Water Security From the Ground Up

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What Keeps You Up at Night

♪ Theme from Jaws ♪

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CENTRAL ARIZONA PROJECT SYSTEM MAP
LAKE HAVASU
MARK WILMER
SANTA MARIA RIVER
ALAMO LAKE
COLORADO RIVER
BOUSE HILLS
LITTLE HARQUAHALA
TONOPAH DESERT
HASSAYAMPA RIVER
HASSAYAMPA
HIEROGLYPHIC MOUNTAINS
LAKE PLEASANT
AGUA FRIA RIVER
WADDELL
AGUA FRIA
PHOENIX
SALT RIVER
VERDE RIVER
HORSESHOE RESERVOIR
BARTLETT RESERVOIR
SALT RIVER
ROOSEVELT LAKE
SAGUARO LAKE
CANYON LAKE
APACHE LAKE
SALT GILA
SUPERSTITION MOUNTAINS
GILA RIVER
SAN CARLOS RESERVOIR
CASA GRANDE
BRADY
PICACHO
RED ROCK
SAN PEDRO RIVER
MARICOPA COUNTY
PINAL COUNTY
LOWER SANTA CRUZ
TWIN PEAKS
SANDARIO
BRAWLEY
SAN XAVIER
TUCSON
SNYDER HILL
BLACK MOUNTAIN
PIMA MINE ROAD
PIMA COUNTY
SANTA CRUZ RIVER
ARIZONA
MEXICO
Colorado River
KINGMAN
FLAGSTAFF
PRESCOTT
PARKER
Central Arizona Project
PHOENIX
YUMA
TUCSON
CAP
3 COUNTY SERVICE TERRITORY
Recharge Project
Pumping Plant
Santa Rosa Canal
Central Arizona Project Canal
Maricopa-Stanfield Irrigation & Drainage District

Background / District Project

480 Square Miles - West of Casa Grande

Between Gila River and Tohono O'Odham Nations

87,000 Gross Acres (80,000 Farmable)
Canal System Completed in 1989
District Acquired Over 400 Operable Irrigation Wells in 1989
40-year Lease Agreements with Landowners

Canal System :

- Santa Rosa Canal: 56 Miles
  - Serves Ak-Chin Community & CAIDD
- East Main Canal: 17 Miles
- Lateral Canals: 130 Miles
- 193 Delivery Turnouts
- Entire Service Area Has Equal Access to CAP Water
- SCADA/ No Regulatory Storage

Groundwater System:

- Current Capacity: Over 400 cfs (140 Wells)
  - Capacity Lost to Development: 70 cfs (60 Wells)
- Current Production Capability: 150,000 AFA*
  - 80 Wells Connected to Canal System
- Uneven Distribution – Some Areas "GW Poor/Dry"

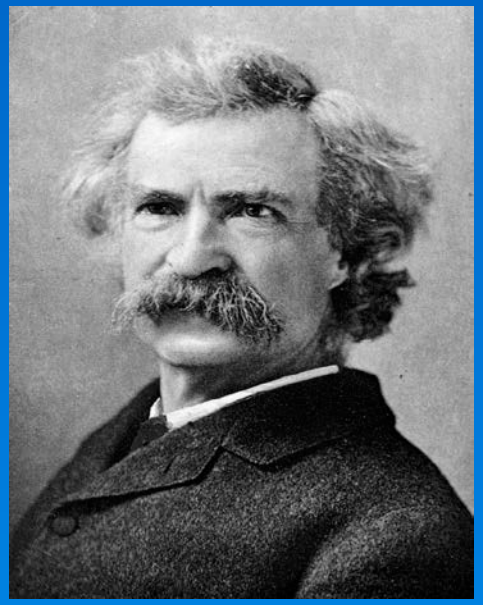
*Depends on Annual Demand and Well Location

Water Security

- Availability
  - Supply vs. Drought
  - Infrastructure - Source to User
- Affordability
- Certainty
  - Rights, Contracts, Settlements, Quality

"It ain't what you don't know that gets you into trouble. It's what you know for sure that just ain't so."

~Mark Twain~



What Keeps You Up At Night

- Aging Well Infrastructure

  ~Think Rusty~

- Government Regulation

  ~Think Layers~

- Competition for Water

  ~Think Boxing~

- Getting Ag's Message Out

  ~Think Infomercial~

Aging Well Infrastructure

140 Active » Base Production 150,000 AF

200 Inactive » Need 30,000 AF by 2017

Many Not Usable Due to Location/Condition

Most Wells are 40-50 Years Old

<u>Maintain Active Wells & Rehabilitate Standby Wells</u>

- Casing Deterioration = Big $
- New Well $600,000
  - Rehab Old Well $70k - $100k
- Production Capacity
- Energy Efficiency
- $/AF for Added Water

Government Regulation

- Energy Policy
  - NGS, EPA & the War on Coal
  - Cost of Additional Energy for Increased Pumping
    - Hoover Reallocation & Natural Gas
  - What Happened to Hydropower & Nuclear Power
- Environmental Policy
  - Clean Air & Clean Water Acts/ ESA
    - NGS/ Waters of the United States/ PM_{10}
    - Is the Standard Clean or Pristine?
- Cost to the Economy
  - Benefits vs. Cost – What are the Benefits?

Competition for Water

- Ag = Default Supply for Urban Growth
  - Population Movement from Water Rich to Water Scarce Areas
- Augment Supplies
  - Promise to Arizona Remains Unmet
- Public Policy
  - Preserve Water for What is Valued
  - Political Reality
    - Votes: East of Mississippi River
    - Bulk of Irrigated Ag, Public & Indian Lands: West of Mississippi River
- States Need to Reclaim Control
  - Who Controls Policy? – Local is Usually Better

Getting Ag's Message Out

- Water Security = Food Security
  - Food/Fiber for Global Population - 9 Billion by 2050
    - 3 Million Acres of U.S. Farmland Lost in 2012
- Economic Impact/Benefits
  - Reduction in Household Income Needed for Food
    25% in 1945 to 7% in 2011
  - $128 Billion to Household Income in 17 Western States
    $3-4 Billion Contributed by Arizona
- Societal Benefits
  - Open Space/ Greenbelts/ Buffer to Public Lands
    - Value Not Recognized in Income or Land Value
- Control of Water = Control of Output
  - Irrigated Ag 25% More Productive
  - Efficient Systems

“Trust, but Verify.”
~Ronald Reagan~