANS – State lead
- WATER BANK FOR ENVIRONMENTAL PURPOSES – Allocation issue
- LIMITS ON NEW PUMPING/WITHDRAWALS TO ADDRESS PRIORITY ENVIRONMENTAL NEEDS
- EXPANDED CITIZEN/VOTER SUPPORT



Santa Cruz River



Bill Williams River



[linda.stitzer@westernresources.org](mailto:linda.stitzer@westernresources.org)  
[www.westernresourceadvocates.org](http://www.westernresourceadvocates.org)