

WATER IN-SERVICE

AG WATER SHORTAGE DISTRICT RESPONSE – CENTRAL ARIZONA

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PRESENTATION OUTLINE

- Firm Introduction
- Suite of Professional Services
- Central Arizona Agriculture
- Districts Response to Drought
- Example Projects
- Emerging Practice
- Questions



Suite of Professional Services

- Agricultural Engineering
- Water Resources Engineering
- Civil Engineering
- Land Surveying
- Construction Administration



Agricultural Engineering

- Planning and Design for Rehabilitation and Modernization of Water Delivery Systems
- Irrigation District Urbanization Impacts Support
- Irrigation and Land Drainage Designs
- Irrigation Regulation and Storage Reservoirs
- Canal Hydraulic Studies
- Water Management Plans
- Canal Automation
- Agricultural Development
- On-Farm Improvements



Central Arizona Agriculture





Water Management Studies

- Water Management Plans – Drought Management Focus
- Water Balances
- Economics
- Engineering Analysis
- Phased Recommendations



Lake Mead Water Level Management

- Forbearance Program Participation by Irrigation Districts Will Leave Ag Pool Water In Lake Mead in 2016
- Falling Elevation and Participation Triggers Actions by Districts



Well Rehabilitation

- Well Rehabilitation to Make up for Lost Water in the Ag Pool
- New Well Construction
- Re-plumbing of Wells for Flexibility
- Pump Modifications
- VFD's
- Meter Management
- Private Well Construction



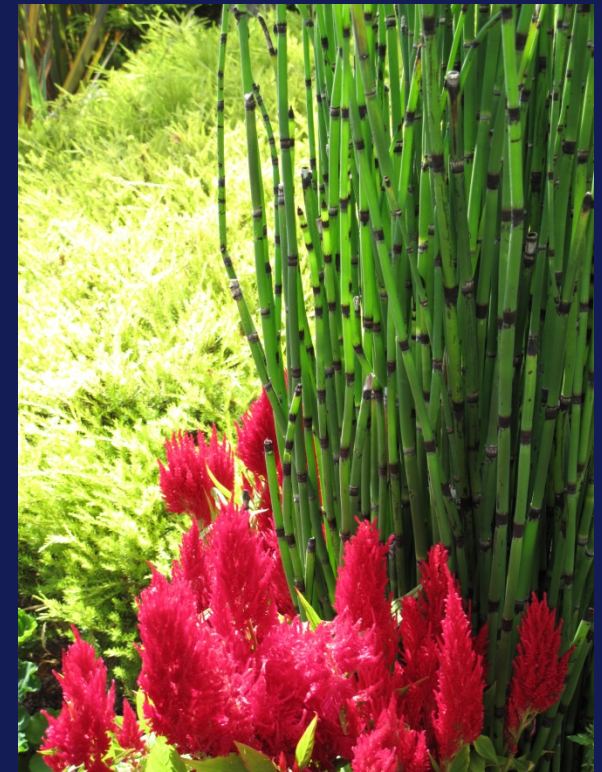
Groundwater Management

- Districts Participating in the Forbearance Program with GSF are Working With ADWR to Increase Storage to Offset Ag Pool Losses
- Increased Interest in Recharge
- Developing Partnerships that with storage benefits to the Districts



Partnerships

- Evolution of Water Management Ag Culture
- Districts/Landowners/Private
- NMID Private Drip Irrigation Study
- M&I/CAP/Mines/Tribes
- Tribal Partnerships – Gila River Water Storage Joint Venture (SRP and GRIC)



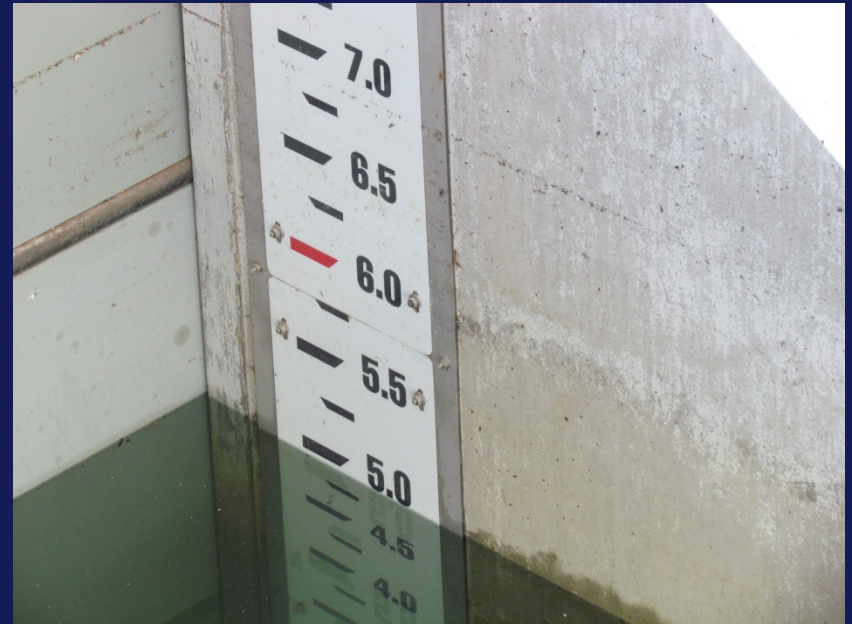
System Efficiency Improvements

- Modern Canal Controls
- System Improvements
- In-line and Off-line Storage
- Flow Measurement
- State of the Art Implementation



Flow Measurement

- Increased Use of Measurement
- Main Stem and Laterals
- Turnouts
- Spills
- SCADA Integration



BWCDD

- Canal Control Efficiency Improvements
- 1M Check Rehabilitation
- In-line Flow Control and Measurement
- Off-Line Storage Small Reservoir
- Raised Canal Banks
- Handles Flow Mismatches



BWCDD

- Canal Control Efficiency Improvements
- Project saves about 17,000 ac ft per year



CAIDD

- Canal Leakage Prevention
- State of the Art Sealants



EMERGING PRACTICE

P-MIP CASA BLANCA CANAL TCC

- 16 Mile Main Stem Lateral
- Design Flows 450 cfs to 40 cfs
- Measurement at all points of flow
- Volumetric Control Scheme
- Goal is to obtain no spill
- Most Sophisticated Reach of Canal in Arizona





EMERGING PRACTICE

UAV Aerial Technologies



Drones Uses

- Water Management Tool
 - Infrastructure Inspections
 - Real Time Data for Water Users
 - Advent of Bio Sensors
- In River Recharge Delineation Tool

QUESTIONS

