



Briefing for
Delta Vision Blue Ribbon Task Force
Water Supply Reliability – Groundwater Banking
March 21, 2008

- Water Supplies, Demands, and Kern County Water Agency
- Groundwater Banking in Kern County
- Challenges and Solutions



Major Water Systems in California





Background

State Water Project Supplies

KCWA is the largest agricultural State Water Project (SWP) contractor, and the third-largest urban SWP contractor.

KCWA's annual SWP contracted Table A supply is about 1,000,000 acre-feet/year. (880,000 af/yr Ag, 119,000 af/yr M&I)

KCWA represents about 25% of the SWP.





Kern County Water Sources

Average Year

	<u>Percent</u>	<u>AF/Year</u>
Kern River	21%	700,000
State Water Project ¹	21%	700,000
Federal (CVP)	12%	400,000
Local Streams and other sources	15%	500,000
Groundwater		
<i>Landowner/Districts (Basin)</i>	32%	1,100,000
<i>In-County Banking</i>		
Conservation/Fallowing		
TOTAL	100%	3,400,000 ³



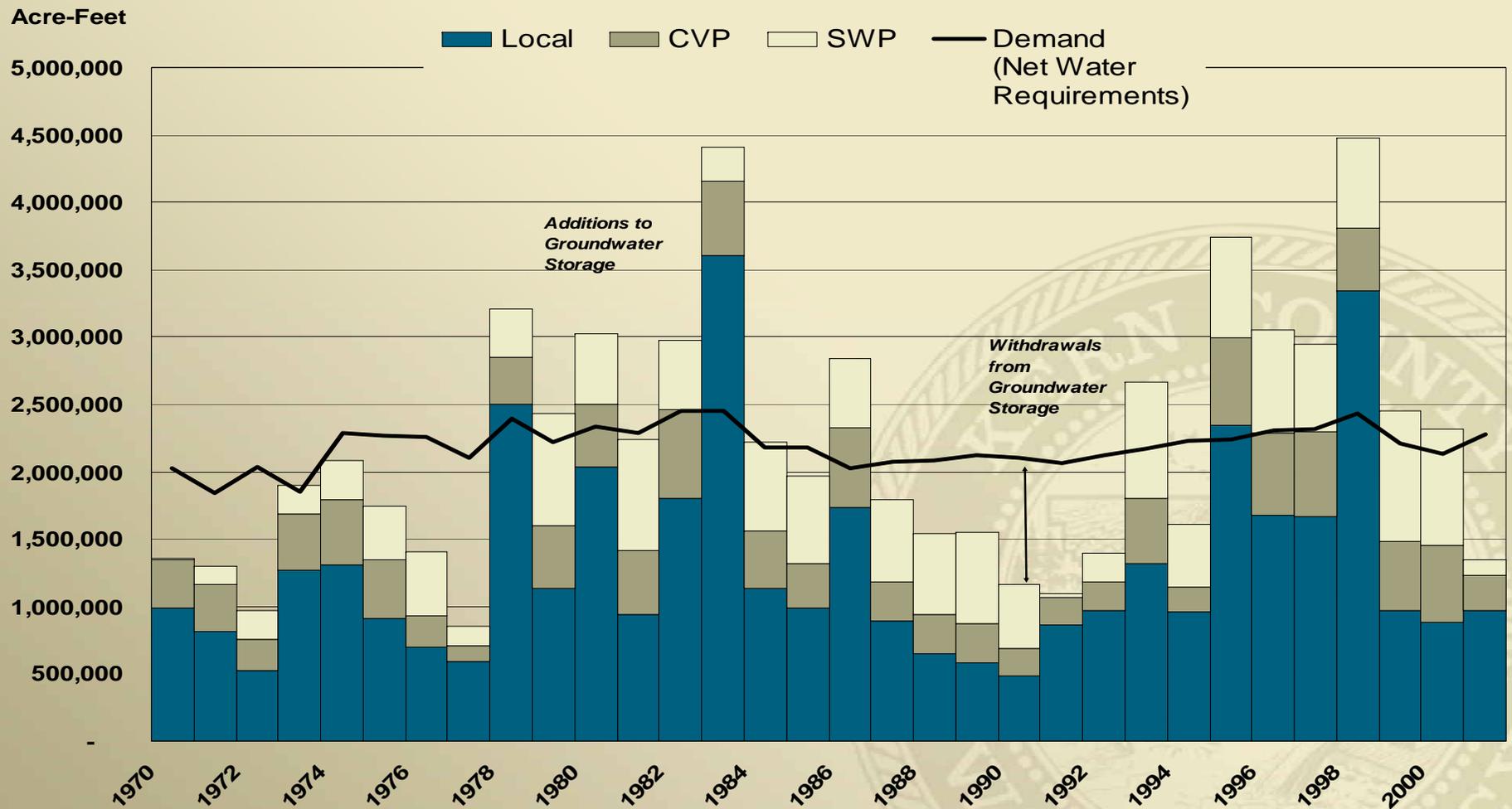
¹ Maximum annual State Water Project allocation of Table A water is about 1,000,000 acre-feet (AF)

² State Water Project allocation for 1977 (4% of Table A water)

³ Applied water

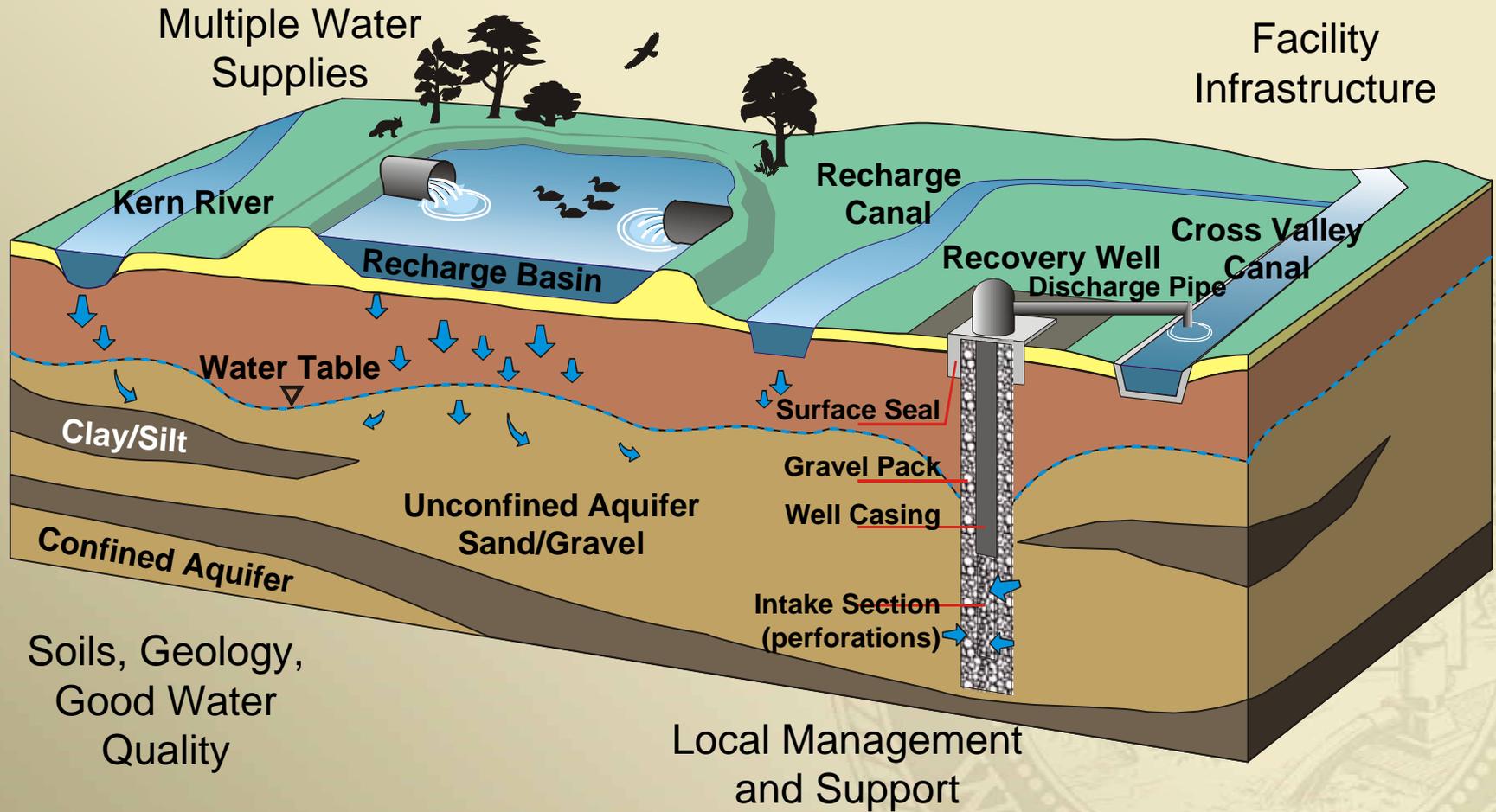


Water Supplies and Demands, SJV Portion of Kern



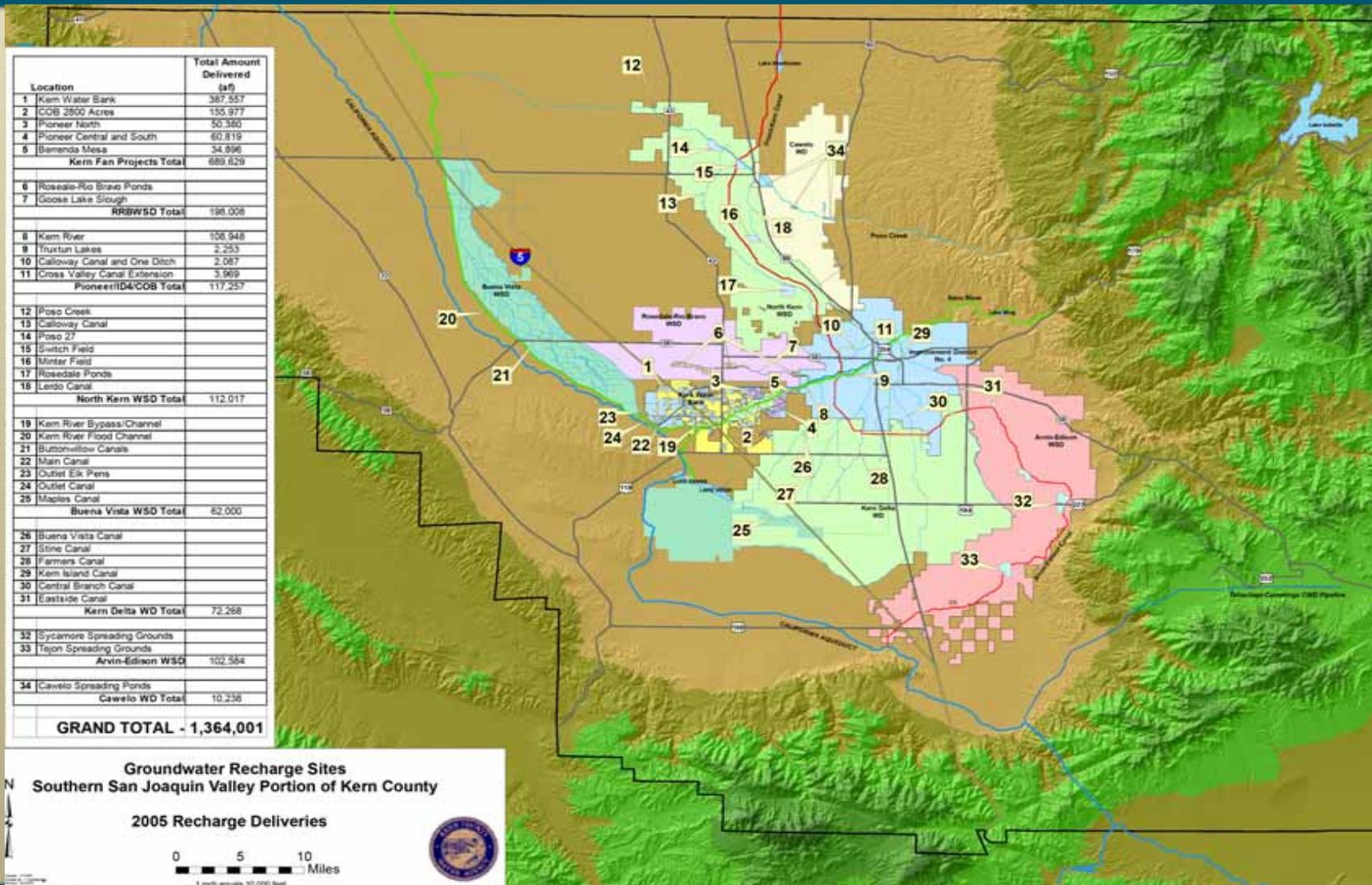


Four Keys to Success With Groundwater Banking



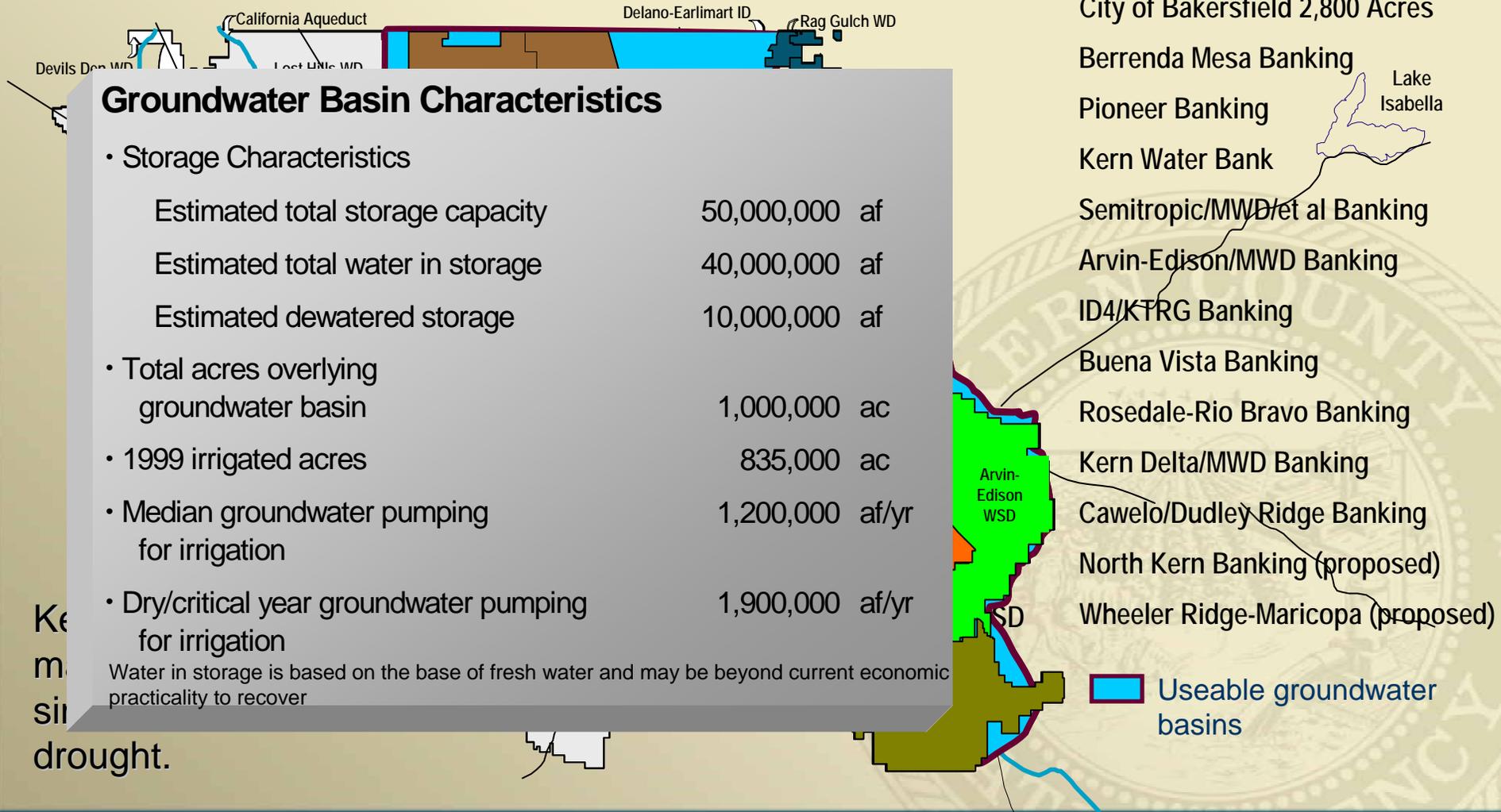


Southern San Joaquin Valley of Kern County Recharge Sites





Kern County Groundwater Banking Programs



Groundwater Basin Characteristics

- Storage Characteristics

Estimated total storage capacity	50,000,000 af
Estimated total water in storage	40,000,000 af
Estimated dewatered storage	10,000,000 af

- Total acres overlying groundwater basin

1,000,000 ac

- 1999 irrigated acres

835,000 ac

- Median groundwater pumping for irrigation

1,200,000 af/yr

- Dry/critical year groundwater pumping for irrigation

1,900,000 af/yr

Water in storage is based on the base of fresh water and may be beyond current economic practicality to recover

City of Bakersfield 2,800 Acres

Berrenda Mesa Banking

Pioneer Banking

Kern Water Bank

Semitropic/MWD et al Banking

Arvin-Edison/MWD Banking

ID4/KTRG Banking

Buena Vista Banking

Rosedale-Rio Bravo Banking

Kern Delta/MWD Banking

Cawelo/Dudley Ridge Banking

North Kern Banking (proposed)

Wheeler Ridge-Maricopa (proposed)

Useable groundwater basins



Kern County Water Sources

	<i>Average Year</i>		<i>Critical Dry Year</i>	
	<u>Percent</u>	<u>AF/Year</u>	<u>Percent</u>	<u>AF/Year</u>
Kern River	21%	700,000	6%	200,000
State Water Project ¹	21%	700,000	3%	< 100,000 ²
Federal (CVP)	12%	400,000	6%	200,000
Local Streams and other sources	15%	500,000	3%	100,000
Groundwater				
<i>Landowner/Districts (Basin)</i>	32%	1,100,000	65%	2,200,000
<i>In-County Banking</i>			15%	500,000
Conservation/Fallowing			3%	100,000
TOTAL	100%	3,400,000 ³	100%	3,400,000 ³

¹ Maximum annual State Water Project allocation of Table A water is about 1,000,000 acre-feet (AF)

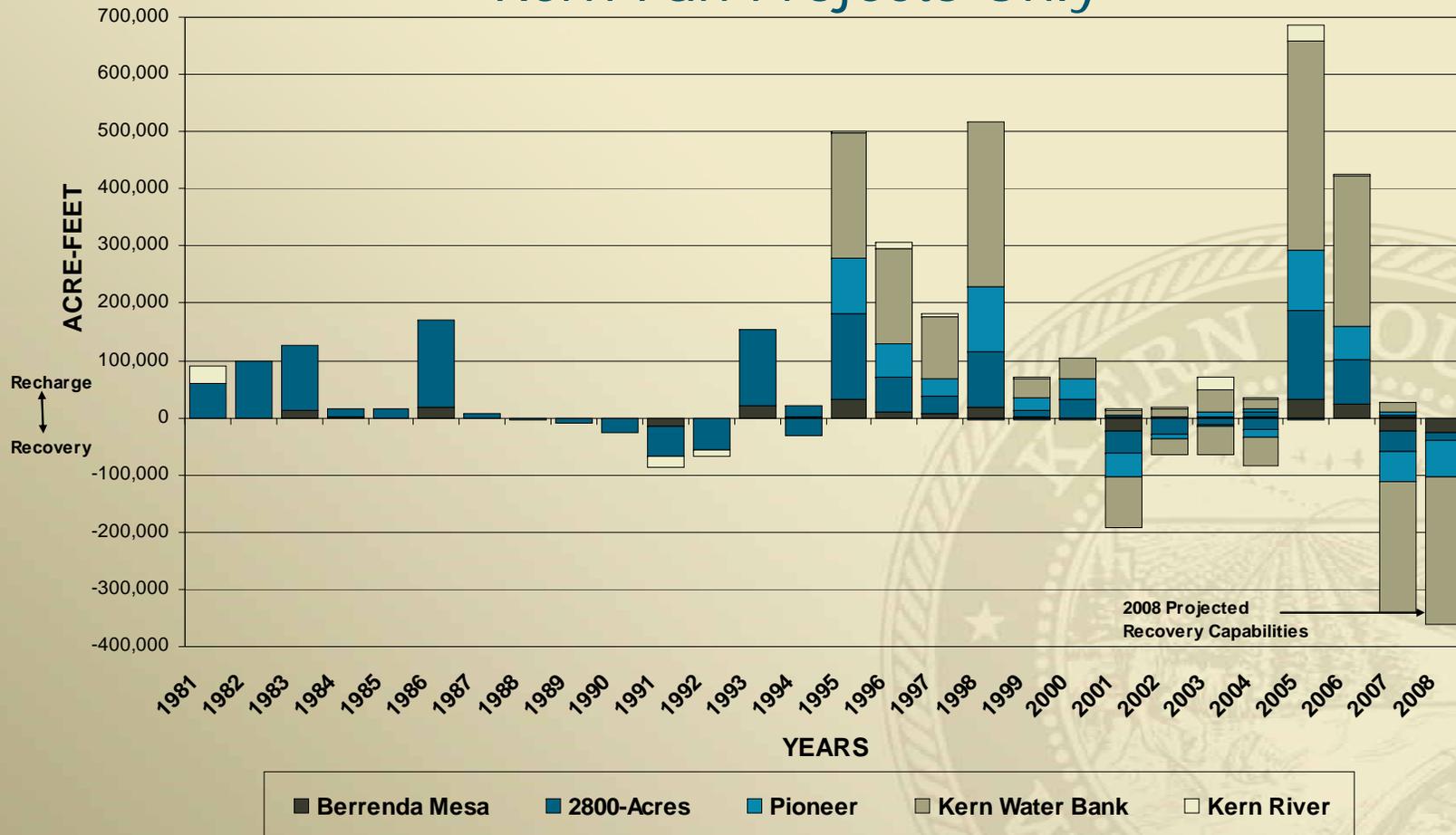
² State Water Project allocation for 1977 (4% of Table A water)

³ Applied water



Annual Recharge and Withdrawal

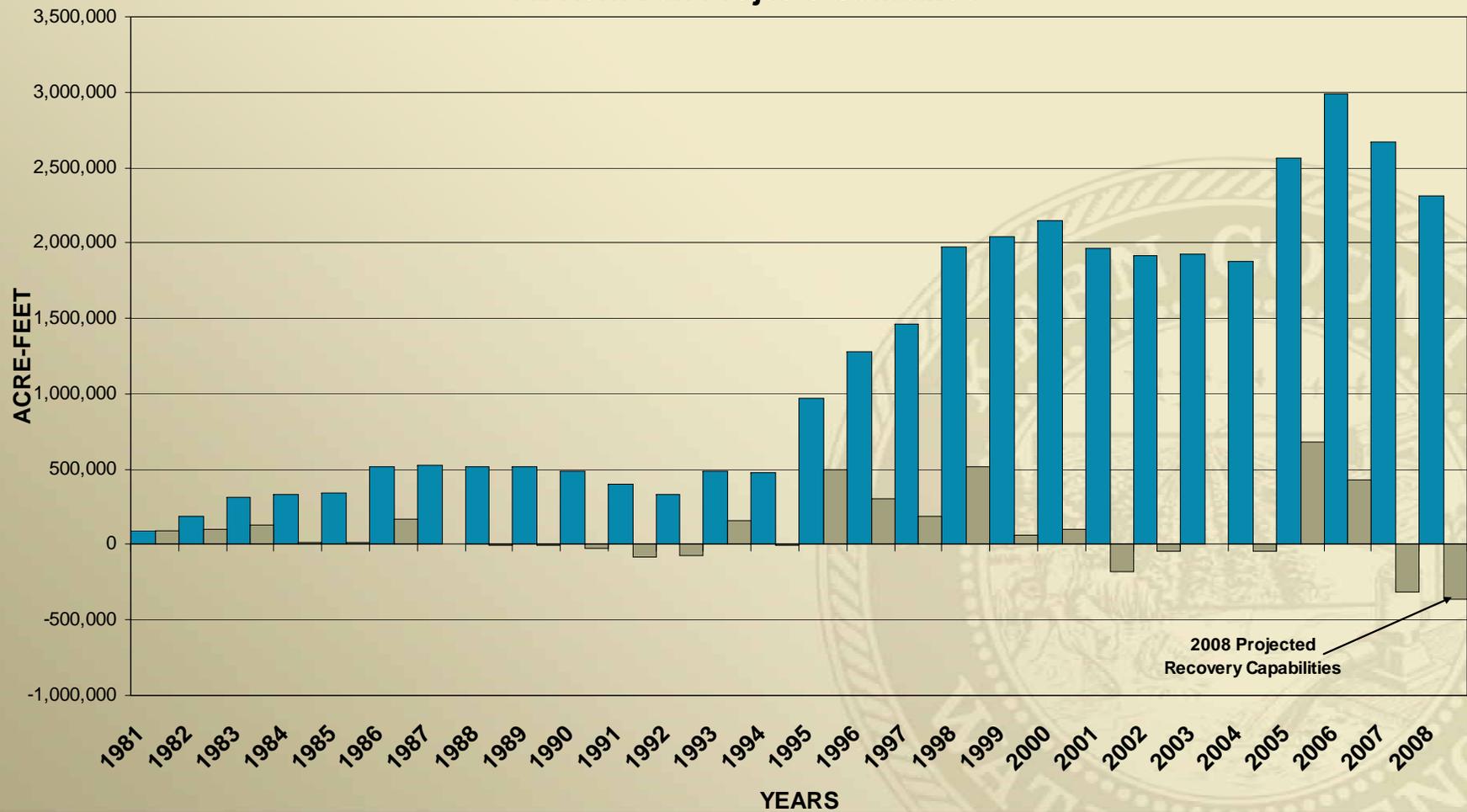
Kern Fan Projects Only





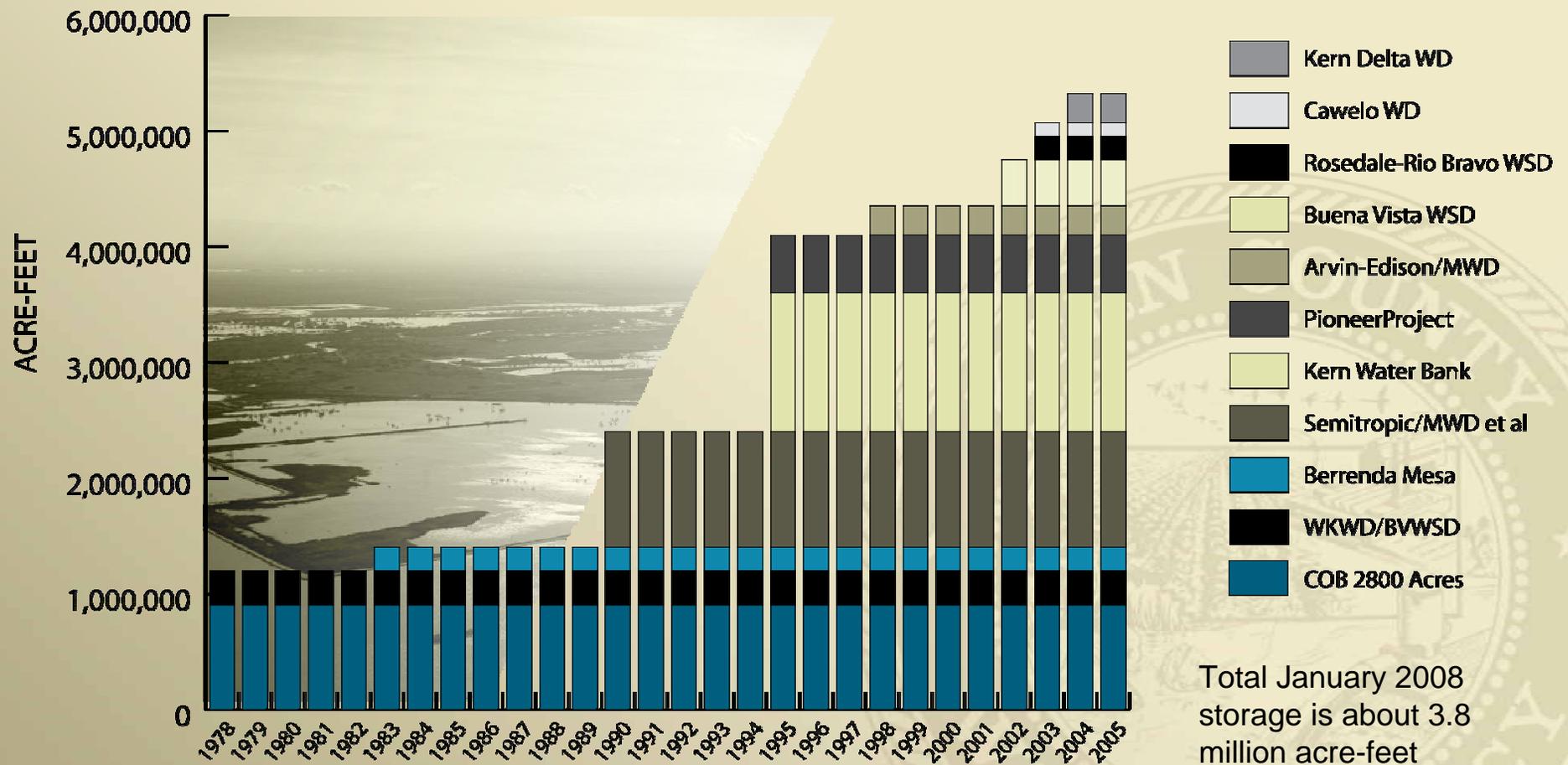
Cumulative Storage and Annual Activity

Kern Fan Projects Only All Kern Fan Projects Combined



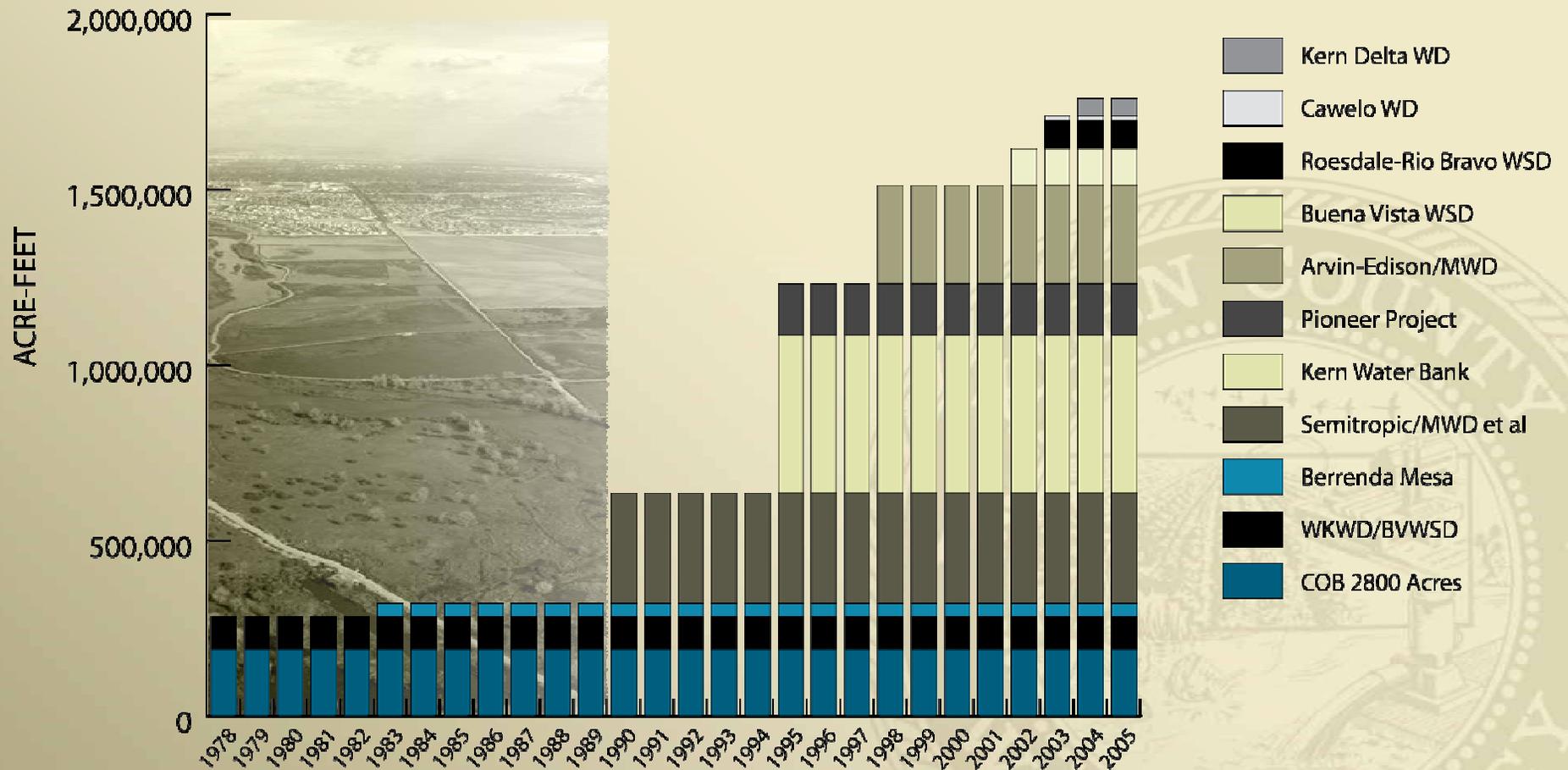


Managed Storage Capacity



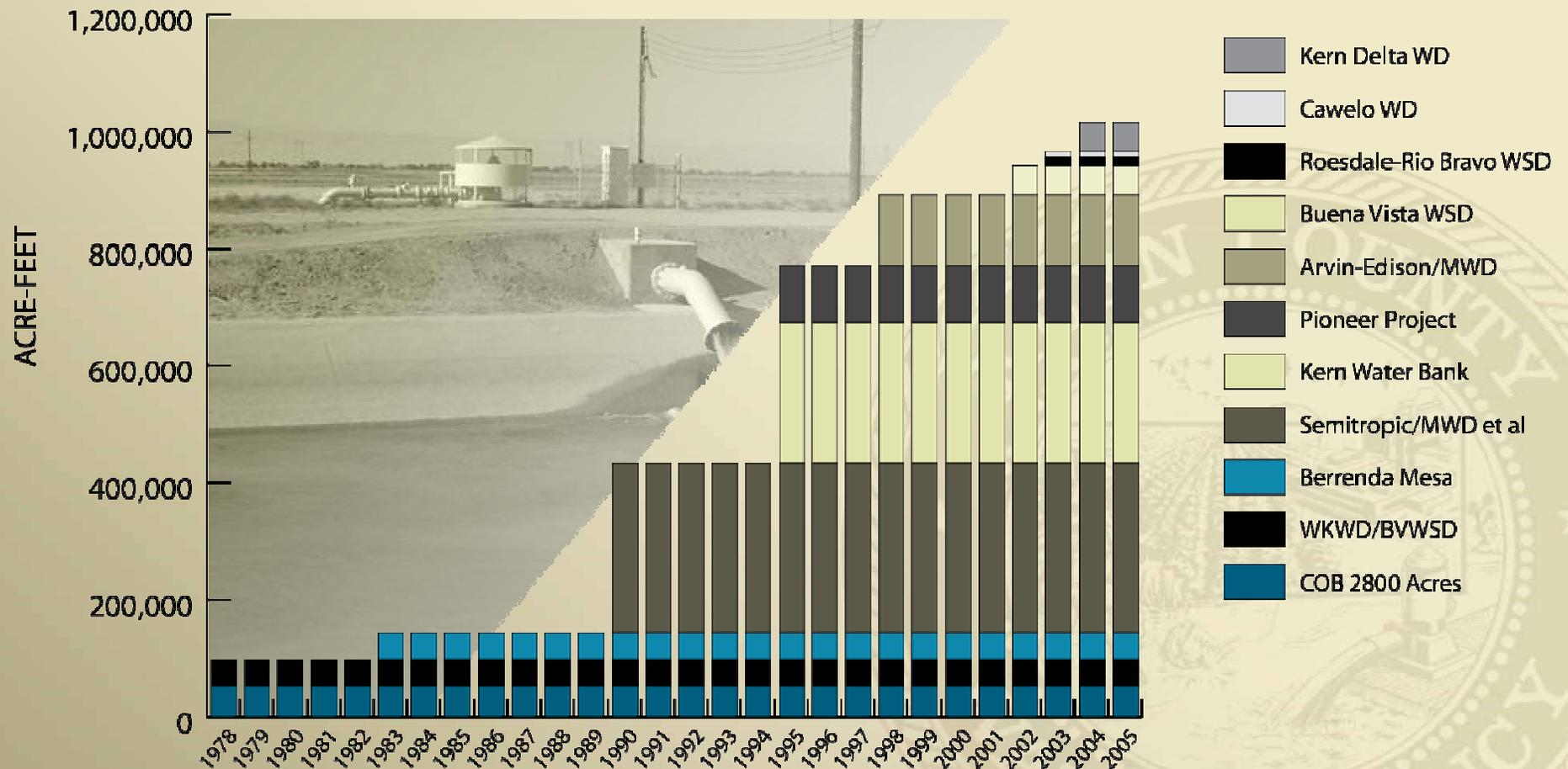


Maximum Annual Recharge Capacity





Maximum Annual Recovery





Banking Project Issues and Solutions

❖ Impacts to groundwater basin interests – Threat of Adjudication

- *Land owners and basin districts are concerned about water level and quality impacts.*

Develop Monitoring and Operations Plans with adjoining water districts pursuant to executed Memorandum of Understanding.

- *State Agencies are concerned about water level and quality impacts.*

Educate outside government agencies like State Water Resources Control Board and Regional Boards on overall long term benefits of variable source water mixing with groundwater and need to be flexible on Basin Management Objectives.

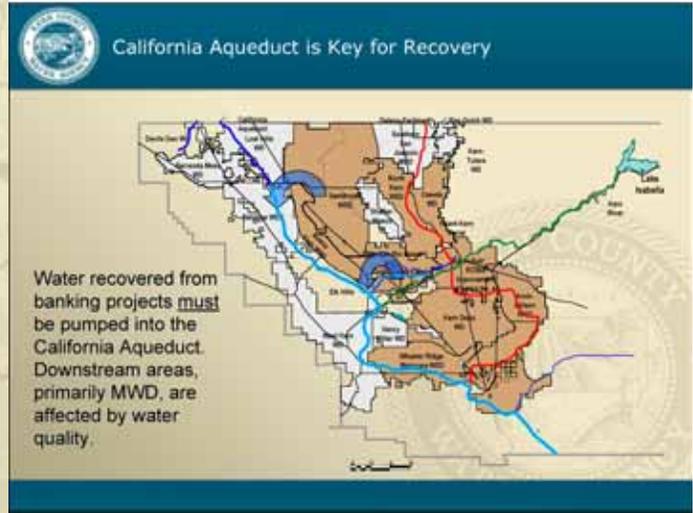
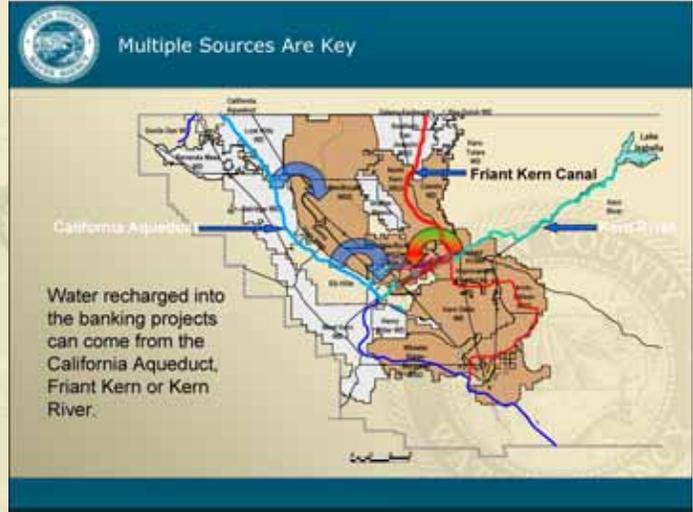
❖ Impacts to supplies

- *Endangered Species, unstable levees and water quality regulations in the Delta result in decreased supply to refill groundwater storage.*

Need a reliable conveyance system.

- *Reclamation law results in difficulty delivering water to banking projects and results in creating additional energy requirements to pump groundwater at same time surface water is available to create an exchange in place.*

Seek waiver for documented banking projects.





Banking Project Issues and Solutions, continued

❖ Impacts due to wildlife in areas available for recharge

- *Endangered species at project sites can spread in between recharge periods resulting in takes next time water is available or making construction difficult.*

Develop streamlined Habitat Conservation Plan (HCP) process, state wide or regional HCP, or exemption for this type of land use, which ultimately provides greater benefit to species than alternative land uses.

- *Wetland species can spread when ponds are in use resulting in potential risk of being classified as wetlands.*

Educate outside government agencies like US Army Corps of Engineers, US Fish and Wildlife Services and Environmental Protection Agency about overall long term benefits of wet and dry periods and develop exemption for this type of land use.



❖ Impacts due to urbanization

- *Urban land use development on sandy soils reduces availability of future recharge sites.*

Work with local land use jurisdictions to preserve those areas through zoning and requiring developers to provide recharge to offset depletion of stored water due to the development (sustainable communities).





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