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INEFFICIENCY, WASTE, AND LOSS:
WATER SUPPLIES OF THE FUTURE?

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WESTERN WATER LAW IN TRANSITION

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I. SEVERAL FACTORS MAKE INCREASED EFFICIENCY OF WATER USE (COLLECTIVELY "CONSERVATION"), COMBINED WITH MARKETS FOR TRADING CONSERVED WATER, AN ATTRACTIVE ALTERNATIVE TO TRADITIONAL WATER DEVELOPMENT PROJECTS.

A. References

1. R. Stavins, et al., Trading Conservation Investments for Water: A Proposal for Metropolitan Water District of Southern California to Obtain Additional Colorado River Water by Financing Water Conservation Investments for Imperial Irrigation District (Environmental Defense Fund 1983).
2. California Assembly Office of Research, A Marketing Approach to Water Allocation (1982).
3. C. Lee, The Transfer of Water Rights in California (Governor's Commission to Review California Water Rights Law, 1977).
4. S. Shupe, "Waste in Western Water Law: A Blueprint for Change," 61 Or. L.R. 483 (1982).
5. National Water Commission, Water Policies for the Future 260-70 (Final Report to the President and the Congress of the United States by the National Water Commission, 1973).
6. C. Phelps, et al., Efficient Water Use in California: Water Rights, Water Districts and Water Transfers (Rand Corporation 1978).

- B. Relative cost of conservation is lower.
1. Cheap dam sites are gone. E.g., unit cost for water from proposed Auburn Dam in California (for storage only) estimated at \$300 - \$900/acre ft.
 2. Some available conservation measures in the \$10 - \$15 /acre ft. range, although costs range higher for more capital-intensive measures such as concrete lining of canals (estimated at \$180/acre-ft. to line All-American canal in California's Imperial Valley).
- C. Lead times for conservation often shorter.
1. Some on-farm conservation measures, such as improved irrigation scheduling, can begin to yield savings almost immediately; others may take longer depending on amount of capital outlay, construction, etc., but most still are possible in relatively short time frame.
 2. Major construction projects can take 10 years or more, particularly when adding in planning and legislative authorization time.
- D. Environmental considerations favor alternatives.
1. Increased recreational use of free-flowing rivers, other in-place water uses, and awareness of need to protect.
 2. Becoming increasingly aware of detrimental effects of past water development on fisheries, other

public trust values.

- E. Political climate makes new large projects unlikely, largely for reasons in B-D above.
 - 1. No new major federal authorizations in last decade.
 - 2. Fiscal concerns and competition for public dollar will shift larger share of cost to water user and discourage new subsidized large projects.
 - a. Cost-sharing proposals requiring some form of up-front investment by state and local beneficiaries of federal projects.
 - b. Efforts to revise pricing of federal water which will increase price (e.g. USBR, CVP Rate Setting Policy Proposal (April 1984)).
 - 3. Current proposals within Reagan Administration evidence little chance for new major storage projects.
 - 4. Same is true at state level in California.
 - a. Defeat of Peripheral Canal in 1982 and Governor Deukmejian's through-Delta proposal in 1984.
 - b. General legislative recognition that it will be hard to pass any new major water packages in the foreseeable future.

II. A WIDE RANGE OF MEASURES IS AVAILABLE FOR INCREASING EFFICIENCIES OF WATER USE AND CREATING NEW SUPPLIES FROM CONSERVED WATER.

- A. Largest conservation potential is in the agricultural sector simply because of amounts of water used.
1. In western states agriculture is by far the largest user of water; in California this sector accounts for 85% of water use.
 2. Much of new demand likely will arise in the urban and industrial sectors, encouraging marginal shift from agricultural savings.
- B. There is disagreement over potential for real water savings depending on assumptions concerning factors such as evaporative losses, reuse of runoff, percolation to reusable groundwater, contribution of runoff to other beneficial uses.
1. Potential magnitude of water savings seen in California's Imperial Valley (discussed infra) where current estimates for savings range from 350,000 AFY and up. This is equivalent to yield from major storage project.
 2. True potential may not become fully evident until measures in place to encourage conservation and create markets.

C. Available measures vary from low cost (generally labor intensive) to higher cost (generally more capital intensive); their implementation may vary depending on economic decisions by the farmer. Some examples follow:

1. Improved on-farm management: includes measures like irrigation scheduling (monitoring crops, weather, soil and other factors, often combined with computer modeling, to increase precision of timing and amount of irrigation), tailwater reuse, and minimized leaching.
2. Improvements in distribution systems: lining canals, constructing regulating reservoirs, other structural improvements.
3. Changes in irrigation application methods: switches to systems which wet smaller areas, such as drip or trickle. Capital intensive.
4. Crop mix changes: switches to less water intensive crops.
5. Land fallowing and retirement (temporary or permanent): proper economic signals may favor taking land out of production on short-or long-term basis and marketing water saved.

III. THERE ARE TWO BASIC APPROACHES TO DEVELOPING SOME OF THESE CONSERVATION POTENTIALS.

A. Some commentators have suggested that state courts and

agencies should more aggressively enforce limits on water use under state constitutional and statutory prohibitions against waste. (E.g., Shupe, 1982).

1. California constitution (Article X, Section 2) and water code (Water Code Section 100) limit water right to reasonable and beneficial use; other western states have similar provisions.
2. Public trust doctrine, recently elaborated on by California Supreme Court in National Audubon Society v. Superior Court, 33 Cal. 3d 419 (1983), requires protection of public-trust instream uses "whenever feasible;" untested doctrine which could require alternatives-- including better use of existing supplies.
3. Potential limitations to this approach.
 - a. Consumes large amounts of judicial or administrative resources from already heavily burdened courts and agencies.
 1. Recent decision by California State Water Resources Control Board finding waste of water by Imperial Irrigation District (discussed infra) took 4 years from initial complaint to decision. Now under judicial review.
 2. Diverts agency resources from other competing tasks (such as toxics regulation in California).

- b. Subject to political resistance because seen as interjecting state into what are perceived as individual and local decisions on water use, crop mixes, etc.
 - c. Approach may be warranted in certain instances but questionable whether it can create large scale move toward conservation, or markets.
- B. Alternative is creating clear economic incentives to conservation, including markets in water.
- 1. The need for water market and potential for increasing use efficiencies has been noted by numerous commentators, e.g. Assembly Office of Research, 1982, and sources cited therein; National Water Commission, 1973; C. Phelps, et al., 1982.
 - 2. Allowing freer transfer will encourage higher efficiencies by giving incentives to save water not necessarily present under current water pricing practices (e.g., IID to MWD transfer, infra).
 - 3. Success of markets will depend not only on economic incentives but on legal and institutional framework which encourages or discourages conservation and freer water trading.

IV. RECENT LEGAL TREND HAS BEEN TO REMOVE IMPEDIMENTS AND CREATE INCENTIVES TO CONSERVATION AND WATER TRADES. (DISCUSSION FOCUSES ON CALIFORNIA BUT ISSUES SIMILAR FOR OTHER WESTERN STATES).

A. In California, appropriative rights to water have long been recognized to be transferable. Thayer v. California Development Co., 164 Cal. 117, 125 (1912); See also Stevinson Water District v. Roduner, 36 Cal. 2d 264, 270 (1950). Nevertheless, factors such as certainty of the right to water being transferred, protection of current user against forfeiture, and effects on third parties can act as impediments both to conservation and to marketing of conserved water.

B. California law now protects user against forfeiture of right resulting from water conservation or transfer.

1. Former California Water Code Section 1241:

When the person entitled to the use of water fails to beneficially use all or any part of the water claimed by him, for which a right has vested, for the purpose for which it was appropriated or adjudicated, for a period of three years, such unused water reverts to the public and shall be regarded as unappropriated public water.

The forfeiture period for pre-1914 (non-statutory) appropriative right is five years. Smith v.

Hawkins, 110 Cal. 122, 126-27 (1895).

2. Recent change protects water rights from forfeiture when all or any part of water not used due to conservation efforts (including water savings resulting from land fallowing or crop rotation). (Water Code Sections 1010, 1011).

a. Water Code Section 1011(a) provides:

When any person entitled to the use of water under an appropriative right fails to use all or any part of the water because of water conservation efforts, any cessation or reduction in the use of such appropriated water shall be deemed equivalent to a reasonable beneficial use of water to the extent of such cessation or reduction in use. No forfeiture of the appropriative right to the water conserved shall occur upon the lapse of the forfeiture period applicable to water appropriated pursuant to the Water Commission Act or this code or the forfeiture period applicable to water appropriated prior to December 19, 1914.

C. Other recent changes to encourage transfer and protect right of transferor from forfeiture.

1. AB 1147 (1979) provides procedure for temporary and long-term transfers of water rights (Cal. Water

Code Section 100.5, 109, Article 1.5 commencing with Section 1210, Chapter 10.5 commencing with Section 1725).

2. AB 3491 (1982) provides comprehensive legislation protecting rights of those who sell, lease or exchange water. Also provides, inter alia, that water districts and agencies may act as brokers for individual users and requires state agencies to encourage transfers and provide technical assistance. (Cal. Water Code Sections 109, 380 et seq.)
 - a. Water Code Section 109 declares it to be "the established policy of this state to facilitate the voluntary transfer of water and water rights where consistent with the public welfare of the place of export and the place of import. "
 - b. Water Code Section 1244 provides:

The sale, lease, exchange, or transfer of water or water rights, in itself, shall not constitute evidence of waste or unreasonable use, unreasonable method of use, or unreasonable method of diversion and shall not affect any determination of forfeiture applicable to water appropriated pursuant to the Water Commission Act or this code or water

appropriated prior to December 19, 1914.

D. Transfers still subject to restrictions on change in point of diversion, place of use and purpose of use to protect other legal users and fish and wildlife (third-party protections.) (Cal. Water Code Sections 386, 1725).

1. State Water Resources Control Board must approve transfer of post-1914 appropriative right. Must disapprove any transfer which might injure other legal users of water involved. (Cal. Water Code Section 1702).
2. Most often used to protect downstream appropriators rights to return flow. Fish and wildlife, recreation and other instream uses dependent on return flow also of concern. Transfer can generally only include amounts consumptively used by present user or additional amounts developed through conservation.
3. Some have questioned whether junior appropriators should be protected and advocate removal of such restrictions, at least for newly acquired rights. See National Water Commission, Water Policies for the Future, 263-64 (1973)).

E. Other considerations:

1. Inchoate, unquantified rights which may take priority over right transferred, e.g.'s:

- a. Riparian rights (California): right to reasonable use of water course adjacent to land; not subject to set quantity.
 - b. Protection of areas of origin (California): County of Origin, Watershed Protection and Delta Protection Acts give priority to "in-basin" uses, including those not yet developed, over out of basin transfers by projects (e.g., Cal. Water Code Sections 10505, 11460, 12201-2).
 - c. Appropriative rights acquired prior to statutory procedures (pre-1914) largely unquantified.
2. Prohibitions on interstate transfers (may be unconstitutional burden on commerce); see Sporhase v. Nebraska, 102 S. Ct. 3456 (1982).
 3. Right of water districts to transfer water versus right of individual landholders within district.
 - a. Most general district acts in California provide agency with broad power to sell, transfer or otherwise convey surplus water, including to buyers outside district boundaries. E.g., Cal. Water Code Sections 22225-64; 31020-34; 71610-17.
 - b. However, individual landowners may not be able to transfer water assigned to them by district

outside of district boundaries, at least without district consent. See Cal. Water Code Section 22251; Jenison v. Redfield, 149 Cal. 500 (1906).

c. California water districts prohibited from earning profit. (C. Phelps, et al., 1978 at 8). Benefit of net revenues would have to be distributed to individual members.

- F. Transfer of water developed by large projects may be subject to specific restrictions.
1. In California, two major projects, State Water Project and federal Central Valley Project, provide approximately 10 MAF combined.
 - a. Projects hold water rights.
 - b. Individual users have right under contract with projects.
 2. State Water Project contracts permit assignment or transfer of rights subject to state approval (Article 41). One concern is financial impact on project. During drought of 1976-77, Department of Water Resources encouraged transfers such as "Metropolitan Exchange" discussed infra.
 3. Federal policy potentially more restrictive.
 - a. According to recent Assembly Office of Research study (1982), USBR Mid-Pacific Region's transfer policy is:

- 1) Contractors not obligated to take maximum quantity of water contracted for cannot purchase water from another contractor.
- 2) Transfers are permitted between contractors who are both obligated to purchase their respective maximum quantities.
- 3) Transfers are allowed from districts not obligated to pay for a maximum amount.
- 4) If agency outside CVP system wants to buy, Bureau prefers to deal directly rather than through contractor.
- 5) Federal policy requires transfers to be approved, to occur at cost plus administration costs, and to comply with federal excess lands restrictions. (Some question whether purchasers of federal water at subsidized prices should be able to sell water for a profit.)

b. Reclamation Law requirement that project water is appurtenant to land irrigated may be a further legal impediment to transfer (43 U.S.C. Section 391 (1902); S. Clyde, "Legal and Institutional Barriers to Transfers and Reallocation of Water Resources," 29 S. Dakota LR 232, 255-6

(1984)). Specific project authorizations, particularly authorized service areas, may also present impediments to transfer.

- c. Department of the Interior has stated that its initial review indicates there would be no legal restrictions to a transfer of the type proposed between Imperial Irrigation District and Metropolitan Water District discussed infra. (Letter from Robert Broadbent, Assistant Secretary for Water and Science to Congressman Vic Fazio, August 13, 1984.)

4. Significant positive aspect of projects is their potential to act as brokers and water wheelers. Extensive distribution systems make transfers physically easier. Broad place of use provisions in permits may sometimes ease legal barriers. AB 3491 (1982) discussed supra requires state agencies, including Department of Water Resources, to encourage and provide assistance for transfers.

V. PAST EXAMPLES OF WATER TRADES

- A. During the drought of 1976-77 there were several attempts to trade water on a temporary basis, some successful some unsuccessful, as response to short-term water shortage. (See C. Lee, 1977 at 57-70).

1. "The Metropolitan Exchange": Metropolitan Water District of Southern California ("MWD") reduced its

deliveries from the State Water Project by 400,000 acre-feet by taking additional water from Colorado. This 400,000 acre-feet was delivered to nine State Water Project contractors and other agencies.

2. Federal Water Banking Program

a. Emergency Drought Act of 1977 directed Secretary of Interior, through Bureau of Reclamation to:

assist willing buyers in purchases of available water supplies from willing sellers and to redistribute such water to irrigators based upon priorities to be determined by the Secretary within the constraints of State water laws. . . .

(Act of April 7, 1977, Pub. L. No. 95-18, 43 U.S.C.A. Sec. 502 note.)

b. In California, Bureau purchased 46,438 acre-feet of water from seven sellers primarily along Sacramento River at prices from \$15 to \$17 per acre-foot and resold 42,533 acre-feet to buyers in San Joaquin Valley at \$53 per acre foot plus conveyance costs.

3. City of Redding transfer

a. City water supply purchased from Bureau of

Reclamation Central Valley Project.

- b. Because of broad place of use provisions in permits held by Bureau, Redding was able to transfer to other users within CVP area without obtaining State Water Resources Control Board approval.

4. Proposed Anderson Farms transfer

- a. Anderson farms located upstream from Sacramento-San Joaquin Delta in Yolo County; Berrenda Mesa in Kern County which receives State Water Project deliveries from Delta.
- b. Anderson farms proposed increasing groundwater pumping and foregoing surface water diversions; State Water Project would then either reduce storage or increase diversions from Delta to extent Anderson relied on groundwater with credit to Berrenda Mesa.
- c. State Water Resource Control Board disapproved transfer as violative of emergency regulations protecting Delta water quality, potentially contrary to public interest, and constituting an unreasonable method of diversion.

- B. More recently, potential for longer-term exchange of conserved water from the Imperial Irrigation District ("IID") to MWD.

VI. IMPERIAL VALLEY-URBAN SOUTHERN CALIFORNIA WATER TRADE

A. Physical/technical potential for large savings of water in IID system with potential for transfer to MWD or other urban southern California users.

1. IID irrigates some 500,000 acres in Imperial Valley near Mexican border. Over last decade diversions from Colorado River have averaged about 275,000 acre-feet/year.
2. 1981 study by California Department of Water Resources ("DWR") estimated 438,000 acre-feet per year could be saved through various conservation measures ranging from on-farm to major system improvements. (DWR, Investigation Under California Water Code Section 275 of Use of Water by Imperial Irrigation District (1981)). This is roughly amount MWD's actual recent diversions from Colorado River will potentially be reduced by Central Arizona Project. Current estimates for savings in IID system range from 350,000.
3. Irrigation return flows from IID currently enter Salton Sea (saline sink.) Owners of land adjacent to sea have initiated legal challenges alleging rising level of sea caused by waste in IID system. While Sea currently supports fish, wildlife and recreation uses, there are no downstream consumptive uses threatened by

reductions in IID use.

4. Since MWD already takes water from Colorado River, physical conveyance system to accomodate transfer is in place.

B. A water conservation/trade arrangement would have potential economic benefits both to IID and to MWD or other urban user.

1. Detailed analysis by EDF shows that IID would benefit if MWD were to invest in conservation improvements by obtaining system improvements IID may not have incentive to make on its own. Further benefits would accrue if IID could sell water for profit. MWD could obtain water at lower incremental cost than alternatives, including primarily to expand State Water Project and increase exports from northern California. (Stavins, et al. 1983).

2. Preliminary study by Bureau of Reclamation confirms potential economic benefits. (USBR, Economic Appendix to the Special Report on Water Conservation Opportunities, Imperial Irrigation District (Draft, July 1983)).

C. State Board Water Rights Decision 1600 (June 1984) found IID wasting water in violation of state constitutional and statutory requirements of reasonable use. (Cal. Constitution Art. X, Sec. 2; Water Code

Section 100). Ordered IID to undertake various measures to reduce waste, but did not quantify potential.

1. Decision in response to complaint of landowner under Water Code Sec. 275 alleging flooding of property adjacent to Salton Sea caused by waste.
2. Decision finds no legal barriers to transfer; notes potential for transfer to urban southern California to meet potential shortfalls from Central Arizona Project operation.
3. In March 1985, Superior Court found that although Board had jurisdiction to hold hearing on reasonableness of IID water use, "[t]he orders contained in Decision 1600 are without binding effect on the Imperial Irrigatin District." Court held Board must initiate separate legal action under Water Code Section 275 challenging IID's water use. Period to appeal runs to mid-June.

D. Important unresolved legal issue is whether IID can sell water conserved to any purchaser.

1. IID maintains it may sell conserved water to any buyer for a profit under recent state law amendments discussed supra. (See Water Code Sections 109, 1011, 1012). District position is that it holds "present perfected rights" to

Colorado River water obtained under state law and that these are not superseded by federal "Law of the River." ((See Arizona v. California, 439 U.S. 419, 429 (1979); Bryant v. Yellen, 440 U.S. 352, 356 (1980)). Under state law, District retains right to conserved water and may transfer to any user.

2. MWD maintains IID's rights are superseded by federal law and are subject to Seven Party agreement allocating Colorado water among California users. MWD claims right to water not used by IID under this intra-state agreement. While MWD is willing to pay costs of conservation improvements, it claims IID can not transfer water to another user.
3. Resolution could have significant effect on magnitude of any water savings. Profit incentive could enhance IID willingness to conserve and transfer water, especially on longer-term, more certain basis.

E. In March 1985, IID entered historic agreement with Parsons Corporation, major engineering firm, to assist in putting together conservation/trade program.

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