2010 California Water Law Symposium
University of San Francisco School of Law
January 30, 2010

Who Controls the Water?
Reforming California Water Law Governance in an Age of Scarcity

3:00 PM
California's Groundwater: New Demands on Underground Waters

Presentation by:
Chris Frahm
Brownstein Hyatt Farber Schreck, LLP

Panel Question Presented

With demand growing on surface water resources, groundwater is increasingly viewed as key to meeting California's future water needs. Much of groundwater is still allocated by private common law property rights. Management of this valuable resource's usage often falls to local agencies and municipalities. In 2002, the State Water Resources Control Board (SWRCB) released a report by Professor Joe Sax, which reviewed the laws establishing the SWRCB's limited jurisdiction over groundwater appropriations and provided recommendations for improving groundwater and surface water management. The recent water legislation tasks the Department of Water Resources, in cooperation with local water managers, with monitoring groundwater levels. This panel will examine the scope of this new legislation, compare it to suggestions made in the Sax report, and examine what else is needed to improve future groundwater governance.

1. With demand growing on surface water resources, groundwater is increasingly viewed as key to meeting California's future water needs.[1]

- In the past, groundwater was, for many, "out-of-sight-out-of-mind"
  - Groundwater Resources Association of California
  - Educates the public and elected officials about groundwater[2]
  - Has advocated for passage of all groundwater monitoring bills
- Historically the state has invested in surface water to meet the state's water needs
- But groundwater has always played a significant role
  - Nearly half of California's drinking water supply comes from groundwater

    - In an average year, groundwater meets about 30% of California's urban and agricultural water demand
- Demands of a growing population and the environment have constrained available surface water supplies and demanded new approaches to water supply management by urban water managers
- Imported water constraints and opposition to new surface storage reservoirs has begun to merge the separate worlds of surface water and groundwater
    - Imported surface water supply shortages increase the need for and willingness of groundwater users and local agencies to voluntarily adopt groundwater management programs
- Case in point – Metropolitan Water District of Southern CA
    - Current Integrated Resources Plan development
    - Groundwater agencies and producers in So CA

2. Much of groundwater is still allocated by private common law property rights.

- Water law reflects tension between environmental law and property law approaches and perspectives[3]
    - Neither side is likely to abandon core beliefs
- Rights are relevant[4] – you can't just "change the allocation" of water
    - More productive to negotiate solutions than challenge rights or argue about jurisdiction
    - Nothing is more important than legal certainty when time is of the essence
    - Some legislative approaches could do more harm than good
    - Significant misperception of scope and application of Public Trust Doctrine

3. Management of this valuable resource's usage often falls to local agencies and municipalities.

- Local management of groundwater is not a problem, it's the preferred solution
    - Multiple mechanisms exist for local management of groundwater[5]
- Some efforts toward state regulation could impede cooperative, local solutions
- Urban groundwater managers unite – California Groundwater Coalition[6]
    - Supports groundwater monitoring and data collection
    - Advocates for increased funding of groundwater programs
    - Advocates for groundwater cleanup
    - Sole focus is on groundwater not all California water issues

4. In 2002, the State Water Resources Control Board (SWRCB) released a report by Professor Joe Sax, which reviewed the laws establishing the SWRCB's limited jurisdiction over

groundwater appropriations and provided recommendations for improving groundwater and surface water management.

- Among the recommendations[7]

    - *Where serious basin-wide problems are presented, comprehensive basin management (as with the most successful adjudicated/managed Southern California basins) is the most promising tool to achieve genuine integration of surface water and groundwater administration in California. This suggestion is made in full recognition of the cost, duration and complexity usually associated with settling rights generally within a basin....Unlike proposals for expanding regulatory jurisdiction, basin management offers the possibility of employing the full range of needed management tools, such as professional administration, pumping assessments, importation of new supplies, replenishment programs, achievement of sustainable use, allocation of groundwater storage capacity, quality control, and conjunctive use.*[8]
    - Case in point – Water Replenishment District of Southern CA[9]

- Sax got some things right
    - Legislative proposals to expand the SWRCB's permitting jurisdiction (or to "reallocate" water) are not calculated to succeed
    - *"...legislation improving the Board's information-gathering capacity, so that it can effectively fulfill responsibilities it already has under the Article X, Section 2 of the Constitution, and Water Code Section 275, should unquestionably be on the legislative agenda."*

5. The recent water legislation tasks the Department of Water Resources, in cooperation with local water managers, with monitoring groundwater levels. This panel will examine the scope of this new legislation, compare it to suggestions made in the Sax report, and examine what else is needed to improve future groundwater governance.

- Scope of SBx7 6 (Steinberg) is consistent with practical suggestions of the Sax Report
- Water bill package on the whole reflects the historical reluctance of the legislature to provide for state regulation of groundwater
- SBx7 6 provides for the collection of data
    - Establishes groundwater monitoring program to measure groundwater elevations in all groundwater basins and subbasins in the state
    - Provides maximum flexibility for local compliance, and an appropriate pecking order if more than one entity seeks to become the monitoring entity
    - Provides for appropriate publication and protection of information

  - Provides criteria for prioritizing basins and subbasins for purposes of implementation including, *inter alia*, population and extent of local reliance on groundwater as primary source of water
  - Provides for state monitoring only as a last resort and after trying to coax local compliance
  - Failure to comply may result in ineligibility for state grants or loans
  - Requires DWR to update Bulletin 118 every five years
- Limitations
  - Funding for state monitoring
  - Role of State Mining and Geology Board
    - Untimely elimination of Board of Geologists and Geophysicists[10]
- How will groundwater reporting requirements affect urban water agencies?
  - The UWMP groundwater reporting requirements are found in Water Code Section 10631(b)

    If groundwater is identified as an existing or planned source of water available to the supplier, all of the following information shall be included in the plan:

    (1) A copy of any groundwater management plan adopted by the urban water supplier, including plans adopted pursuant to Part 2.75 (commencing with Section 10750), or any other specific authorization for groundwater management.

    (2) A description of any groundwater basin or basins from which the urban water supplier pumps groundwater. For those basins for which a court or the board has adjudicated the rights to pump groundwater, a copy of the order or decree adopted by the court or the board and a description of the amount of groundwater the urban water supplier has the legal right to pump under the order or decree. For basins that have not been adjudicated, information as to whether the department has identified the basin or basins as overdrafted or has projected that the basin will become overdrafted if present management conditions continue, in the most current official departmental bulletin that characterizes the condition of the groundwater basin, and a detailed description of the efforts being undertaken by the urban water supplier to eliminate the long-term overdraft condition.

    (3) A detailed description and analysis of the location, amount, and sufficiency of groundwater pumped by the urban water supplier for the past five years. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.

(4) A detailed description and analysis of the amount and location of groundwater that is projected to be pumped by the urban water supplier. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.

  - Metropolitan Water District of Southern CA
  - San Diego County Water Authority
  - CCG members
- What are practical implications of the legislation for urban water management plans and water supply planning generally?
- How does this compare to rural and agricultural water agencies?
- Were urban water agencies more supportive of SBx7 6 and if so, why?
- What else is needed to improve future groundwater governance?
  - Streamline adjudications
  - Access to facilities including water quality standards
  - Address overlapping legal authorities over groundwater
  - Improve governance of IRWM groups to better integrate with and reflect rights and responsibilities
  - More funding for groundwater projects including cleanup
- Urban groundwater managers will do more if they have the tools and dollars they need to implement sound groundwater management programs.

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[1] See California Groundwater Coalition (CGC), *The Increasing Importance of Groundwater for California Water Supply*, Attachment 1, (2007). At that time, CGC was a trial association of the Association of Ground Water Agencies, Groundwater Resources Association of California and American Ground Water Trust. CGC has subsequently formed as a permanent 501(c) (6) nonprofit mutual benefit corporation to promote sound principles of groundwater management in California.

[2] GRA's membership consists of scientists, engineers, and other professionals involved in the assessment, development, quality and management of the state's groundwater resources. Attachment 2 briefly describes GRA's history and objectives. For complete information about GRA's role and programs go to www.grac.org. GRA publishes the leading handbook containing general information about law and hydrology of groundwater basins as they pertain to groundwater management in California. See STEVEN BACHMAN ET AL., CALIFORNIA GROUNDWATER MANAGEMENT, A RESOURCE FOR FUTURE GENERATIONS (2nd ed. 2005).

[3] For an excellent note on this feature and the Sax Report generally, see David Aladjem, *Groundwater Management in California: The Sax Report and Beyond*, California Water Law & Policy Reporter (July 2002).

[4] See David Aladjem, *Property Rights Triumphant: Barstow v. Mojave Water Agency*, California Water Law & Policy Reporter (October 2000).

[5] See Bachman et al., supra, Attachment 3, Table 7-1: Mechanisms for Groundwater Management.

[6] *The Increasing Importance of Groundwater for California Water Supply*, *supra*, Attachment 4. Attachment 4 describes CGC's Mission Statement and Principles. For more information about CGC and its programs contact CGC President Ken Manning at (909) 484-3888 or the author at (916) 441-1232 or cfrahm@bhfs.com.

[7] This paper and the author's presentation will not address the recommendations in the Sax Report regarding SWRCB Jurisdiction over underground waters; that issue will be addressed by co-panelists Sawyer and O'Brien.

[8] JOSEPH SAX, REVIEW OF THE LAWS ESTABLISHING THE SWRCB'S PERMITTING AUTHORITY OVER APPROPRIATENESS OF GROUNDWATER CLASSIFIED AS SUBTERRANEAN STREAMS AND THE SWRCB'S IMPLEMENTATION OF THOSE LAWS, p. 92 (2002).

[9] Attachment 5 provides a brief overview of this Southern California success story in which decades of dispute over groundwater storage and management are being resolved through judgment amendments now pending before the Superior Court.

[10] As part of the budget package of bills introduced during the 4th Extraordinary Session of the Legislature, ABx4 20 merged the Board of Geologists and Geophysicists (BGG) with the Board for Professional Engineers and Land Surveyors. This came as a surprise to the BGG and its members. The State Mining and Geology Board has not traditionally had any authority or responsibility over groundwater.

ATTACHMENT 1

GROUNDWATER RESOURCES ASSOCIATION
of California

2007 California Groundwater Coalition

THE INCREASING IMPORTANCE OF GROUNDWATER FOR CALIFORNIA WATER SUPPLY

Groundwater is one of California's most important natural resources. Consider that:

- Nearly half of California's drinking water supply comes from groundwater.[1]
- In an average year, groundwater meets about 30 percent of California's urban and agricultural water demand.[2]
- In drought years, when surface supplies are reduced, groundwater meets an even larger percentage of urban and agricultural water demand.
- Groundwater provides water for the environment including wetland habitat, springs and other important natural resources.
- The potential amount of groundwater storage in California is far greater than the amount of water stored in the state's surface storage reservoirs.
- Groundwater is the only source of water supply in many areas of the state that do not have surface water connections.

The demands of an ever-increasing population and longer dry periods resulting from climate change demand new approaches to more strategically utilize groundwater storage space available in subsurface reservoirs. This means filling the available storage space in the wet years and withdrawing the stored groundwater in dry years. Using our available groundwater storage is essential to provide a long term, safe and reliable water supply for all Californians.

This paper will address is relatively summary form two key questions regarding the ability to store water in the state's groundwater basins. First, how much storage space is available? And second, what are the water quality challenges in using groundwater and how much will it cost to remediate the contamination?

ESTIMATES OF POTENTIAL GROUNDWATER STORAGE

Substantial amounts of available groundwater storage in California have been reported by a variety of resources, as shown in Table 1.

Groundwater Resources Association of California www.grac.org *GRA Liaison, Tim Parker*
Association of Ground Water Agencies www.agwa.org *AGWA Liaison, John Rossi*
American Ground Water Trust www.agwt.org *AGWT Liaison, Terry Foreman*

For more information contact Hatch & Parent at 916-441-1232

Table 1. Reported Estimates of Groundwater Storage in California

Agency	Potential Groundwater Storage (MAF)	Estimated Development Cost	Location
California DWR[3]	9 to 20	$1.5 to 5.0 Billion	Statewide
Metropolitan Water District of Southern California[4]	3.2	—	MWD service area
Association of Groundwater Agencies[5]	15	—	Kern County, Mojave River, Hayfield, Cadiz, and Coachella basins (excludes those areas included in MWD's evaluation)
Natural Heritage Institute[6]	2	$175/Acre-Foot	American River, Eastern San Joaquin, and Madera groundwater basins

In order to effectively integrate surface water reservoirs and groundwater with conveyance and distribution systems and to address the impacts of climate change, conjunctive use will be increasingly important. Conjunctive use involves the coordinated and planned operation of both surface and groundwater resources for conservation and optimal use[7] by routing surface water flows to groundwater recharge facilities.

Conjunctive use can be implemented in multiple ways. *In lieu* conjunctive water management relies on offsetting historical groundwater pumping with surface water deliveries during times of surplus surface water supply, during the wet season or wet years. A recent analysis of the Central Valley indicated that over 1.7 MAF of groundwater storage could be attained, by *in lieu* conjunctive water management[8].

Flood protection can also be integrated with managed conjunctive use operations. For example, integrated water resources planning can emphasize co-locating recharge areas and surface water reservoirs with end users, and encourage participation from surface water and groundwater users within affected floodplains[9]. In this way, California's water resources management strategies will maximize

surface water capture, enhance flood protection, increase environmental benefits, and increase the available groundwater storage.

Climate change[10] also has the potential to cause significant impacts on the State's water resources and water demand. Changes in local and regional temperature and precipitation patterns in the state, as well as a potential loss of one-third of the annual Sierra snow pack, are anticipated to have profound impacts on state ecologic and water resources systems.[11]

In the future, Californians must increasingly rely upon the state's subsurface reservoirs and integrated management approaches in order to respond to the challenges of an increasing population as well as larger swings in precipitation and temperature.

GROUNDWATER QUALITY AND TREATMENT COSTS

Water stored underground does not face evaporation losses or the environmental challenges associated with constructing large surface reservoirs. However, groundwater quality and associated costs to treat stored water extracted for potable use can vary, depending on the nature and concentration of the contamination.

Agricultural and industrial contaminants, as well as naturally occurring inorganic and radiological constituents in California's aquifer systems can impact groundwater quality. In areas of current or former agriculture, nitrate is a common groundwater contaminant in shallower aquifers, and pesticides are also relatively common but less abundant. Volatile organic compounds, such as trichloroethylene (TCE) and perchloroethylene (PCE) are associated with industrial operations and dry cleaners. Perchlorate, an industrial oxidizer, is associated with industrial operations, and to a lesser degree with agriculture and as a natural occurrence. Arsenic occurs naturally in some of the state's groundwater basins, and hexavalent chromium may be naturally-occurring or the result of industrial practices. Radiological constituents include primarily naturally occurring constituents such as radon, gross alpha, and uranium. Naturally-occurring dissolved solids (salts) can impair groundwater, as can seawater intrusion in coastal areas. Some basins may have a single contamination issue, while others may have to deal with multiple contaminant groups. Emerging contaminants such as pharmaceuticals and some personal care products may require attention to protect surface water ecosystems and groundwater supply.

Groundwater quality in California's groundwater basins ranges widely from excellent to poor, based on data from public supply wells [4]. Groundwater quality in the

Sacramento River Hydrologic Region is generally excellent, with only localized areas of impairment. Groundwater quality throughout most of the San Francisco Bay, San Joaquin, and Tulare Lake Hydrologic Regions is suitable for most urban and agricultural uses with a few restricted areas of degradation. VOCs and perchlorate have created notable groundwater impairments in some of the heavily industrialized portions of the South Coast Hydrologic Region, and some localized impacts in the urbanized areas of San Francisco Bay and Sacramento Hydrologic Regions. Nitrate and pesticides in shallow aquifers are a result of agricultural activities in the San Joaquin, Tulare, Central Coast, and to a lesser degree, North Coast and Sacramento River Hydrologic Regions.

In general, seawater intrusion in shallow aquifers is a problem in the coastal groundwater basins of the North, San Francisco Bay, Central and South Coast Hydrologic Regions. Total dissolved solids are a problem for interior desert basins in the South and North Lahontan Hydrologic Regions where salts build up over time.

Table 2. Groundwater Demand and Public Supply Well Maximum Contaminant Level (MCL) Exceedances by Hydrologic Region

Hydrologic Region	Demand met by Ground-water (TAF)	Demand met by Ground-water (%)	No. PW's Sampled	No. PW MCL Exceedances	PW MCL Exceedances (%)	Dominant MCL Exceedances
South Coast	1177	23	2342	982	42	Nitrates, VOCs
Tulare Lake	4340	41	1049	427	41	Pesticides, radiological, nitrates
San Joaquin	2195	30	689	166	24	Pesticides, radiological, nitrates
Central Coast	1045	83	711	124	17	Nitrates, inorganics, radiological
South Lahontan	239	50	605	99	16	Inorganics, radiological, nitrates
SF Bay	68	5	485	75	15	Nitrates, inorganics, VOCs
North Lahontan	157	28	169	22	13	VOCs, inorganics, radiological
Sacramento River	2672	31	1356	74	5	Nitrates, VOCs, inorganics
North Coast	263	25	584	31	5	Nitrates, inorganics, radiological
Colorado River	337	8	314	14	4	Radiological, inorganics, nitrates

Table reference DWR Bulletin 118[4]

A wide range of effective technologies and methods are available to remove most constituents from extracted groundwater. Volatile organic compounds or VOCs (industrial solvents) are usually removed effectively by granular activated carbon filters (GAC) or by aeration (air stripping), while removal of inorganic chemicals such as nitrate and perchlorate require an ion exchange or biologic processes, and treatment of dissolved solids or desalination uses the reverse osmosis method.

Where multiple types of contaminants are present above drinking water standards, several treatment components may be needed to produce potable water. Treatment costs also vary depending on the level of contaminant in the water. Treatment processes and cost ranges for various groundwater contaminants are summarized in Table 3.

Contamination is often limited to the shallow zone, which is not pumped for drinking water. Contamination may occur in some portions of a basin and not necessarily preclude the basin's overall use. When contamination is limited to certain areas or zones of an aquifer, contaminated water may be blended with water produced from other areas or zones to meet drinking water standards, thereby avoiding costly treatment. For example, in 2004 the Metropolitan Water District of Southern California and its member agencies, which supply water to approximately 18 million California residents, blended 85,000 acre-feet of groundwater and treated another 215,000 acre-feet for a total of 300,000 acre-feet of extracted groundwater, accounting for 21 percent of all groundwater produced in the MWD service area.

Considering all the variables and unknowns, it is not practical to estimate an overall quantity of contaminated groundwater statewide or an overall cost of treatment; however, groundwater treatment costs can be averaged based on the following costs and groundwater quality in individual basins.

Table 3. Estimated Groundwater Treatment Costs

Contaminant	Level of Contaminant	Treatment Method	Cost per Acre-Foot
Nitrate	< 60 ppm > 60 ppm	Blending with other sources Ion Exchange	-- $125[a]
Perchlorate	4 ppb - > 100 ppb	Ion Exchange	$175 – 225[b]
MtBE	30 - 2,000 ppb 30 - 4,000 ppb < 2,000 ppb	GAC Air Stripper Resin Adsorption	$375 - $725[c] $125 - $1,600[d] $450[e]

VOC	< 50 ppb > 50 ppb	GAC Air Stripper	$40[f] $55[b]
Arsenic	10 - 50 ppb	Reverse Osmosis	$800[g]
Hexavalent Chromium	< 60 ppb < 60 ppb	Ion Exchange Coagulation/Filtration	$350 - $450[h] $350[h]
Total Dissolved Solids	500 - 1,000 ppm Ocean Water	Reverse Osmosis Reverse Osmosis	$800[g] $1,400[i]

The cost per acre-foot is based on annualized capital cost plus annual operations and maintenance cost; assumes 7 percent for 20 years and annual payment factor of .09439. Assumes average 2,000 gallon-per-minute facility producing 2,800 acre-feet per year.

[a] City of Chino ISEP
[b] California Domestic Water Company & La Puente Valley County Water District
[c] California MtBE Research Partnership 2001 & Final Report to Crescent Valley Water District
[d] California MtBE Research Partnership 2001& 2006
[e] California MtBE Research Partnership 2000
[f] San Gabriel Valley Water Company B5 Estimate
[g] 2007 Public Health Goals: Cost Estimates for Treatment Technologies
[h] Malcolm Pirnie, personal communication
[i] Dana Point Desalter Preliminary Cost Estimate

Monitoring groundwater basins for water quality and groundwater levels is a necessary function for informed groundwater management strategies. Monitoring is conducted by local water districts and other local water suppliers, and in some areas more advanced data collection is conducted by state and federal agencies.

Much work remains to be done in order to adequately characterize and manage California's groundwater resources and accurately plan for increasing storage to meet growing demand for water. Funding is needed to gather key information about the geologic structure, groundwater flow patterns, groundwater quality characteristics, and vulnerability to contamination. Local water suppliers and local and state agencies will need to work together to pool their resources for statewide integrated water resources management planning, so that flood control, surface water reservoirs, and groundwater basin planning are coordinated.

With adequate funding, California's groundwater basins can play a critical role in helping to meet the state's long term demands for a reliable water supply.

References

[1] California Groundwater Management, A Resource for Future Generations, Groundwater Resources Association of California, second edition 2005.

[2] California's Groundwater, Bulletin 118, 2003 Update, California Department of Water Resources.

[3] California Water Plan Update 2005, Bulletin 160-2005, California Department of Water Resources, 2005.

[4] Draft Groundwater Assessment Study Report, Metropolitan Water District of Southern California, 2007.

[5] Groundwater and Surface Water in Southern California, A Guide to Conjunctive Use, Association of Ground Water Agencies, 2000.

[6] Designing Successful Groundwater Banking Programs in the Central Valley: Lessons from Experience, The Natural Heritage Institute, 2001.

[7] Groundwater Hydrology, 3rd Edition, David K. Todd and Larry W. Mays, John Wiley & Sons, Inc. New Jersey, 2005.

[8]Estimating the Potential for In Lieu Conjunctive Water Management in the Central Valley of California, David R. Purkey and Elizabeth Mansfield, The Natural Heritage Institute, 2002.

[9] Conjunctive Use for Flood Protection, US Army Corps of Engineers, 2002.

[10] Preparing for a Changing Climate, the Potential Consequences of Climate Variability and Change, a Report of the California Regional Assessment Group for the US Global Change Research Program, June 2002.

[11]Progress on Incorporating Climate Change Into Management of California's Water Resources, Technical Memorandum Report, California Department of Water Resources, July 2006.

ATTACHMENT 2

GROUNDWATER RESOURCES ASSOCIATION OF CALIFORNIA

HISTORY

The Groundwater Resources Association of California (GRA) is a statewide, non-profit organization of scientists, engineers, planners, educators, attorneys, students, hydrogeologists and other professionals that focuses on all aspects of California's groundwater resources including assessment, development, recharge, quality, protection, education and management.

Since its formation in 1992, GRA has been committed to initiating and facilitating the development of viable, credible solutions for the complex issues involved in groundwater management and protection. This commitment requires that a multitude of topics and issues are investigated and are equally represented by interested and affected scientific, public and governmental constituencies. The GRA strives to provide neutral, nonpartisan forums that facilitate participation by a diverse group of professionals and stakeholders in the groundwater industry.

OBJECTIVES

- develop and promote scientific and practical educational programs that advance the understanding of the importance of groundwater resources, its management and protection;
- actively participate in the formulation of statewide policy on the development and management of California's groundwater resources, the protection of groundwater quality, the remediation of soil and groundwater, and the performance of environmental site assessments;
- develop and disseminate scientific and technical information to GRA members, legislators, regulators, planners, managers, contractors, the public and others who are involved in the development and application of policies and regulations concerning groundwater resources;
- facilitate the development of alternative technologies and standardization of methods to advance groundwater evaluation, management and protection; and
- encourage cooperation among groundwater professionals, regulators, managers, contractors and suppliers locally, statewide and nationally.

Mission

To advance and promote resource management that protects and improves groundwater in California.

915 L Street, Suite 1000
Sacramento, CA 95814
Phone: (916) 446-3626
Fax: (916) 442-0382
www.grac.org

ATTACHMENT 3

Table 7-1
Mechanisms for Groundwater Management

Coordinated Agreements

- Can provide for development of groundwater basin model, joint capital projects and joint operational policies.
- Unanimous agreement between parties.
- Potentially time consuming and cumbersome.

Groundwater Management Act (AB 3030)

- Local agency groundwater management.
- May exercise powers of a water replenishment district.
- Provides for agreements between public and private parties.
- Permissive legislation and voluntary cooperation.

Adjudication and Physical Solution

- Control over extractions.
- Can create comprehensive physical solution for basin management.
- Time consuming and expensive.
- Effective dispute resolution by court's continuing jurisdiction and watermaster administration of judgment; continuing jurisdiction allows more flexibility with changed future conditions.

General Act Districts

- Management indirectly accomplished through assessments and incentives.
- No authority to regulate or limit groundwater extractions.
- Possible limited jurisdiction over groundwater basin.

Water Replenishment Districts

- Can obtain supplemental supplies to directly or indirectly replenish overdrafted groundwater basins.
- Some water quality authority.

Special Act Agencies and Districts

- Powers and organization customized for the individual, political and technical characteristics of the area.
- Generally empowered to conduct studies, regulate extractions and replenish extracted supplies.

City and County Powers

- Comprehensive or general plans.
- Police power regulation; management through groundwater ordinance.
- Coordination with AB 3030 plans.

ATTACHMENT 4

The CALIFORNIA GROUNDWATER COALITION has been established based upon the success of a 2007 joint initiative of Groundwater Resources Association of California, Association of Groundwater Agencies, and American Ground Water Trust. Coalition members include public and private water suppliers who rely upon groundwater to help meet the water supply needs of millions of California residents and sustain our economy. The Coalition was formed at the urging of California state and local elected officials who believe that increased efforts are needed to educate and inform policy makers and the public about California's groundwater resources and the role groundwater plays in providing a safe and reliable water supply for California. The Coalition is an independent 501(c)(6) organization.

MISSION: The Coalition's mission is to 1) educate policy makers about groundwater; 2) represent groundwater interests in legislative and other policy arenas; and, 3) promote a fair share of funding for statewide groundwater programs, including past and future water bonds.

PRINCIPLES: While groundwater issues can be highly technical and complex, the Coalition's education and outreach program is based on the following five basic principles:

1. Groundwater development, conjunctive use, and groundwater storage have the capability to provide increased water supply reliability for California in the near future.

2. Groundwater management and monitoring are essential to the successful development and protection of the state's groundwater resources for current and future generations.

3. New infrastructure is needed to obtain statewide benefit from groundwater resources utilization and replenishment.

4. Groundwater cleanup in many areas of the state is needed to eliminate contamination and ensure high quality water, and to allow for the sustainable development and use of groundwater supplies.

5. Funding is needed to ensure the effective management and use of the state's groundwater resources.

1121 L Street, Suite 800, Sacramento, CA 95814 | Tel: 916-441-1232 Fax: 916-441-3243

ATTACHMENT 5

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Who Controls the Water?
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A Success Story about the Water Replenishment District of Southern California

California's Groundwater:
New Demands on Underground Waters
3:00 PM Panel Discussion
January 30, 2010

Thank you to the Water Replenishment District of Southern California for assistance in preparing this presentation

2010 CA Water Law Symposium

University of San Francisco

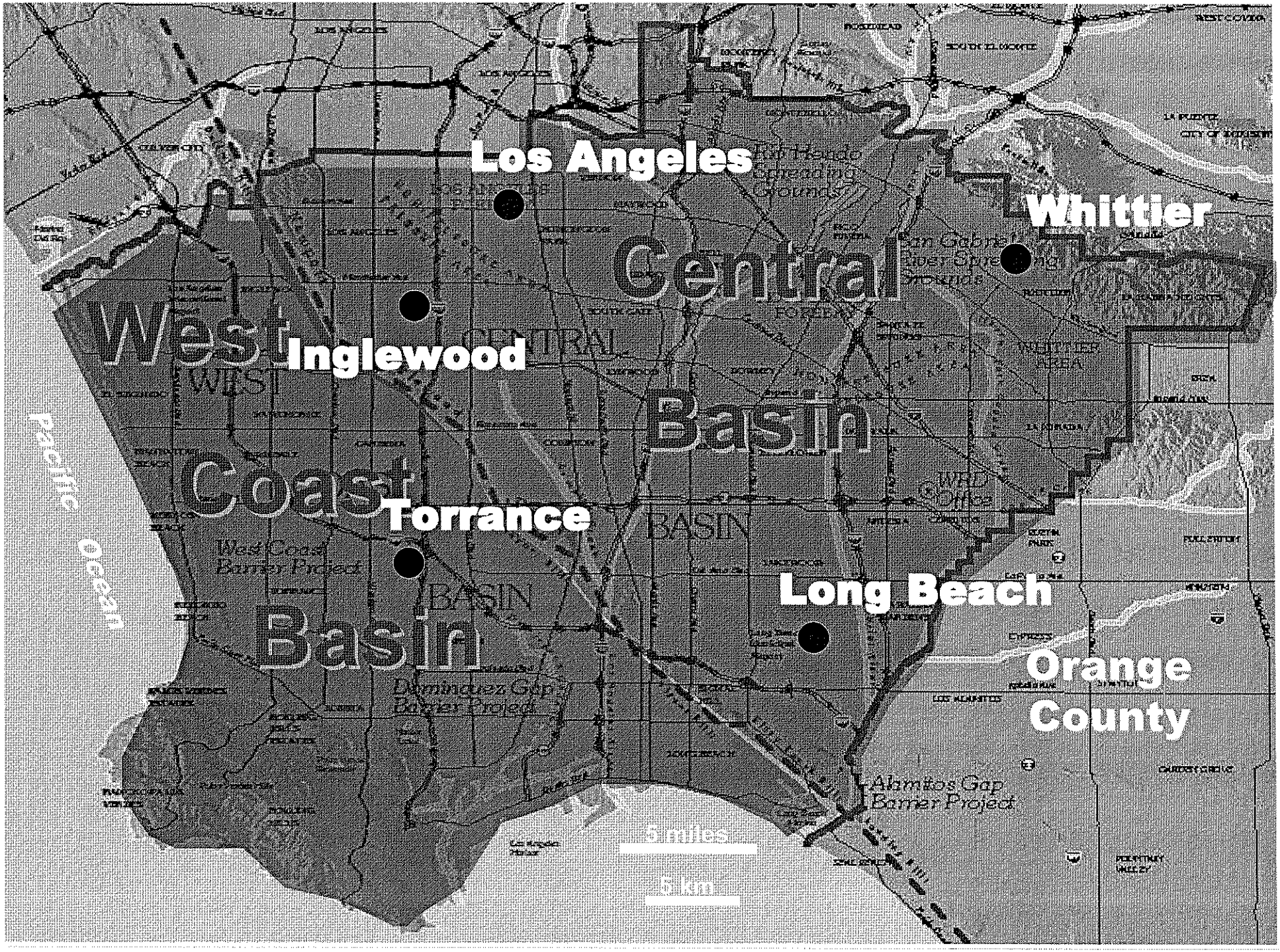
Presentation by
Chris Frahm
916-441-1232
cfrahm@bhfs.com

Always There™

Los Angeles Coastal Basin By the Numbers

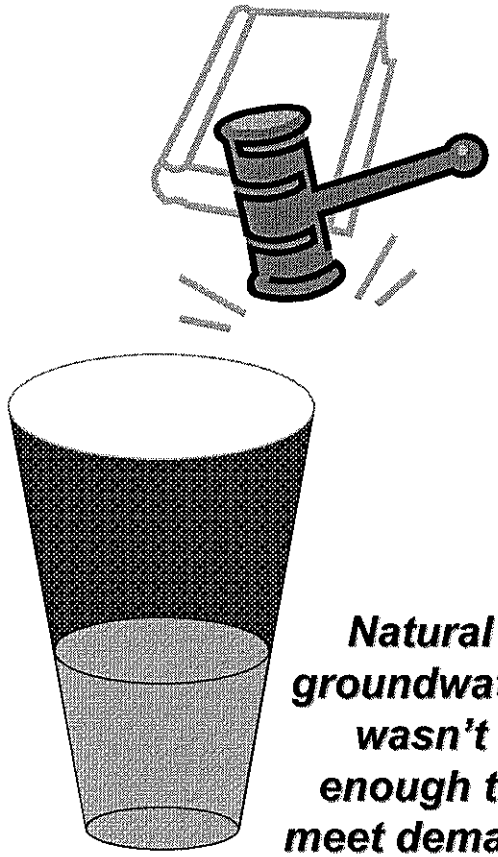
Brownstein | Hyatt Farber | Schreck

- Area = 420 square miles
- Population = 4 million
- 635,000 AF water used each year
- 43 cities
- 1county
- 1 water replenishment district
- 2 municipal water districts
- 1 metropolitan water district
- 100's of groundwater producers
- 2 court judgments
- 1 watermaster – Department of Water Resources


Los Angeles
Whittier
Inglewood
Torrance
Long Beach
Orange County
Central Basin
West Coast Basin
Pacific Ocean
West Coast Barrier Project
Dominguez Gap Barrier Project
Alamitos Gap Barrier Project
5 miles
5 km

History

- Basins adjudicated in early 1960s
- Adjudication reduced pumping to 282,000 acre feet per year and established pumping rights to parties that pumped historically
- Pumping rights exceeded natural replenishment
- WRD formed in 1959 to supplement natural replenishment
- Adjudication did not address storage
- Lacked legal certainty to utilize storage



Natural groundwater wasn't enough to meet demand

Water Picture in Central and West Coast Basins

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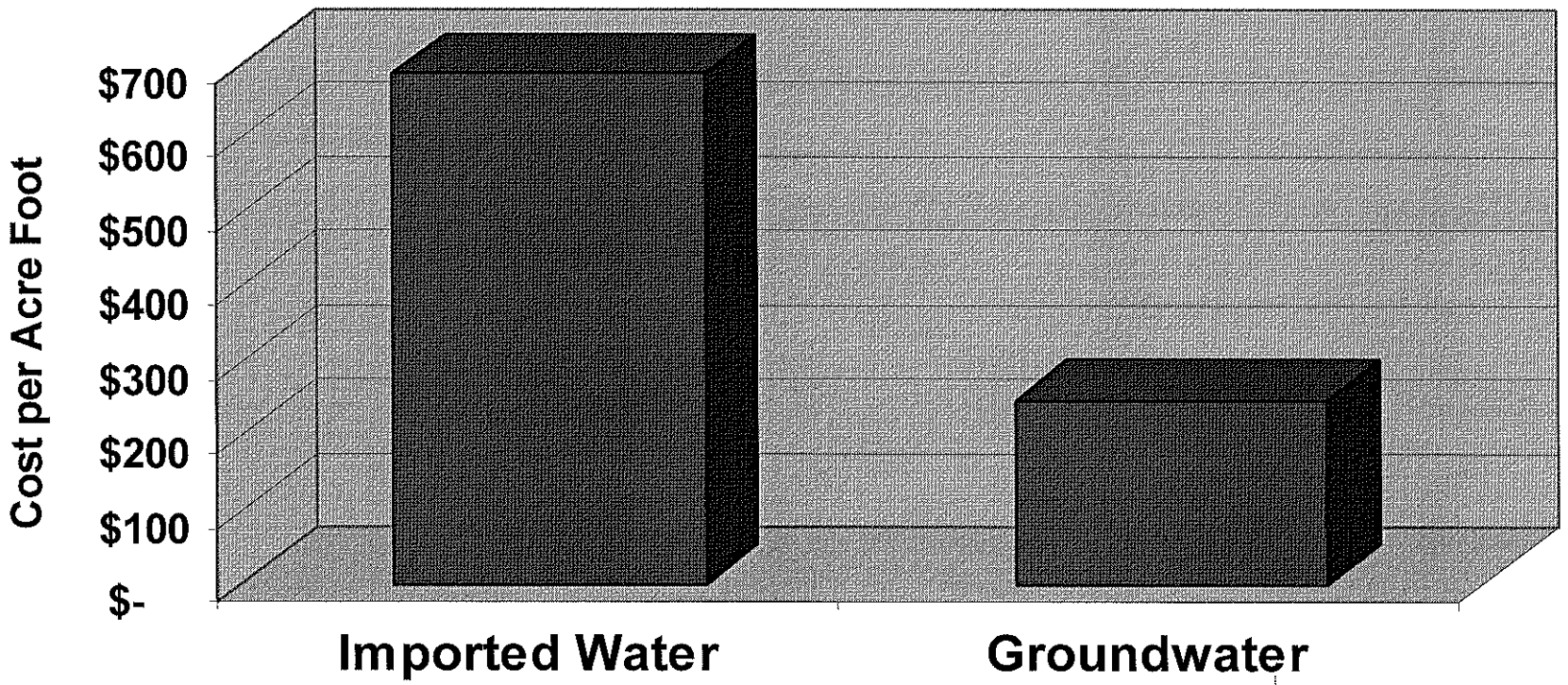
- Imported Water provides 60% of supply
- Groundwater provides 40% of supply
- Groundwater is less than half the cost of imported water



Historical AF Cost of Groundwater Compared to Imported Water

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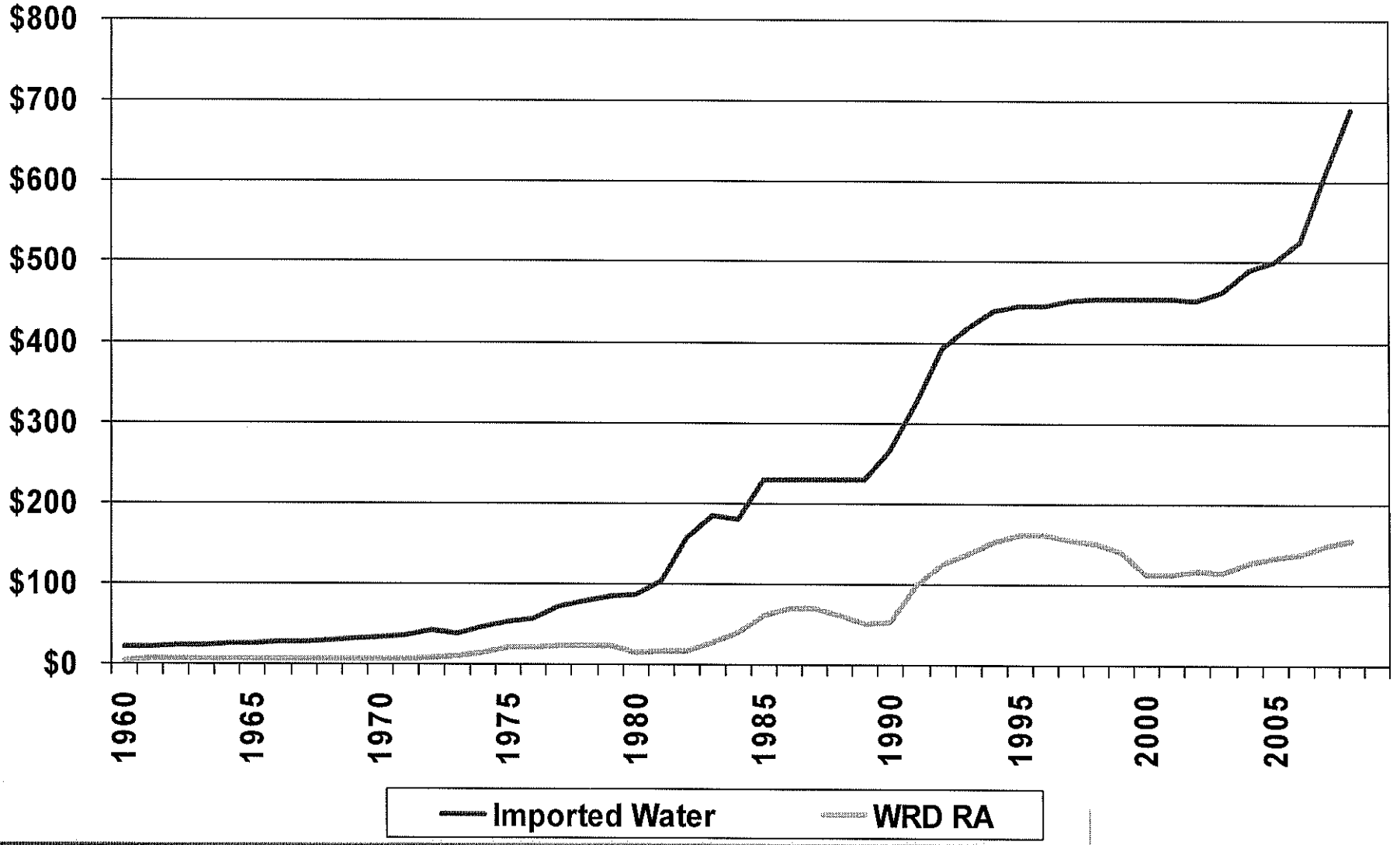
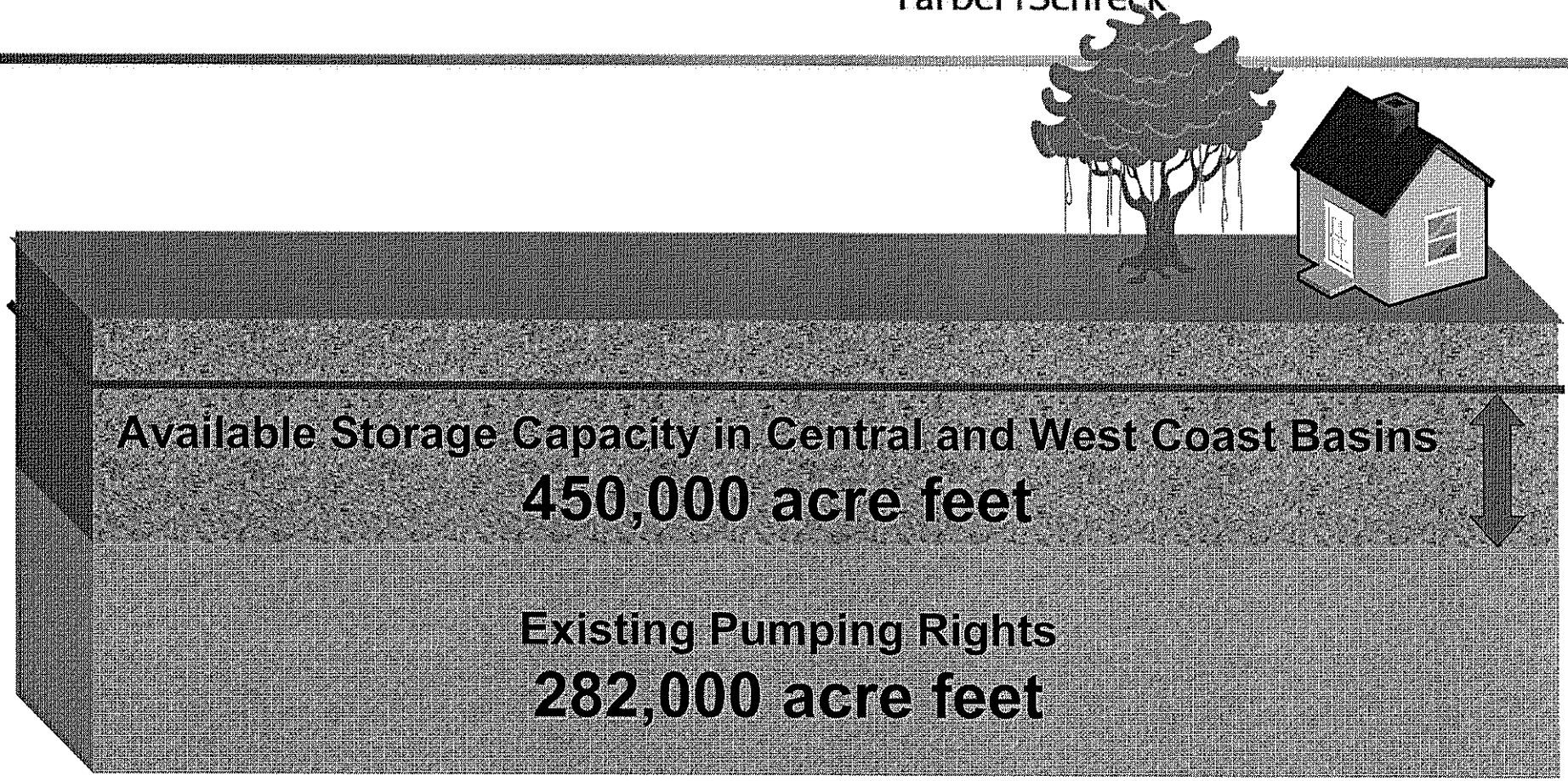


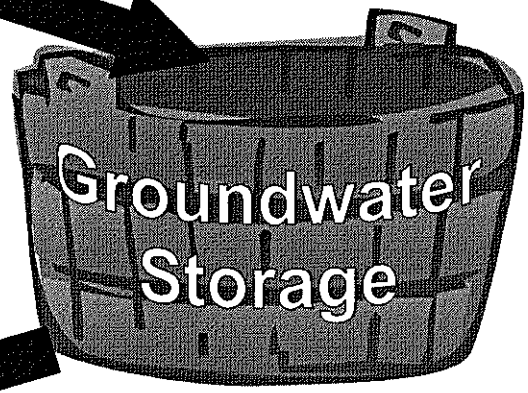

Available Storage Capacity in Central and West Coast Basins
450,000 acre feet
Existing Pumping Rights
282,000 acre feet

Wet Year

Water Supply

Water Demand

During wet years, extra water is available to put into storage (when supply > demand)



Dry Year

Water Supply

Water Demand

Take water out of storage during dry years to make up water supply shortages (when supply < demand)

Groundwater Storage

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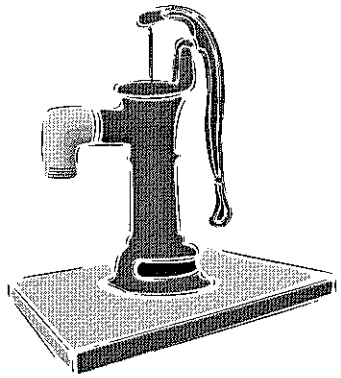
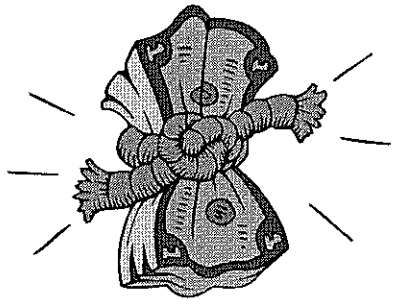
- Central and West Coast groundwater basins can store almost 500,000 AF in addition to sustaining current pumping
- Enough to provide water to over 1 million households for a year during drought or other emergency
- Can offset water shortages for several years
- Increases water reliability
- Lowers cost of alternative water supplies





Groundwater Storage Discussions

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- Prior to 1999 there was both litigation and legislation attempting to address and resolve the disputes between the parties
- Did not result in legal certainty and disputes continued
- 1999 – Storage discussions begin at the request of former DWR Director Tom Hannigan
- 2002 through 2005 – Formalized the first facilitated process
- 2006 – Parties agree to DWR Director Lester Snow request for mediated process led by Gordon, Thomas, Honeywell
- WRD funded to distribute costs equitably among producers
- Working group established reflecting core interests and perspectives
- 2008 – Majority of participants agree to Framework for Groundwater Storage (basis for adjudication amendments)

Groundwater Producer Objectives

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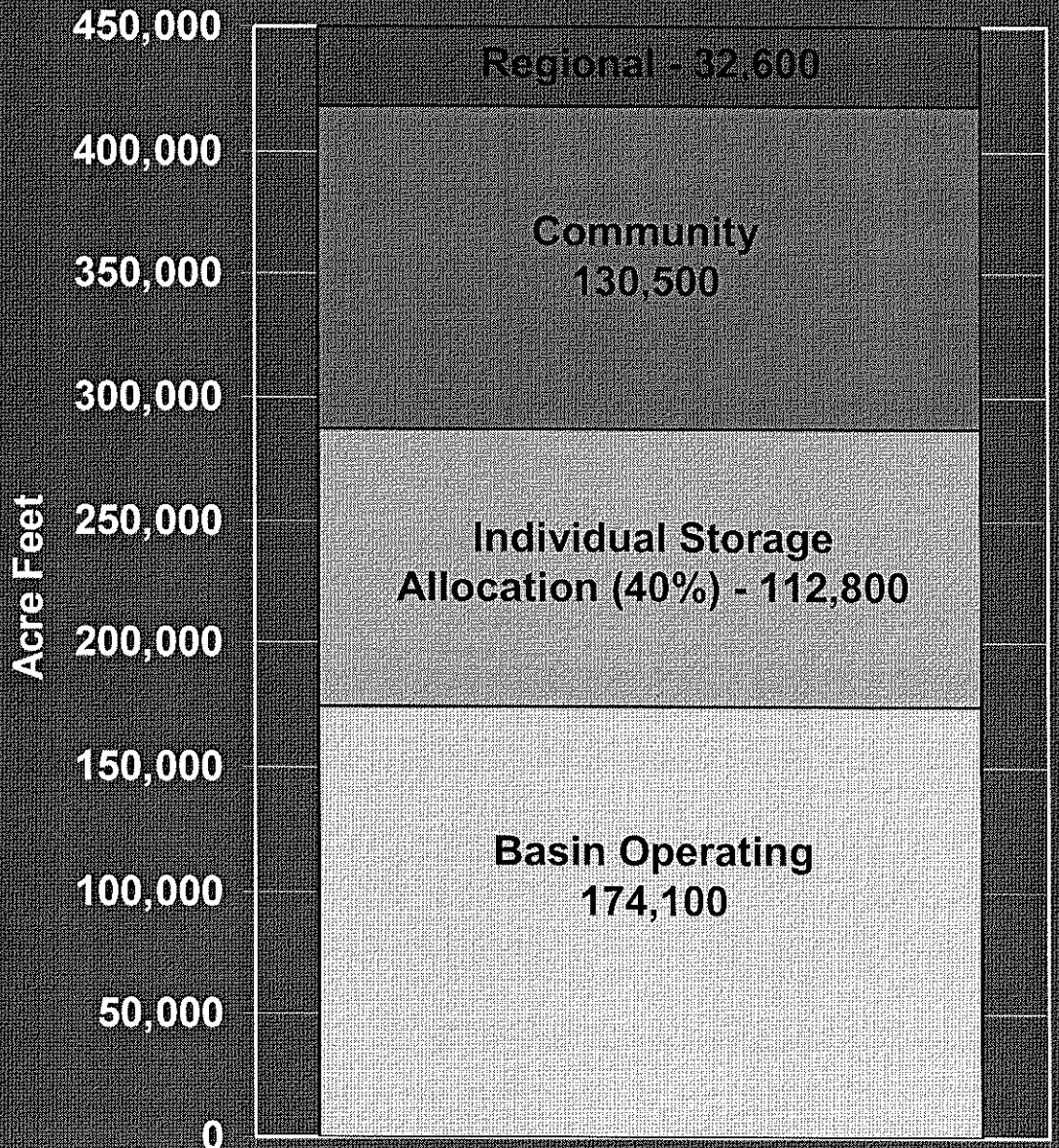
- Do no harm to existing water rights or replenishment
- Be able to use storage space without disputes
  - Need for legal certainty
  - Assure benefits to overlying communities, not third parties
  - Provide cost effective choices and flexibility for producers with different water supply profiles and objectives
- Reach agreement on local governance
  - Avoid possible state intervention
- Position the region to obtain state and federal funding
- Position the region to better manage resources and address critical water supply needs
  - Take advantage of wet water years & wet periods (big gulp)
    - *Replenishment interruption*
    - *Long term supply challenges are real*

STORAGE CATEGORIES



(73% is Central Basin and 27% is West Basin)

When is approval required?

What I want to do this year?	Pay RA?	Required Approval?
Extract my pumping rights	Yes	None.
Extract my leased water rights	Yes	None.
Extract my carryover rights, up to 20% of APA	Yes	None.
Store by converting carryover to storage (up to 40% of APA)	Yes	None.
Store by converting carryover to storage (between 40% and 100% of APA)	Yes	None.
Store by importing water (but not using spreading grounds or new facilities) and adding it to Community Storage Pool	No	None.
Extract up to 20% APA in stored water (if total production doesn't exceed 120% of extraction right)	No	None.
Over-Extract per Judgment (with make-up)	Yes	Pumper Panel for applicable Basin.
Store by importing water (new facilities)	No	Pumper Panel for that Basin and WRD Board
Store by importing water to Community Storage Pool, using spreading grounds.	No	WRD, but only as to the use of the spreading grounds (subject to specific criteria), if Community Storage Pool space is available.
Store by importing water, using spreading grounds -- Community Storage Pool full	No	Pumper Panel for that Basin and WRD Board (plus WRD consent to use spreading grounds), if other space is available.
Extract more than 20% APA in stored water	No	Pumper Panel for that Basin and WRD Board if total production is > 120% of extraction right (adjudicated right plus leased water).
Increase Extraction Right through a new Water Augmentation Project	No	Voluntary contract between parties. No cost to non-participating parties. No extraction until new water actually delivered.
Receive Temporary Surplus Water	No	Voluntary arrangement between party and WRD, directed to applicable Met member agency as to MWD water.
Receive a transfer of stored water from West Basin less than 5,000AF	No	None, until the total transferred that year exceeds 20,000AF. Voluntary contract between pumpers.
Receive a transfer of stored water from West Basin above 5,000AF (or a total of more than 20,000AF that year)	No	Voluntary contract between pumpers. Approval by both Basin Pumper Panels and WRD Board. Subject to pumper majority veto by water rights in either Basin.
Extract Carryover Conversion created by another party in that year	No	Central Basin only. Approval by Pumper Panel and WRD Board. Demonstrate no lease water available at <90% untreated Met rate. Pro rata allocation if carryover is oversubscribed. Max 2500AF/yr. per pumper. Pay untreated Met rate.

Watermaster Structure in the Central Basin

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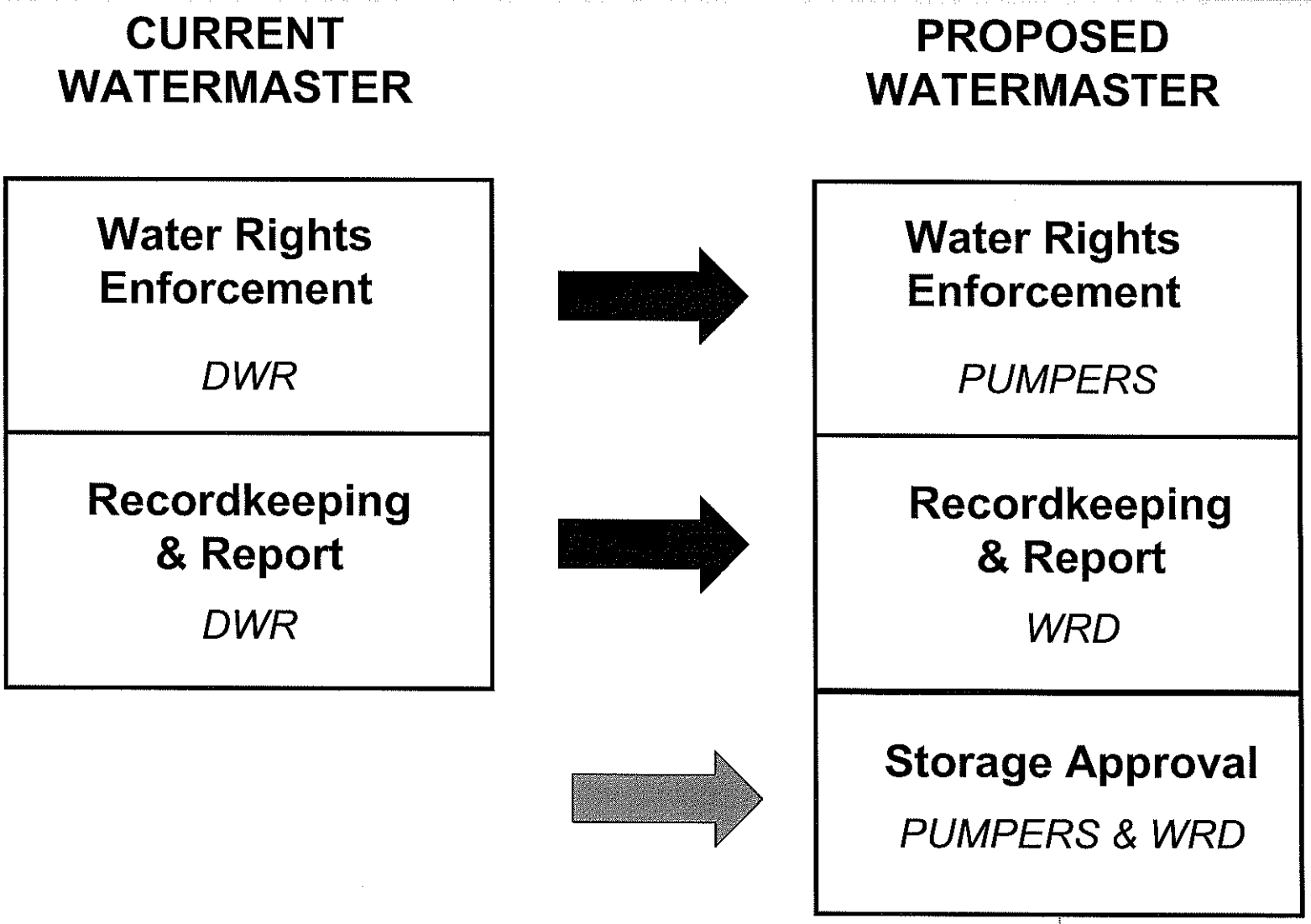
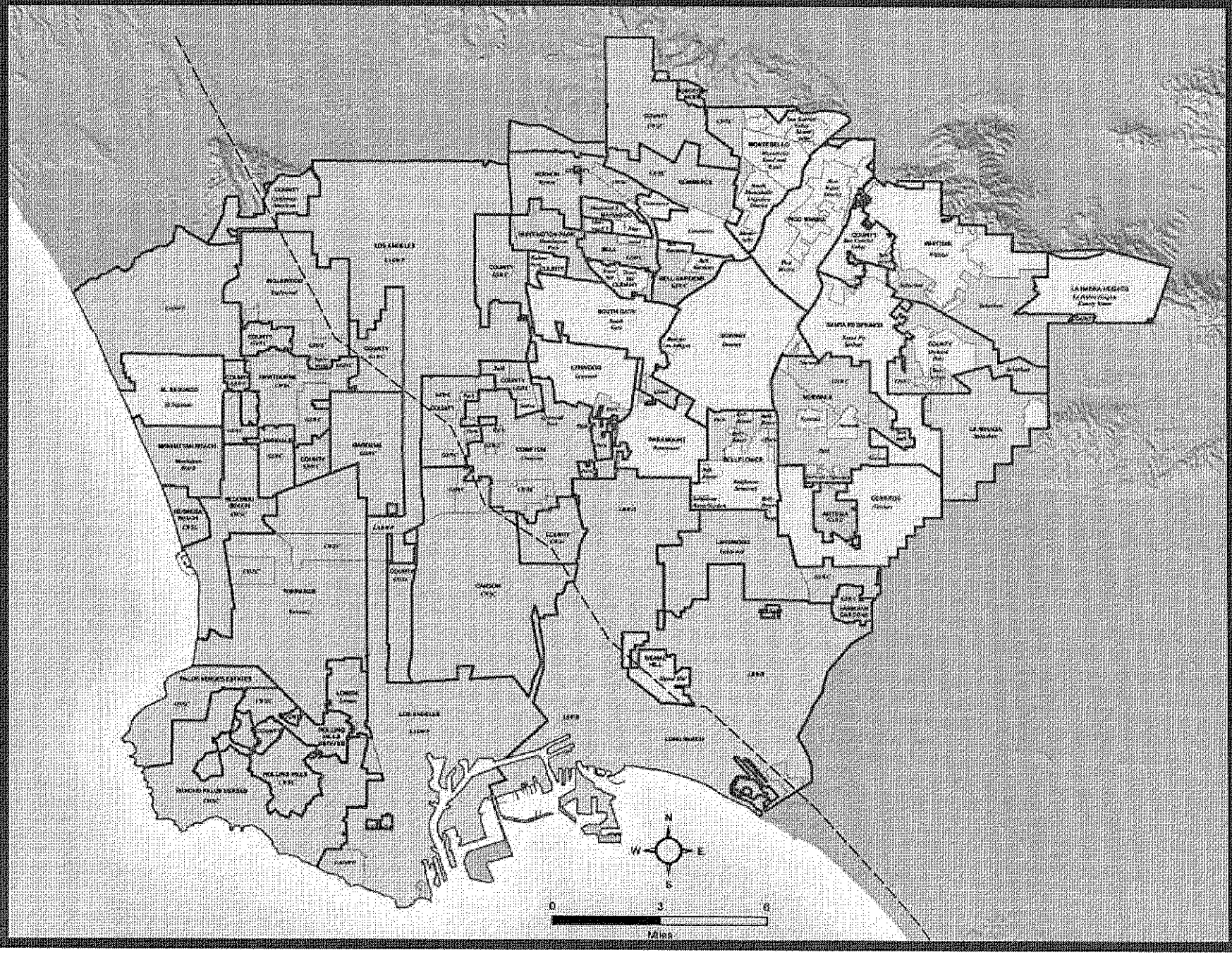


Judgment Amendment Support – Choosing Shared Governance



Issues We Chose Not to Litigate

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- Underflow between the basins
- Extent of legal authority of all the parties over groundwater
  - Water Replenishment District
  - Cities
  - County
  - Municipal water districts
    - Issue still pending in one court case
    - Central Basin MWD claims it has authority under general Municipal Water District law
- DWR consent to substitution as Watermaster

A Southern California Success Story

- Water Replenishment District of Southern California
- Key players included Lakewood, Long Beach, Torrance, Golden State Water Company and the Central and West Coast Basin Water Associations
- Leadership of Department of Water Resources
- Upon final court approval, there will be a ***new governance model*** well-suited to achieve the Sax objective of "*employing the full range of needed management tools, such as professional administration, pumping assessments, importation of new supplies, replenishment programs, achievement of sustainable use, allocation of groundwater storage capacity, quality control, and conjunctive use.*"