

Recovery Planning

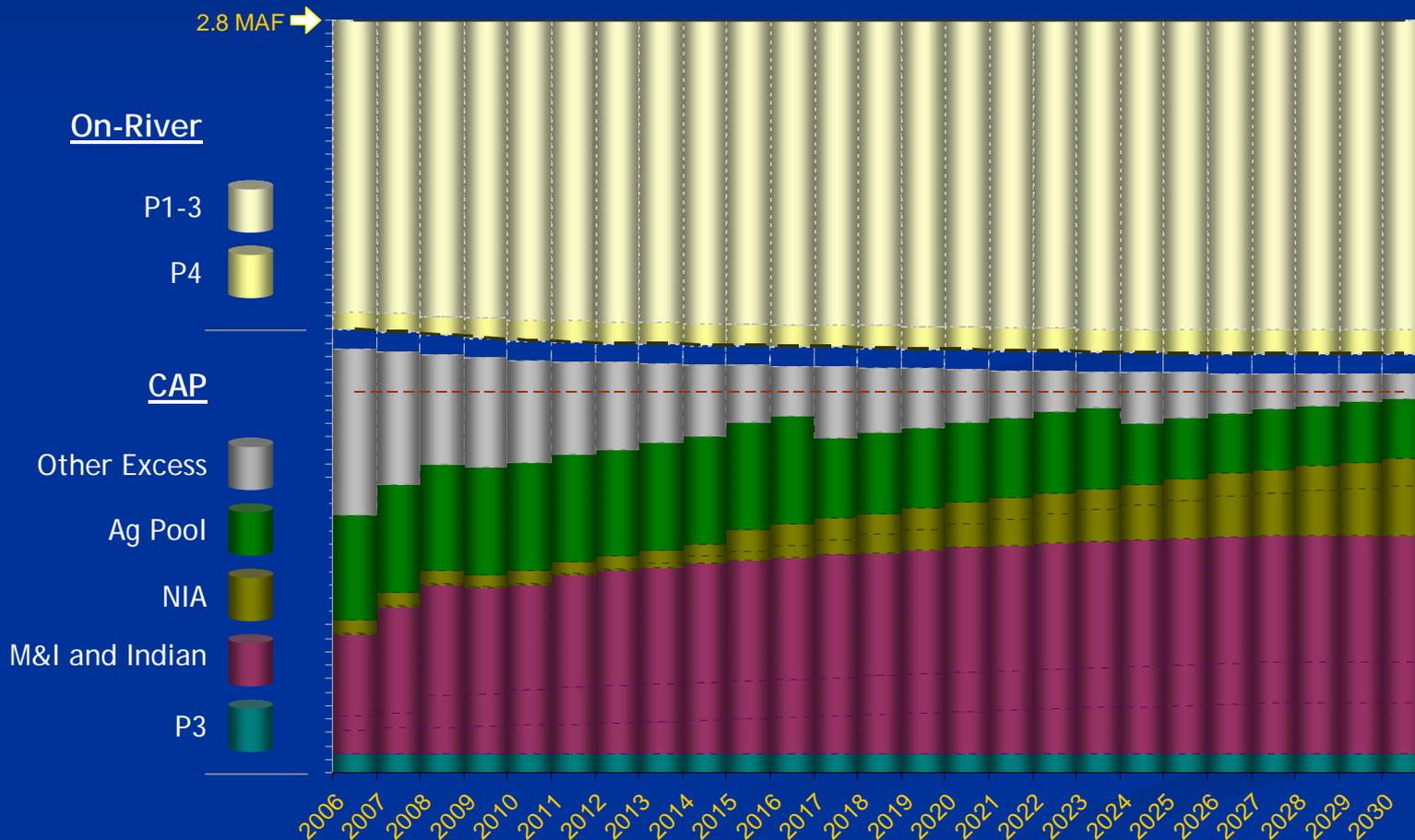


AWBA Work-Study Session
November 23, 2009

Demand Projections

“Most Probable” Scenario

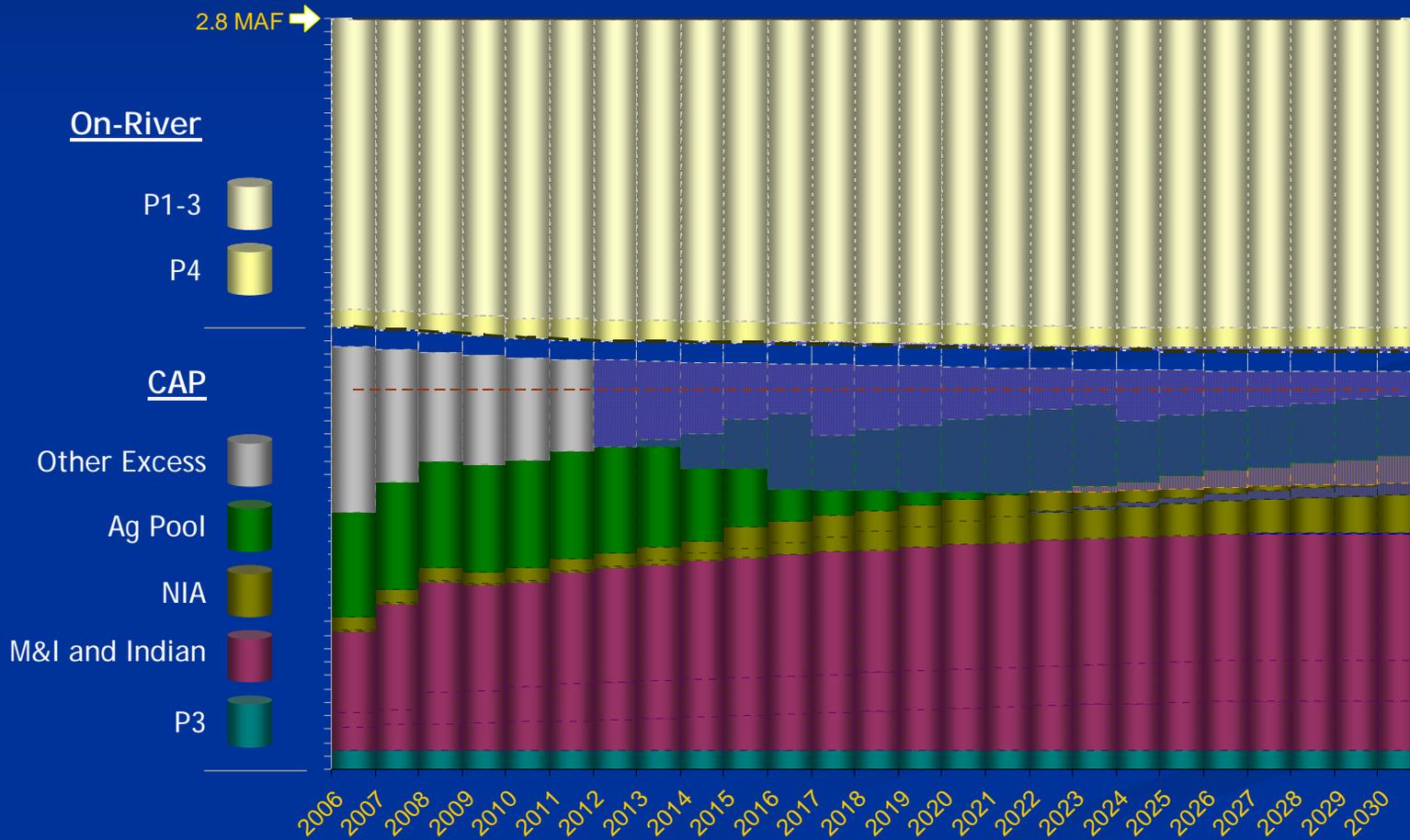
Steady Increase in M&I & Indian; Moderate NIA utilization; Moderate growth in On-River use



Demand Projections

“Most Probable” Scenario + “Deep & Sustained” Shortages

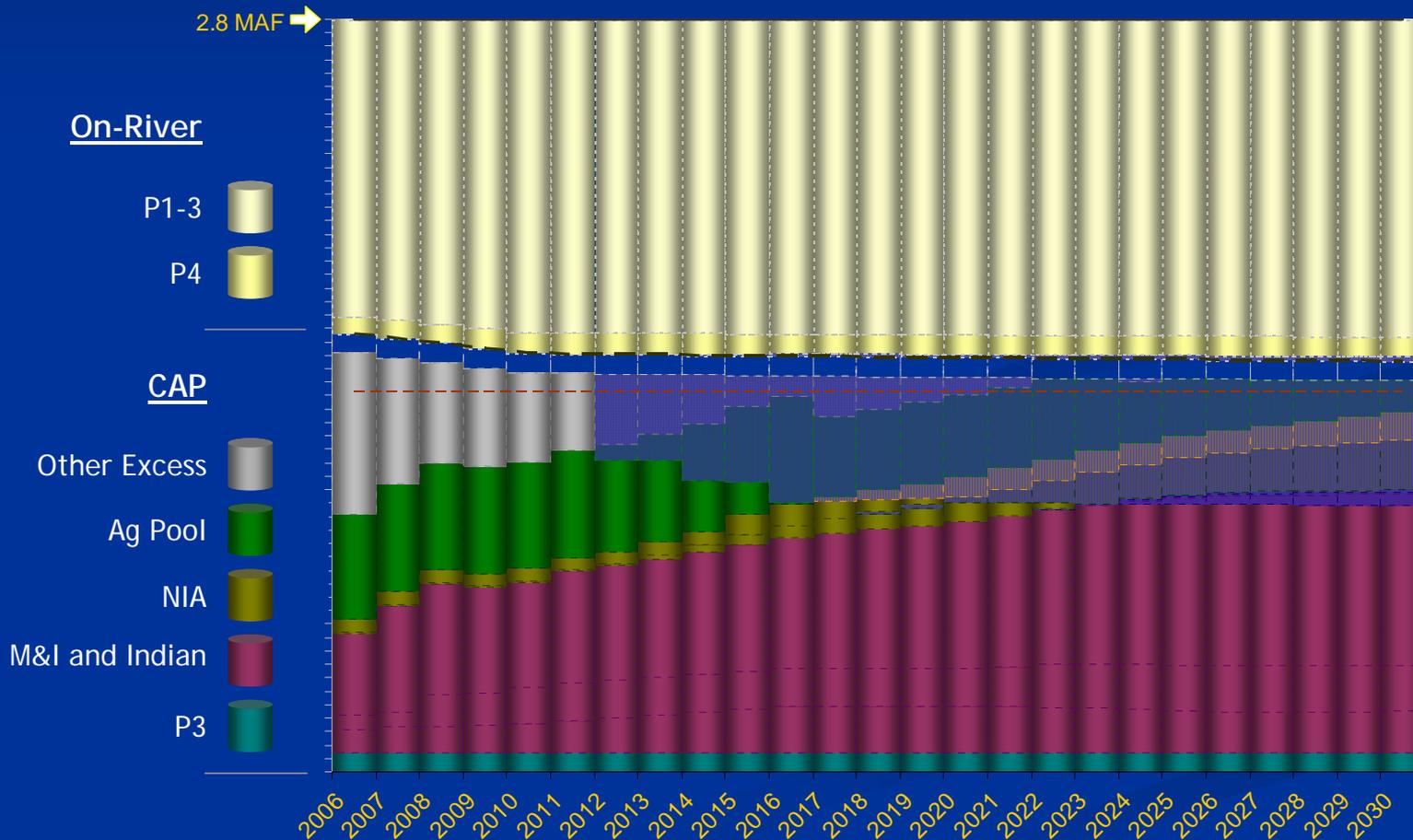
Steady Increase in M&I & Indian; Moderate NIA utilization; Moderate growth in On-River use



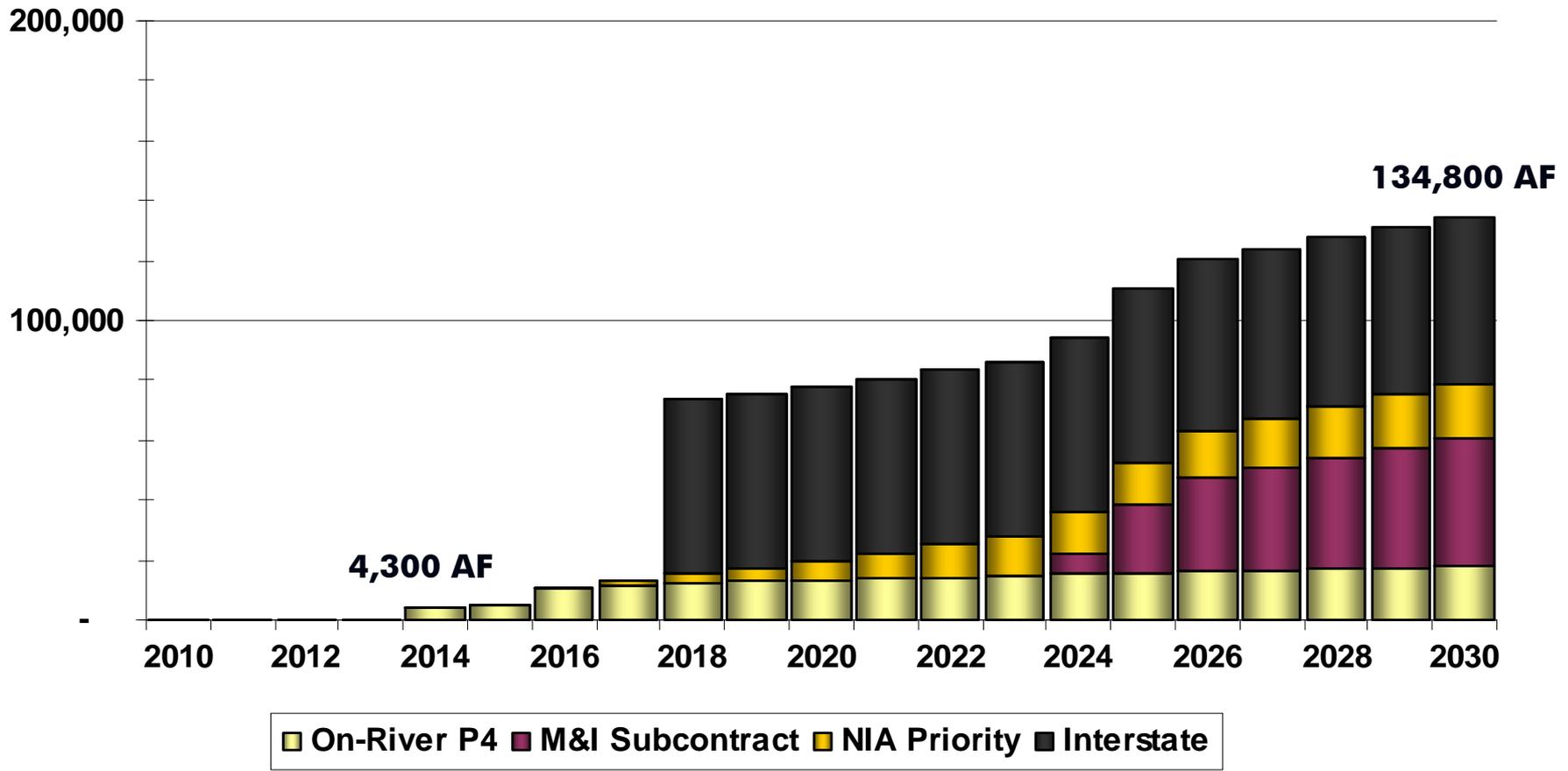
Demand Projections

“Rapid Buildup” Scenario + “Deep & Sustained” Shortages

Full M&I & Indian by 2030; High NIA utilization; Aggressive growth in On-River use



Projected Recovery Needs



Recovery Methods

- **Direct recovery**
- **Indirect recovery**
- **Credit exchange**

Direct Recovery

- **Stored water is pumped from wells permitted for recovery**
- **Recovered water is returned to the CAP system for delivery to a CAP customer**

Indirect Recovery

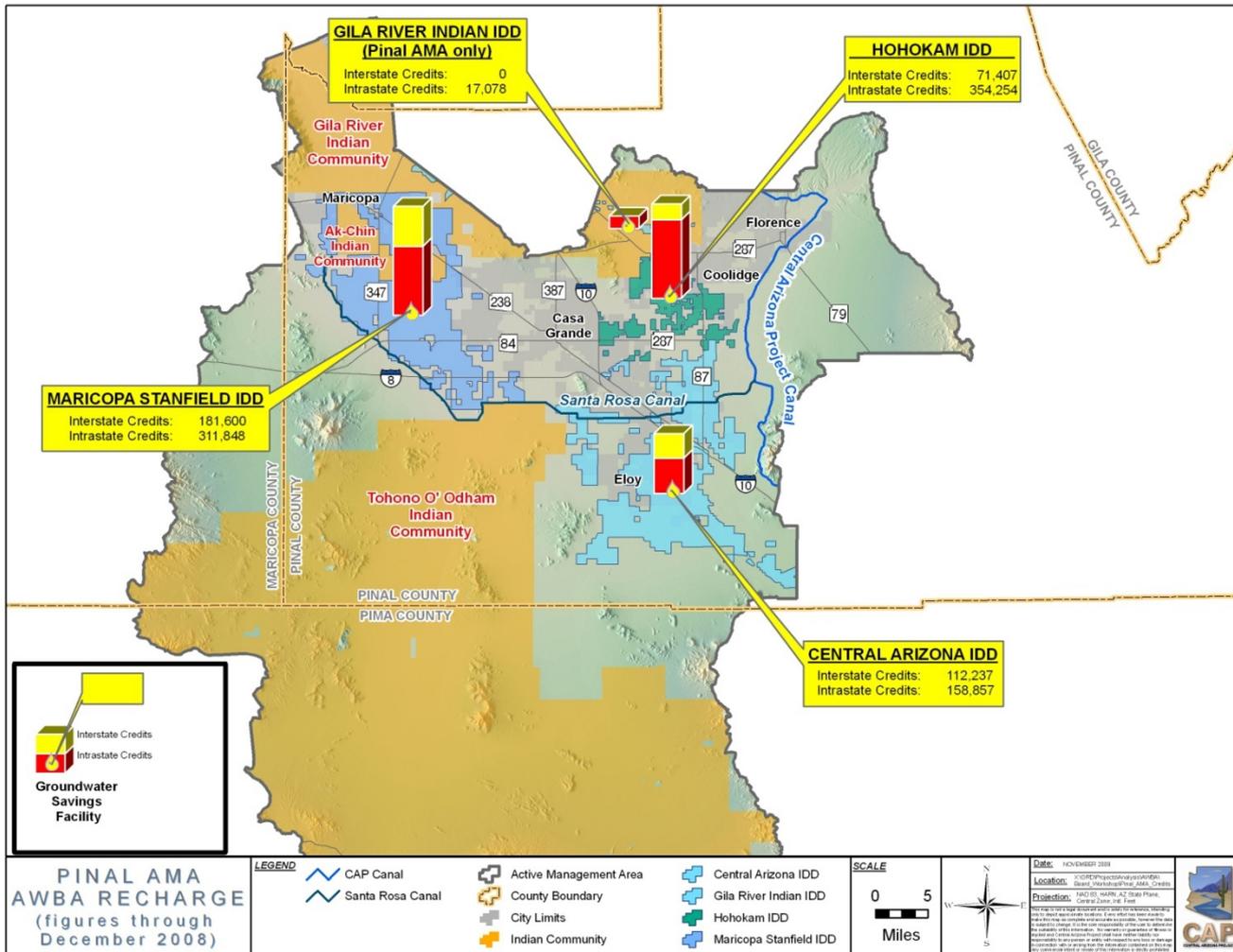
- **Stored water is pumped from wells permitted for recovery**
- **Recovered water is delivered directly to a CAP customer to fulfill a CAP water order**
- **Recovered water is not returned to the CAP system**

Credit Exchange

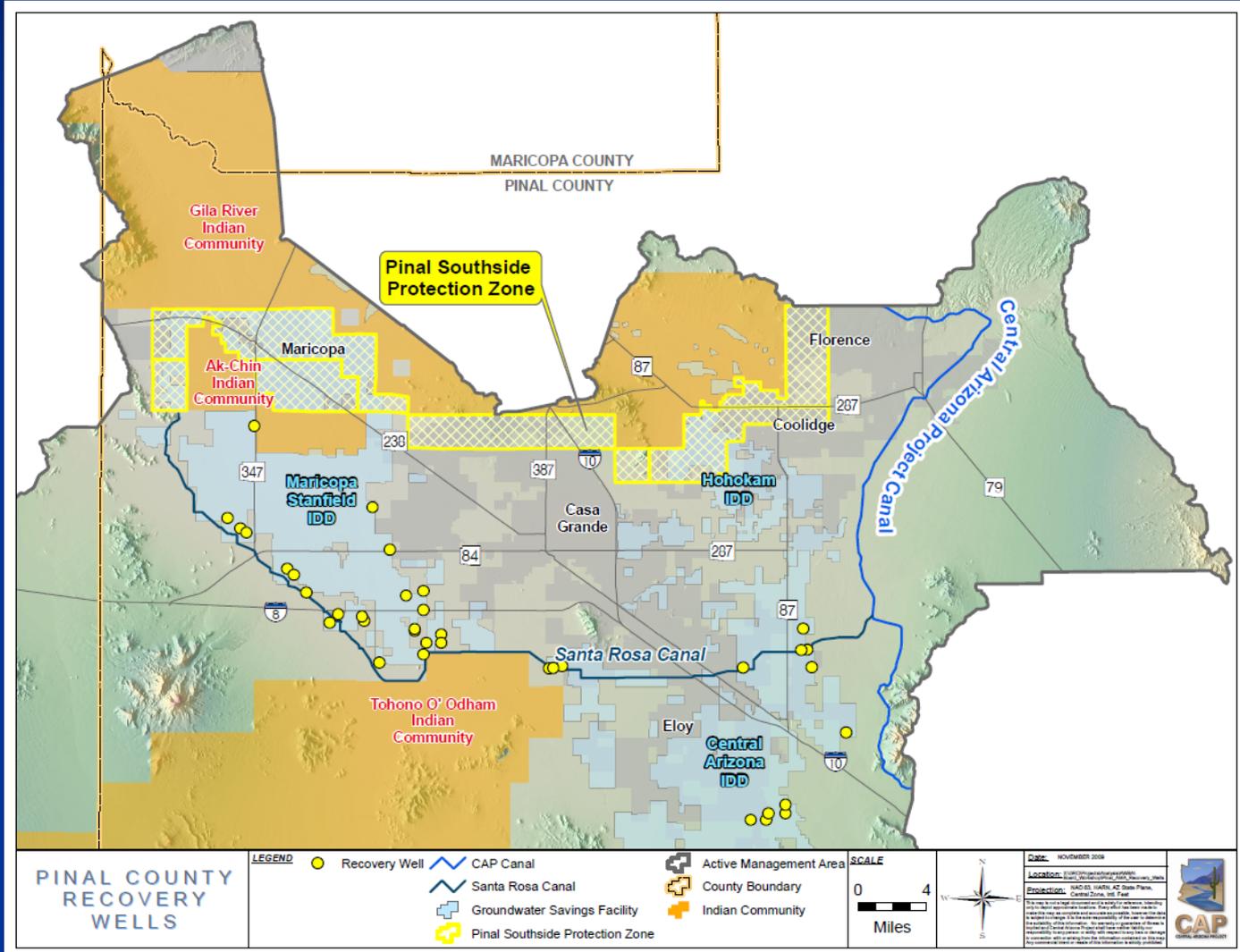
- **CAP customer has scheduled CAP water for delivery to an underground storage facility**
- **CAP assigns long-term storage credits to that customer in lieu of delivering CAP water**

Pinal AMA Recovery

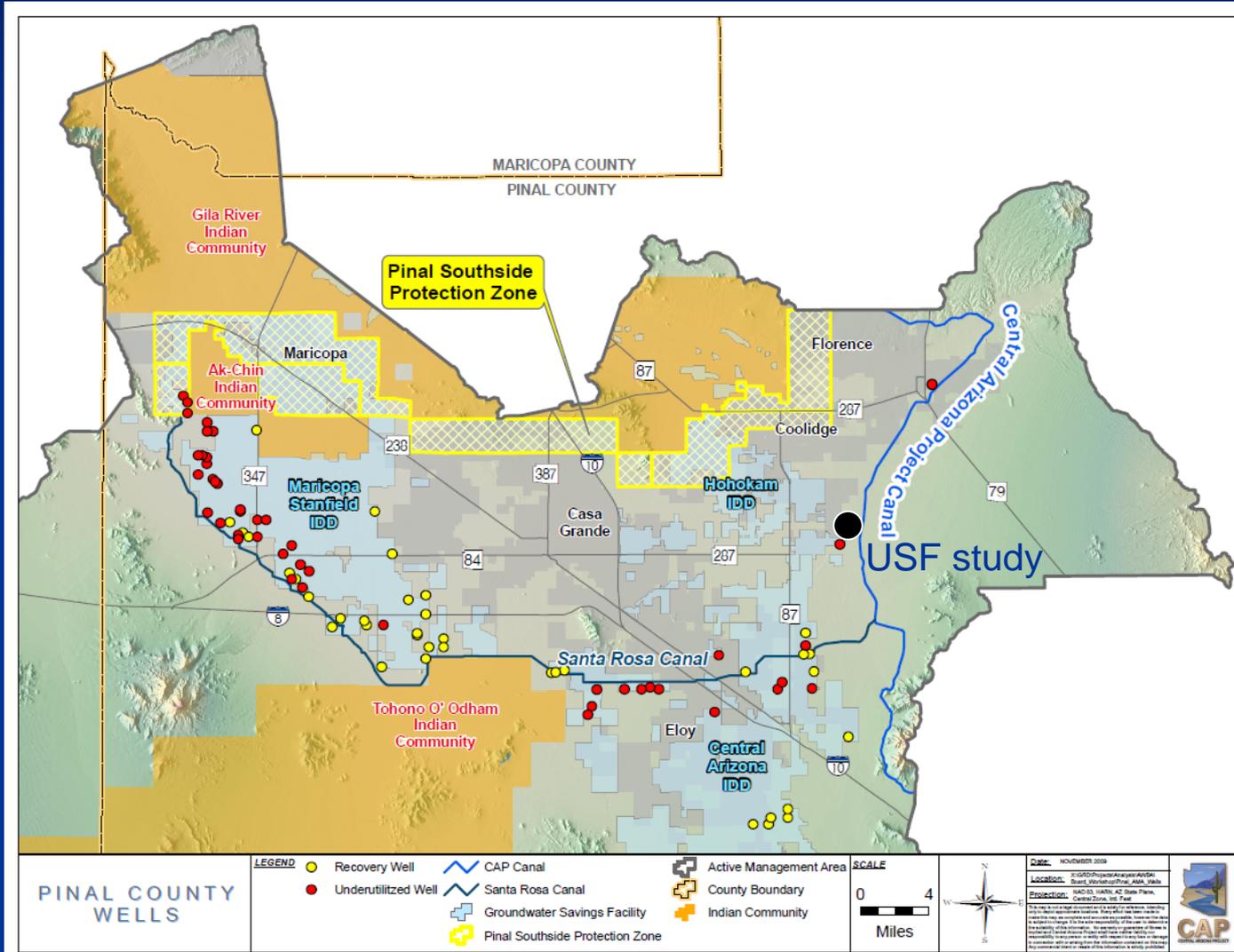
Pinal AMA AWBA Storage



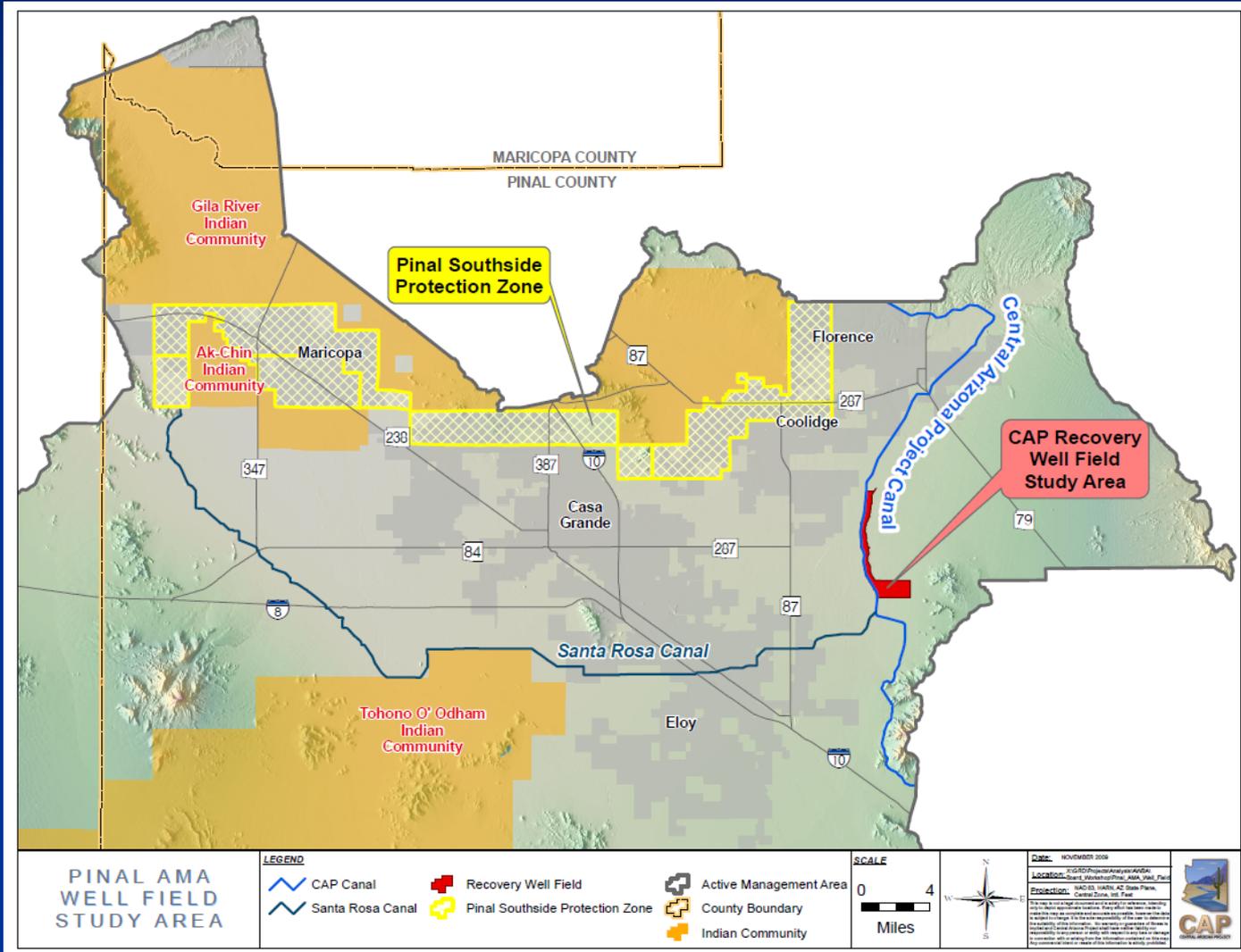
Existing Recovery Wells



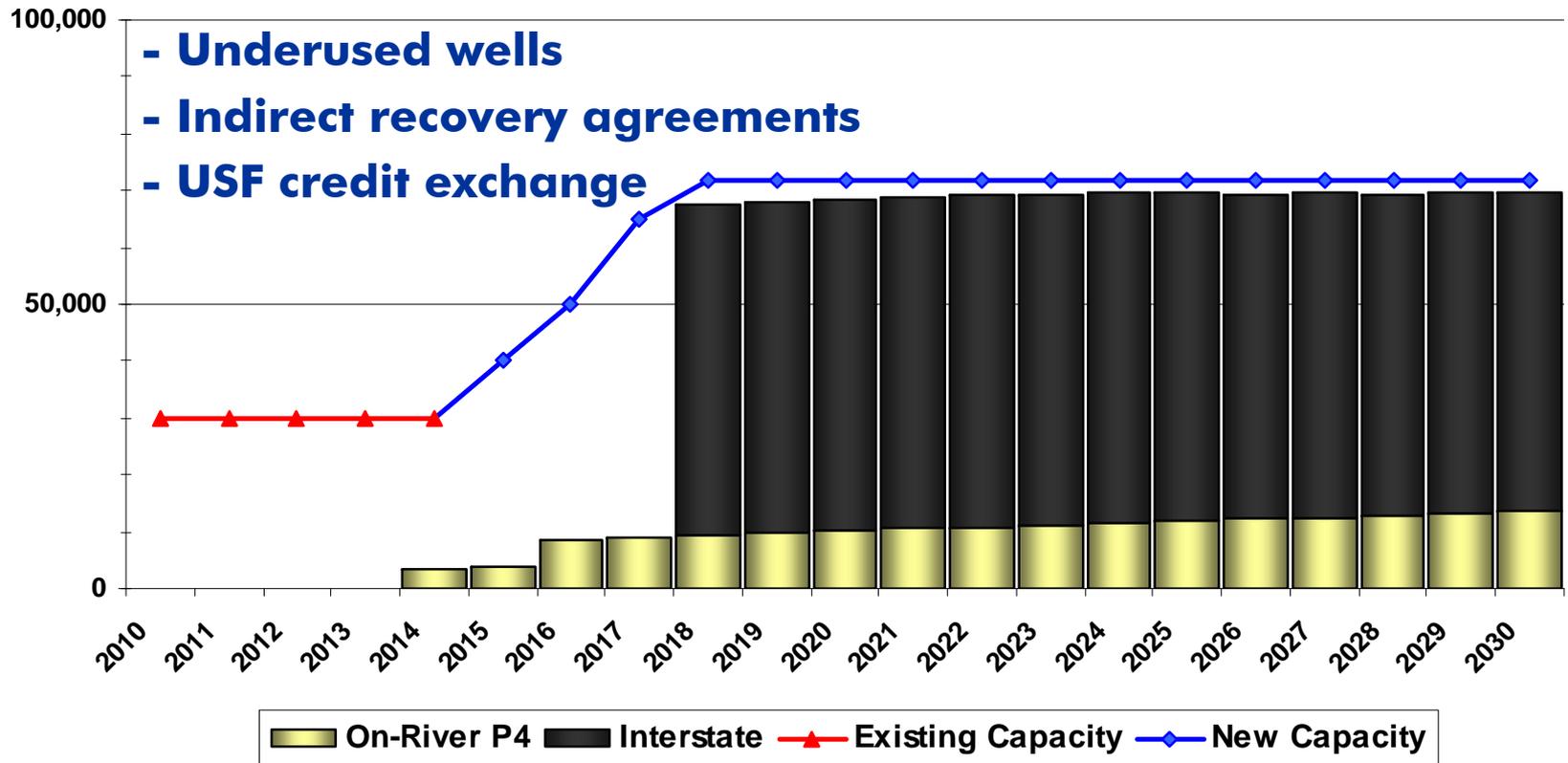
Underutilized Wells & USF Study



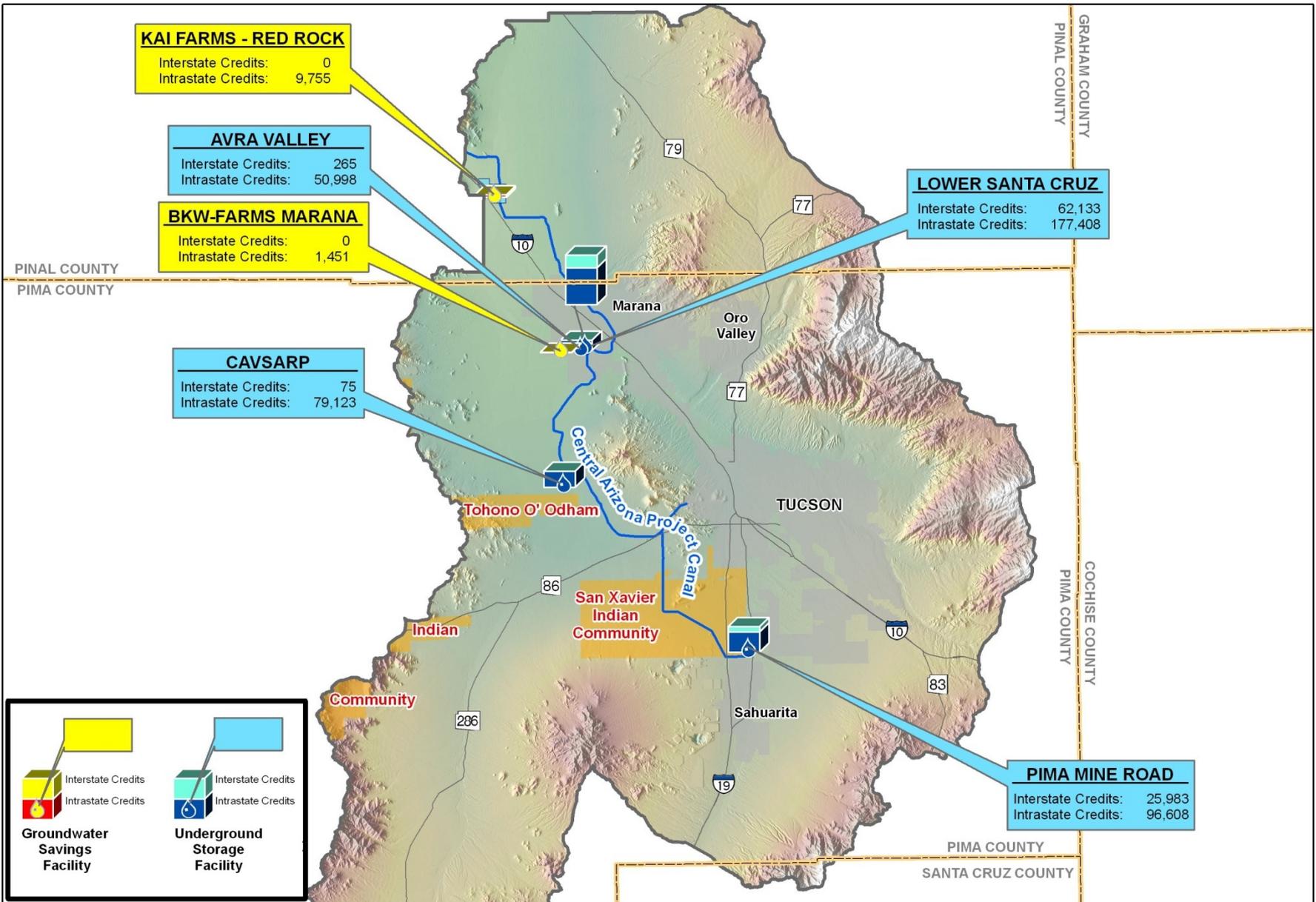
Groundwater Study



Pinal AMA Recovery Target



Tucson AMA Recovery



	Interstate Credits		Interstate Credits
	Intrastate Credits		Intrastate Credits
Groundwater Savings Facility		Underground Storage Facility	

**TUCSON AMA
 AWBA RECHARGE**
 (figures through
 December 2008)

LEGEND

	CAP Canal		Active Management Area		Kai Farms Red Rock
	County Boundary		City Limits		Indian Community

SCALE

0 5
 Miles

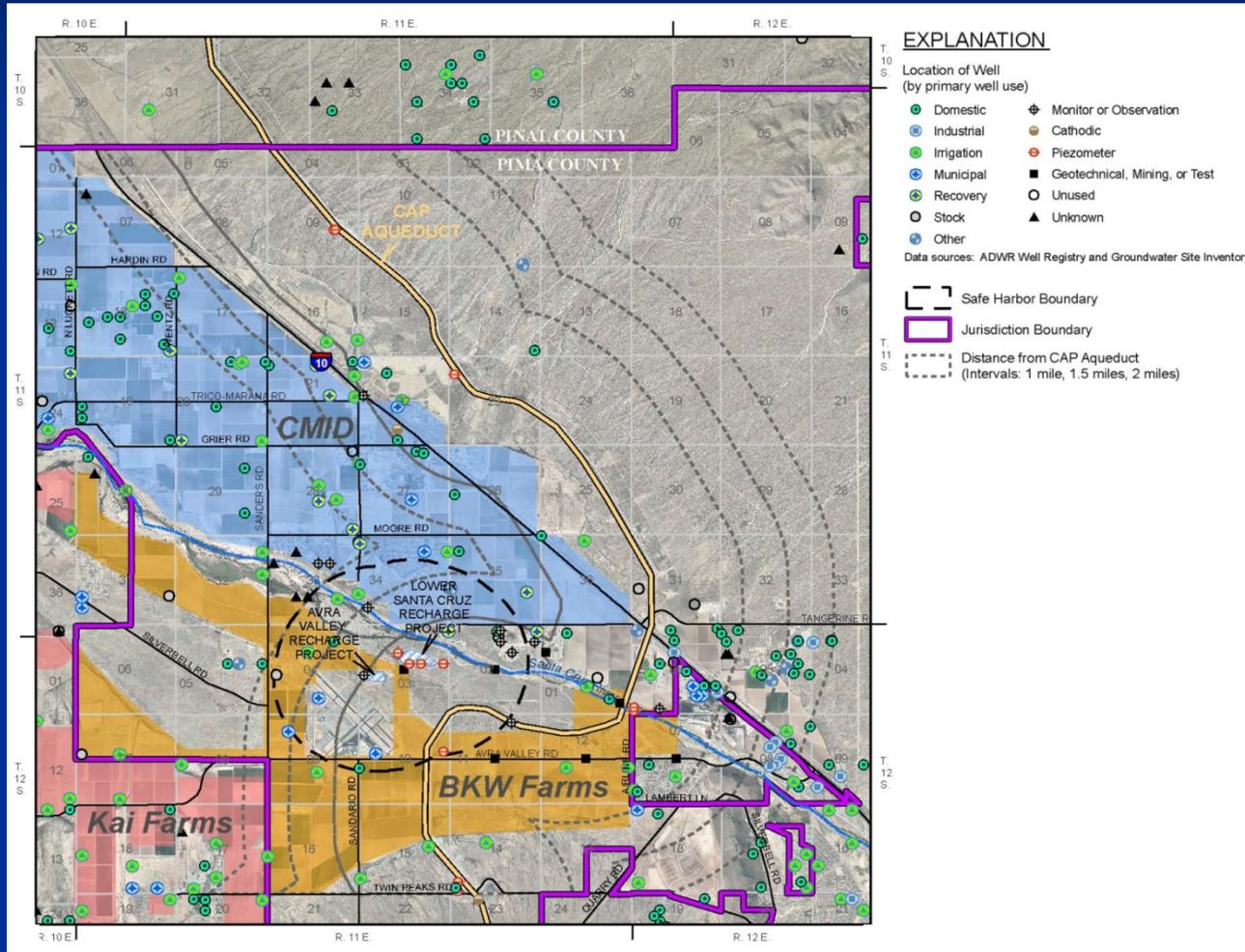


Date: NOVEMBER 2009
Location: X:\GRC\Projects\Analysis\AWBA\Board_Workshop\Tucson_AMA_Credits
Projection: NAD 83, HARN, AZ State Plane, Central Zone, Intl. Feet

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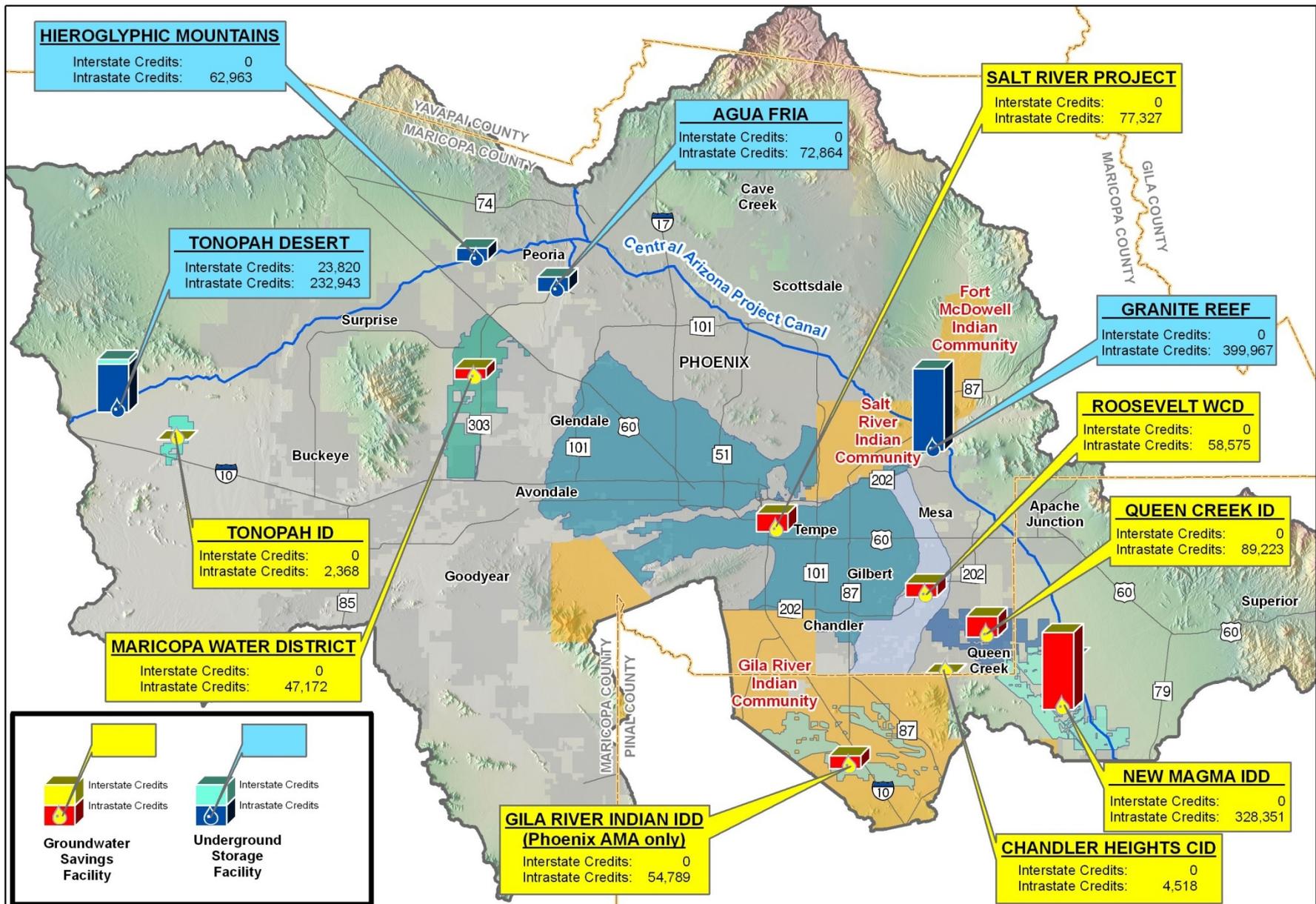
Locations of Wells and Proximity to CAP



LSCRP and Safe Harbor Area



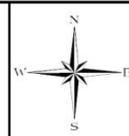
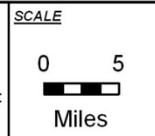
Phoenix *AMA* Recovery



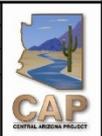
**PHOENIX AMA
AWBA RECHARGE**
(figures through
December 2008)

LEGEND

- CAP Canal
- Active Management Area
- Chandler Heights CID
- Queen Creek ID
- County Boundary
- Gila River Indian IDD
- Roosevelt WCD
- City Limits
- Maricopa Water District
- Salt River Project
- Indian Community
- New Magma IDD
- Tonopah ID



Date: NOVEMBER 2009
 Location: X:\GFD\Projects\Analysis\AWBA\Board_Workshop\Phoenix_AMA_Credits
 Projection: NAD 83, HARN, AZ State Plane, Central Zone, Intl. Feet



Tonopah Desert Recharge Project

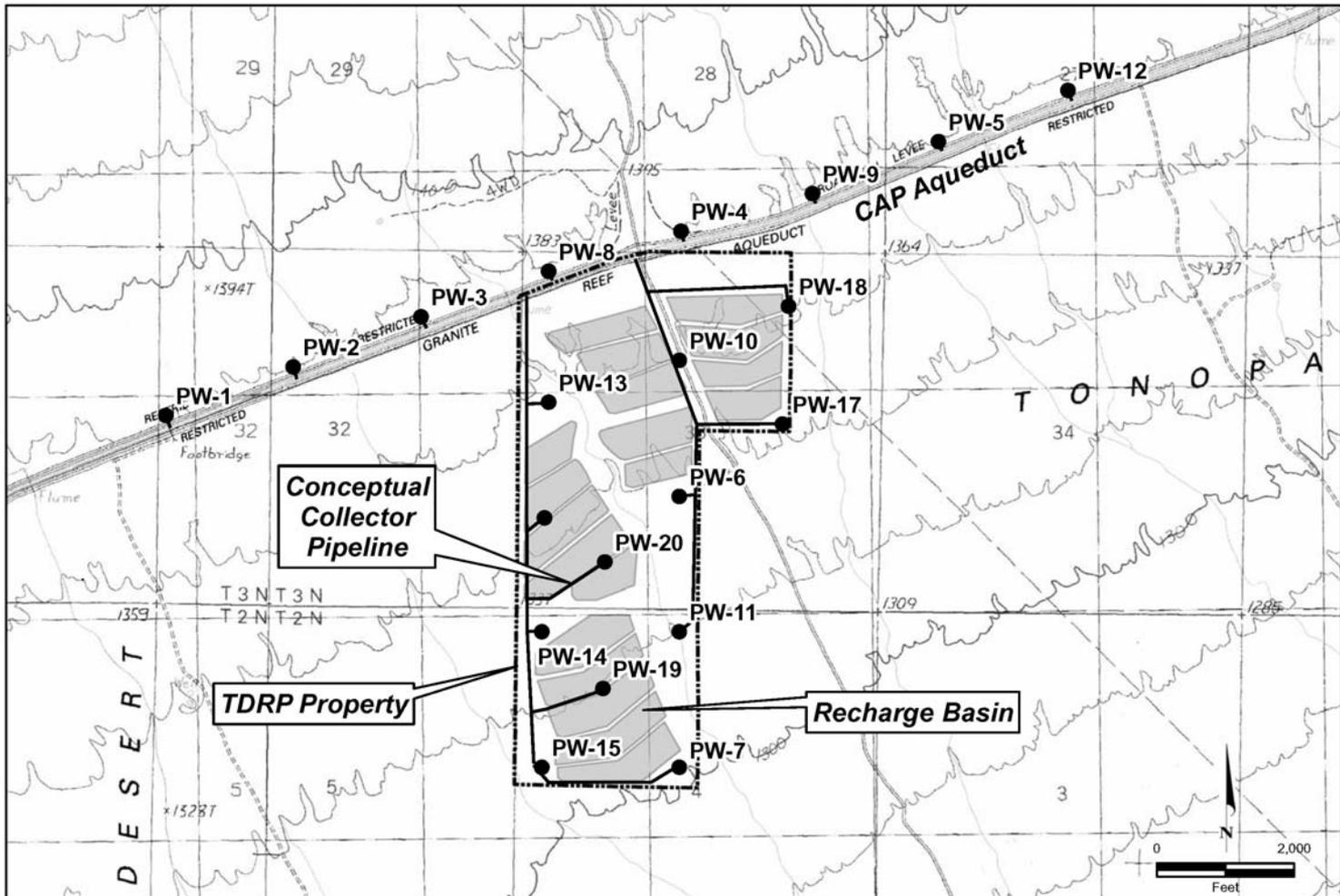


TDRP Recovery – Modeling Results

Results of Phase 1 study were highly favorable for locating a regional recovery well field at TDRP; physical recovery of the water is feasible

- **Optimal test design was 20 wells plus a collector system**
- **TDRP can easily recover 100,000 AF per year**
- **The entire permitted capacity of 2,000,000 AF could be recovered after 20 years of recharge**
- **Capital costs in today's dollars: \$28.5M**
- **Impacts of drawdown after 20 years of intensive recovery would be centralized in recovery well field**

TDRP Recovery Well Layout 20-Well Alternative



TDRP Recovery – Phase 2

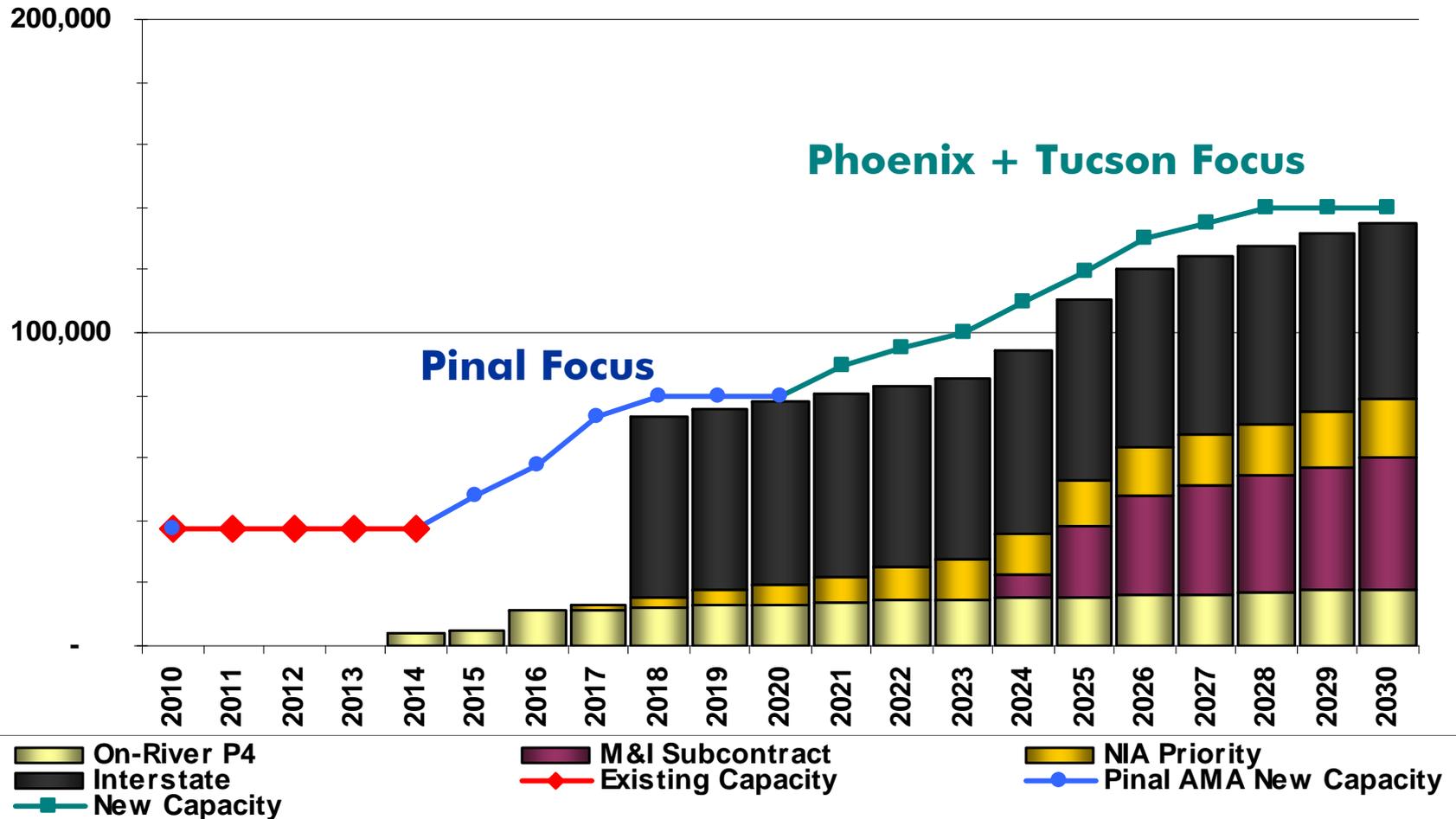
A Phase 2 Study is needed to obtain critical information and complete a more realistic well field design and pumping criteria. The follow up study would include:

- **Drilling deep test wells to examine deep level water quality and aquifer production. Test wells could be used for recovery wells.**
- **Evaluate power sources and costs for constructing transmission infrastructure.**
- **Evaluate impacts of aggressive pumping in relationship to subsidence.**
- **Evaluate uplift resulting from recharge activities.**
- **Conduct additional aquifer modeling using new information from the test wells.**
- **Develop alternative recovery designs, including well field reconfiguration.**

Summary

- **CAP currently has about 40,000 AF of recovery capacity, mostly in Pinal AMA**
- **Existing capacity is sufficient to meet all recovery needs until recovery for Nevada starts (est. 2018)**
- **No shortage to CAP M&I until at least 2024**
- **Plans to expand recovery capacity (time frame):**
 - **Pinal AMA (2015-2018) – Obtain recovery permits for existing underutilized wells; indirect recovery agreements**
 - **Tucson AMA (2020+) – Indirect recovery agreements; credit exchange; LSCRIP recovery facility**
 - **Phoenix AMA (2020+) – TDRP recovery facility; indirect recovery agreements; credit exchange**

CAP Recovery Capacity Plan



Questions?