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Groundwater and Intergovernmental Relations in the Southern San Joaquin Valley, California

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GROUNDWATER AND INTERGOVERNMENTAL RELATIONS IN THE
SOUTHERN SAN JOAQUIN VALLEY, CALIFORNIA

by

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GROUNDWATER: ALLOCATION, DEVELOPMENT AND POLLUTION

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"Groundwater and Intergovernmental Relations in the
Southern San Joaquin Valley, California"

I. Introduction: Groundwater ("GW") Management in the
Southern San Joaquin Valley ("SSJV")

A. Purpose of Presentation: To Dispel Myths

Our goal is not to advocate general or specific GW management outcomes, but to explore institutional complexities of the SSJV which we believe have been inadequately analyzed in public policy debates thus far. We will therefore focus on three simplifying and inaccurate myths.

Myth #1: Groundwater is not managed in the SSJV.

Myth #2: The federal and state governments play a minor role in GW use in the SSJV.

Myth #3: There is no question that GW use should be more heavily regulated in the SSJV.

B. Location and General Physiographic Features of the
SSJV (Tulare Basin); 4 General Subregions

Despite the conventional wisdom regarding North vs. South alignments in California water politics, the southern half of this agriculturally-oriented valley is split into policy-significant subparts. Key differentiating factors include surface water availability and price; GW availability, rechargeability and depth; and land ownership and land use patterns.

C. Significance of the SSJV as a Case Study in GW Use

We plunge into this complex geographical region because water in the SSJV constitutes a major resource sustaining a highly productive agricultural economy, and is a major challenge for state land and water policymakers.

1. The SSJV is a significant state, national and international center of agricultural productivity.
 - a. 3.8 million acres of irrigated farmland produce diverse specialty and staple crops.
 - b. All four SSJV counties rank in California's top ten in agricultural production. Three counties (Fresno, Kern and Tulare) rank in the nation's top five; Fresno County as a separate country would rank 12th or 13th in world.
 - c. The SSJV is the major reason why California leads the U.S. in production of 40 crops: the State's top industry generated \$14 billion in 1982 (about three times that amount if industries related to agriculture are included).
2. SSJV agriculture is a major water consumer in California and a major source of imbalance in the State's water system.
 - a. Agriculture (statewide) accounts for 85-90% of all water consumed in California.
 - b. The SSJV accounts for about 30% of all water consumed in California, and generates only 9% (7 maf) of the State's supply.
 - c. The SSJV accounts for about 1.1 maf, or approximately 50%, of the State's 2.2 maf total annual overdraft.
 - d. GW use in the SSJV varies in close relationship with surface water availability (compare 1975: SSJV water use was 46% surface water, 54% GW; with 1977 (drought year) when water use was 16% surface water, 84% GW).

D. Four Major Conclusions from Our Study

1. Depending upon one's priorities, GW may not be optimally managed in the SSJV, but it is not unregulated. GW is widely recognized among local districts as an integral part of the Valley's water programs.
2. All three levels of government, and many private parties (including but by no means limited to agricultural interests), play a role in the Valley's water management picture.
3. GW management in the SSJV results from the cumulative efforts of local institutions to respond to diverse natural factors, historical situations, land-use and economic conditions, and state and federal water programs.
4. While justification for more direct or comprehensive conservation/management efforts may exist, any call for or design of new initiatives must proceed in light of the present situation: (1) many governmental entities directly and consciously influence GW use in the SSJV and sometimes directly manage it; (2) nearly all of those entities have significant, presently unexercised authority to manage GW further.

E. Two Basic Observations Underlie Our Conclusions

1. Despite the fact that surface water is highly regulated in California while GW apparently is not, the two water sources are inseparable hydrologically, politically, economically and in an overall management perspective. (We emphasize this point because in California the debate over Valley GW minimizes or ignores the interconnections.)

- a. California's extensive surface water transport and delivery systems were initiated in large part to solve GW overdraft problems.
 - b. GW use is closely controlled by surface water availability, price and other management factors; thus, surface water delivery organizations are unavoidably in the GW business.
2. The local management institutions in the SSJV are numerous and diverse; with varying degrees of sophistication and premeditation they are engaged in efforts to reduce GW pumping, recharge aquifers, and stretch available supplies as widely as possible, particularly on a short-term basis.
 - a. Interdistrict relations are characterized by a complex and dynamic mixture of heated competition and opportunistic cooperation to secure the best "water deals" possible for individual district members.
 - b. The local districts' first loyalty is to their members. They cooperate only when it is in their mutual best interests to do so.

F. Format of Presentation: Three Parts

1. General introduction to the local, state and federal water institutions affecting GW in the SSJV (BTA).
2. Brief case study of unusual experience of Fresno Irrigation District (FID) which illustrates the numerous variables influencing GW management in the SSJV (SKF).
3. A brief discussion of the factors which are likely to affect future institutional arrangements in the area (BTA).

II. Basic Institutions Affecting GW in the SSJV

A. Major Regulatory Institutions

1. Surface Water Allocation.

Both riparian and appropriative rights are honored in California. The latter are administered through the permit system of the State Water Resources Control Board (SWRCB); the former are governed by common law. In the SSJV, however, water project contracts are the dominant form of water entitlement. They are administered by the U.S. Bureau of Reclamation for federal water projects, and by the California Department of Water Resources (DWR) for the State Water Project (SWP). Surface water allocation in the SSJV is thus determined by a combination of SWRCB permit requirements, common law riparian rights, and, predominantly, state and federal water project pricing and distribution policies.

- a. Riparian rights in California have priority over appropriative rights. All rights are limited by the criterion of "reasonable beneficial use" under Article X, § 2 of the California Constitution.
- b. An appropriative permit system has been operative since 1914. The trend has been a steady increase in the requirements governing the granting of permits, and in the regulation of allocations under permits. Early on, review was confined to the availability of water for appropriation, the existence of a beneficial use, and a limited public interest test. Modern permits include extensive terms and conditions, reservation of administrative jurisdiction for reconsideration of permits, and, most recently, a "public trust" criterion. The latter development suggests that the prior appropriation doctrine in California may be evolving away from a firm notion of property rights, toward one of permits as "usufructuary licenses," subject to possible revocation if the SWRCB or the courts later determine that the "public trust" has been adversely affected.

- c. Water project contract rights are held by local districts or by state and federal project builders. Their existence softens the SWRCB's regulatory impact, since their effect is to substitute project allocation policies for state water rights restrictions. In addition, the state and federal projects differ significantly in their water allocation policies (these policies will be discussed in the "Management Institutions" section, below).

2. Groundwater Allocation.

- a. GW rights in California are controlled primarily by the courts and some local districts; they are not integrated into the SWRCB's surface water allocation system. Several local basins have been adjudicated (southern coastal region), and special GW management districts have been enacted (southern coastal region, Ventura County, Sierra Valley/Long Valley), but none occur in the SSJV. Rights to GW in the SSJV are poorly understood due to widespread overdraft, disincentives to enforcement, and uncertain application of three poorly integrated doctrines:
 - (i) "Correlative rights" in overlying landowner (superior to appropriative);
 - (ii) Appropriative rights in "surplus" GW;
 - (iii) Prescriptive rights in overdrafted basins.
- b. Court action is avoided in the Valley due to vast extent of the aquifer: a suit between a small number of water users could result in an unmanageable adjudication which, in the users' view, could work to everyone's detriment by reducing and permanently regulating all pumping.

- c. The factors most directly influencing GW use in the SSJV are the costs of pumping and surface water. Pumping costs vary with the depth of the well, and in their relationship to the cost of other locally available supplies. Surface water costs vary with the water purveyor, as discussed below.
- d. The SWRCB has some authority over GW allocation but it is limited and highly controversial. Most of what exists is unexercised.
 - (i) The SWRCB has no direct authority over percolating GW; its jurisdiction is defined in terms of surface water and water flowing in "underground streams."
 - (ii) A 1928 amendment to the California Constitution (Art. X, § 2) limits all water rights in the State, including GW, to "reasonable beneficial use;" anyone can sue to enforce, including the SWRCB (see, e.g., Cal. Water Code § 275).
 - (iii) Other possibilities (unexercised authority) include requiring surface water conservation, reduced GW pumping, or GW management plans as conditions in surface water appropriative permits.
 - (iv) The SWRCB does exercise present authority to encourage local GW management; for example, it approves permits to store surface water underground -- specifically designated as a beneficial use under the California Water Code.

3. Water quality regulation.

Water quality regulation in the SSJV is more prominent in surface water than GW.

- a. In 1967 the SWRCB was given the authority to regulate water quality through the water

rights permitting process. It typically exercises this authority by limiting water rights allocations or by requiring releases from storage reservoirs. The SWRCB also administers the federal National Pollutant Discharge Elimination System (NPDES); however, point sources of pollution are not nearly as prevalent as nonpoint sources in the agricultural SSJV.

- b. Under the California Water Code, the SWRCB has authority to initiate GW adjudications in basins experiencing an imminent threat to GW quality. This authority is limited and has never been exercised.
- c. The SWRCB's regional water quality control boards have the authority to prescribe well standards, and require localities to adopt well ordinances, to protect water quality. This authority has been sparingly exercised in the SSJV (one exception is the City of Bakersfield).
- d. Under the Safe Drinking Water Act, the U.S. Environmental Protection Agency could play a role by declaring certain areas, such as the City of Fresno, as "sole source aquifers." Thus far the agency has not done so.
- e. Less explicit authority under the Federal Water Pollution Control Act (Section 208 planning) has been exercised to a limited extent, to achieve voluntary, local "master agreements" directed toward integrating water quality and water management goals.

B. The Management Institutions

The dominant institutions in the SSJV are surface water development and distribution agencies.

- 1. Local water districts.
 - a. Types and governance.

- (i) The dominant district types in the SSJV are traditional agricultural surface water suppliers (irrigation districts, California water districts, water storage districts).
 - (ii) The major distinction between the types of districts is political control (land-based vs. member-based voting). The districts are not usefully distinguished by water management authorities or practices.
- b. GW management authorities vary from district to district, as does implementation (again, however, the type of district has little to do with GW management activity). Recharge programs depend largely on the availability of "cheap" surplus water; regulatory efforts are tied to the careful arrangement of water deliveries under contracts held by the districts.
- (i) The districts directly own and control the water rights on four federally developed Sierran rivers (Kings, Kaweah, Tule, Kern); the districts hold contracts with the state and federal projects which draw from the San Joaquin River and northern California sources.
 - (ii) The local districts coordinate ad hoc and more durable arrangements among themselves and their water suppliers, typically voluntary, to accomplish surface water exchanges, conjunctive use programs, water quality control and other local GW management goals.
 - (iii) The local districts have limited, direct GW management authority; moreover, the authority that is present generally is not exercised.
 - (iv) Kern County Water Agency ("KCWA") is an exception in that it has relatively broad GW authority (to impose pump taxes; replenishment assessments; well

registration; conjunctive use programs); however, these authorities are the subject of intense local political resistance, and are seldom exercised.

- (v) Several districts on the Valley's southeast side (Cawelo and Rag Gulch, for example) had their general enabling legislation specially amended for GW management purposes; these authorities have not been exercised.
- 2. State Water Project ("SWP") -- distinctive policies of importance to GW management in the SSJV.
 - a. High water prices which include the variable costs of transporting water, frustrate SWP's overdraft correction goals.
 - b. "Surplus" (lower cost) water is utilized in many district GW recharge programs.
 - 3. Federal Central Valley Project ("CVP") -- policies of importance to GW management.
 - a. Contract allocations are determined partly by overdraft conditions.
 - b. Federal water is much cheaper than SWP water. Federal contractors are thus in a better position to participate in local GW management programs.

III. Case Study of Groundwater Institutions and Use in the Fresno Area

A. Fresno Irrigation District ("FID"): Groundwater "Fat Cat"

Competition for water in the SSJV strongly favors the East Side (in particular, the Northeast region), as a result of several factors:

1. Surface water availability, cost and security.
2. GW cost, quality and availability; aquifer rechargeability.
3. Land use: type, size of landholdings and status of development.

B. Patterns of Cooperation

Many of FID's positions and programs reflect standard cooperative efforts which are typical of the Valley's approach to GW management.

1. Local "Master Agreement" under Section 208 of Federal Water Pollution Control Act Amendments.
2. "Leaky Acres" -- a novel experimental recharge program.
3. SSJV Agricultural Water Committee: in this highly political group effort, FID adopts the standard "Valley" position.
 - a. First preference: relieve overdraft by importing surface water.
 - b. Second preference: let overdraft proceed and allow economic forces to dictate which lands will go out of production.
 - c. "Farmer knows best": the view that increasing regulation at the state level will fail to account for the subtleties of individual district and farm requirements, and will create inefficiencies rather than solve problems.
 - d. On-farm conservation is economically unjustified.
 - (i) Percolation losses are not lost (SSJV claims 96% basinwide efficiency).
 - (ii) Evapotranspiration losses cannot feasibly be reduced.

C. Patterns of Conflict: FID v. Raisin City

Where FID's interests are adversely affected, it has developed an independent course of action.

1. The problem: a loss of recharged water to an unincorporated area.
2. FID's solution: state-level GW management legislation which is supported by some districts but threatens many others.

D. Conclusions Regarding Motivating Factors at Work

Although FID shares many goals and interests in common with other SSJV agricultural water users, important factors have dictated an independent course for the district on key issues. Principally, these factors include variations in surface water availability, cost and security; groundwater quality and depth and aquifer rechargeability; and land-use patterns. These variations give the SSJV agricultural community a diversity which must be recognized in statewide water policies.

IV. Implications for the Future

A. The Anti-Valley Position

Local goals and patterns are, obviously, only part of the story. Valley critics have radically different priorities and perspectives; these, too, will play a pivotal role in SSJV water policymaking.

1. The SSJV is a major cause of the State's water imbalance.
2. Given the extensive water developments already in place, environmental protection -- in the North Coast and the Delta particularly -- is the top priority, not enhanced agricultural production.
3. The SSJV's disaggregated institutional structure is incapable of generating a rational management response to state and local water supply problems.

4. History will surely repeat itself: new surface water development will not halt or reduce overdraft, but will be used to irrigate new lands and exacerbate overdraft.

B. Specific Points of Conflict

1. North Coast Rivers: To develop or not to develop? (The rivers currently have state and federal wild and scenic river status.)
2. Sacramento/San Joaquin River Delta: How much environmental protection is enough, and how should the burden for salinity control be allocated between the state and federal water projects?
3. Agricultural water conservation: Can meaningful amounts of water be saved by economically feasible technologies; are inducements or subsidies required to encourage the adoption of such technologies?

C. Factors Likely to Affect Future Institutional Arrangements

1. Los Angeles water demand -- increasing over time; losing Colorado River water; lacking full entitlement supplies from the SWP; embroiled in public trust litigation over Mono Lake.
2. Water pricing policies -- federal and state (effects of renegotiation of Bureau of Reclamation contracts; impact of DWR's new power contracts on economics of pumping SWP water upstream from the Delta, into the SSJV).
3. Climate -- annual variations in precipitation and runoff.
4. Energy prices (increasing costs of pumping GW and imported surface water.)
5. National agricultural priorities and subsidies.
6. Growing federal role in GW quality and interstate commerce (implications of SSJV as wholly intrastate aquifer supporting nationally

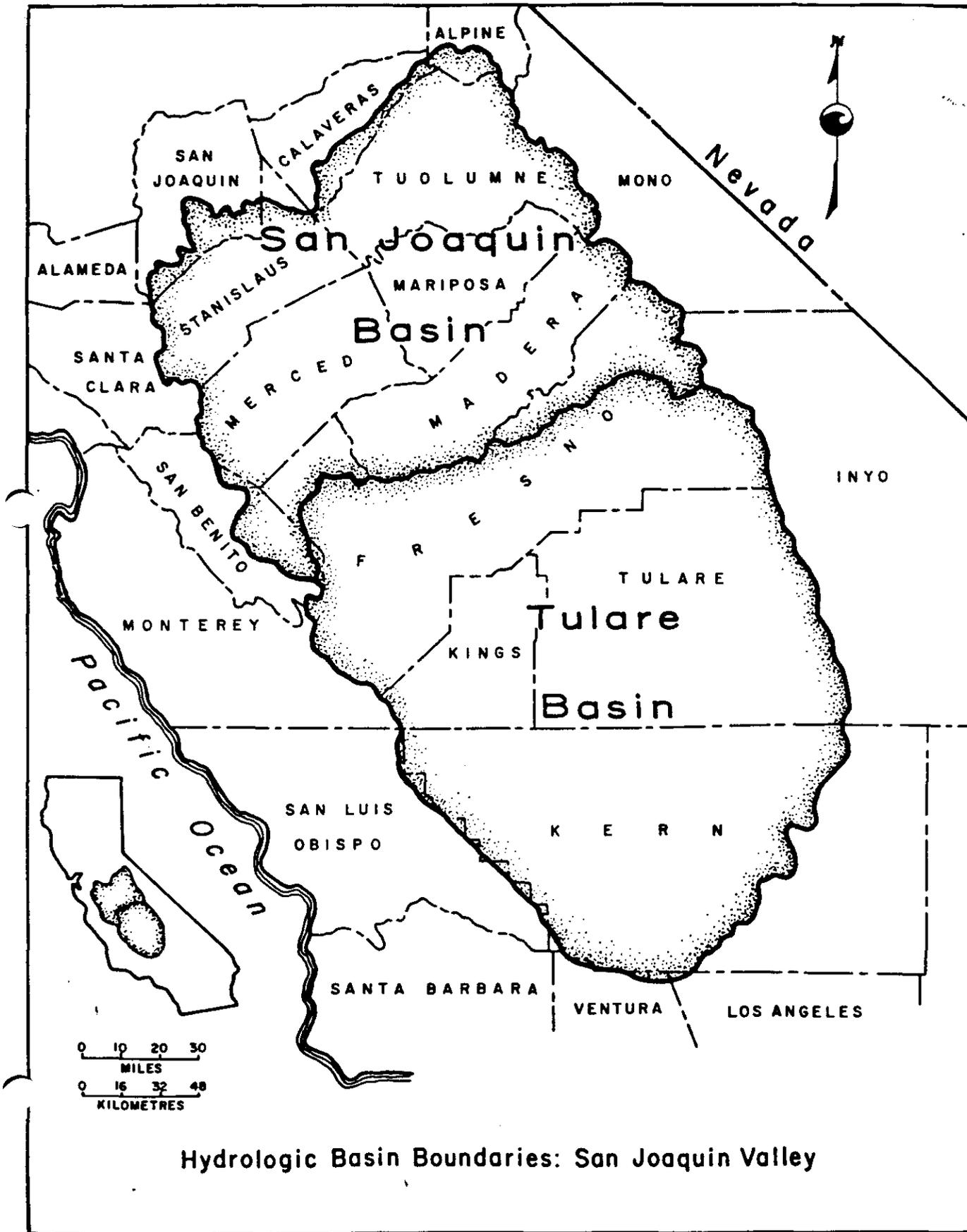
significant industry; contrast with interstate aquifers at issue in Sporhase and El Paso cases, and with the extensively studied Ogallala).

D. Future Adjustments

Recent developments seem to indicate that:

1. State-imposed GW regulation is always a possibility, but is unlikely given current water policies and anti-regulatory attitudes at the state and federal levels.
2. Some new water development will occur but will yield higher-priced supplies. Moreover, new development will be limited in scope and impact, and will be conditioned on some conservation/efficiency improvements. Future schemes, therefore, will not disrupt existing allocations and practices, as much as they will rely on additional supplies and a modest strengthening of regulatory policies.
3. To the extent new water development fails to occur, as is entirely possible under present political and fiscal conditions, a premium will be placed on local and intraregional exchanges or trading of water. Local management efforts will be accordingly enhanced. Some marginal farming areas may go out of production. The resulting water allocation patterns may resemble the market model which economists have long sought in the water rights area. However, numerous legal and institutional barriers to a free-trading system will persist. Not the least of these barriers will be uncertainty of title to GW in a heavily overdrafted basin, and to surface water under federal contracts and the new "public trust" obligations of the SWRCB.

FIGURE 1



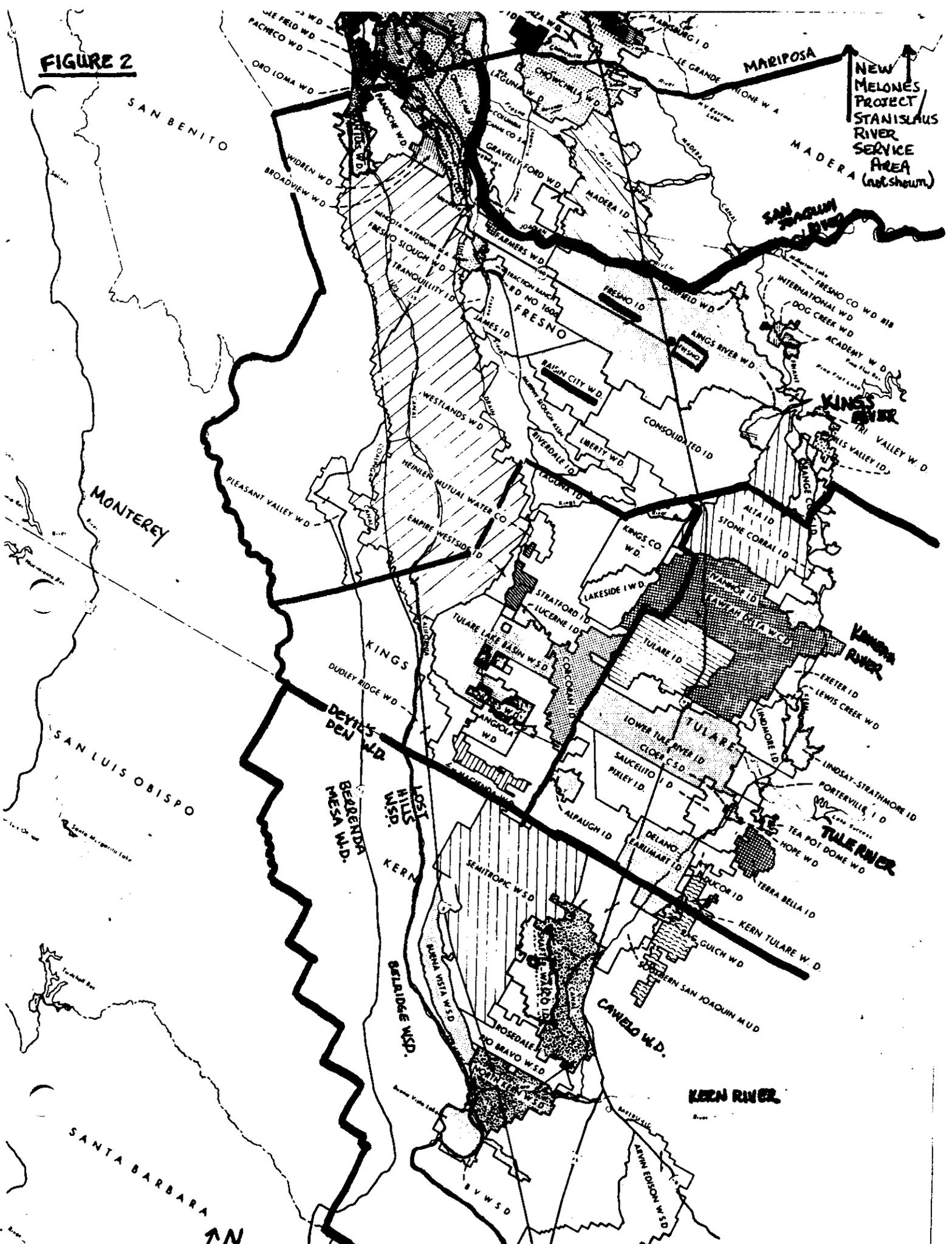
Hydrologic Basin Boundaries: San Joaquin Valley

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FIGURE 2



NEW MELONES PROJECT STANISLAUS RIVER SERVICE AREA (not shown)

MARIPOSA

SAN BENITO

MONTEREY

SAN LUIS OBISPO

SANTA BARBARA

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Figure 3

	West Side			East Side		
	I. W. Fresno	II. Kings County	III. W. Kern	IV. E. Fresno	V. Tulare County	VI. E. Kern
Surface water availability	good	good	variable	good	variable	good
Security	good	questionable	questionable	good	questionable	good
Price	low	high	highest in Valley	low	low	low
Source	CVP (delta) (low salt)	SWP	SWP	local; CVP I & II (Sierran)	CVP II (Sierran)	local; CVP I & II (Sierran)
Expand						
Groundwater availability	general	general	partial	general	partial	general
Pumping cost	high	high	high	low	high	high
Rechargeability	poor	poor	poor	good	good	good
Overdraft	currently none	moderate to high	high	slight (35,000 af)	high worst in Valley	high
Expand						
Land use						
Farm size	large	large	large	small	varies	varies
Development	full	near full	not full	full	not full	near full

Highway 99

1

2

3

Figure 4
 STATE AND FEDERAL WATER PROJECT POLICIES AFFECTING
 GROUNDWATER USE IN THE SOUTHERN SAN JOAQUIN VALLEY

<u>Policy</u>	<u>State Water Project ("SWP")</u>	<u>Central Valley Project ("CVP")</u>
1. Service Areas/ Delivery Conditions	(a) Southwest Side; Kern County	(a) Northwest Side (Westlands); East Side (includes eastern Kern County)
	(b) No acreage limitation	(b) Acreage limita- tion recently revised (1982 Reclamation Reform Act)
	(c) No requirements for delivery to existing lands or in lieu of pumping	(c) Same as SWP
2. Water Pricing	(a) High prices: "full-cost water" -no agricultural interest subsidy -variable transpor- tation costs -"Delta charge" must be paid whether or not water received	(a) Low prices: -agricultural subsidy for eligible lands (interest forgiveness; farmer's ability to pay)
	(b) Prices to increase steeply in mid-1980s as present DWR power contracts expire	(b) Prices to increase to "full cost" for excess and leased lands (difficult to say what relationship to SWP prices will become)
3. Surplus Water Programs	(a) Favorably priced surplus water, with priority for use in groundwater recharge programs	(a) Same as SWP - surplus water is called "Class II" (vs. "Class I")
	(b) Availability severely limited if new facilities not forthcoming	(b) Availability not constrained by lack of new facilities to satisfy advance contractual commitments

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<u>Policy</u>	<u>State Water Project ("SWP")</u>	<u>Central Valley Project ("CVP")</u>
4. Overall Water Availability	(a) Ultimate contractual commitments are double current firm project yield; all contractors face reductions in entitlements if new facilities not authorized	(a) Contractual commitments match or even fall below currently constructed capacity (b) Some uncertainty interjected due to current contract renegotiations, and application of new acreage limitation rules
5. Possible Future Policies Affecting Groundwater Management	(a) Require direct storage of supplies or delivery only in lieu of pumping (b) Require conservation and/or groundwater management plans as conditions to entitlement deliveries (c) Assert control over percolated project water, if not directly stored (d) Manipulate pricing to encourage improved conjunctive use (may require specific legislative authorization) (e) Encourage surface water transfers between state and federal contractors in Southern Valley and possibly other parts of the State	(a) Same as SWP (b) Same as SWP (c) Same as SWP (d) Same as SWP (e) Same as SWP (in conjunction with it)

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