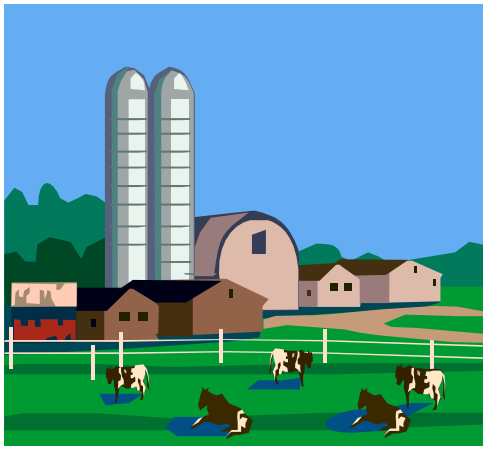
Water Transfer Issues in California



Final Report to the
California State Water Resources Control Board
by the Water Transfer Workgroup

June 2002

July 30, 2002

Arthur Baggett Jr., Chair
State Water Resources Control Board
901 P Street
Sacramento, CA 95814

Subject: Report of the Water Transfer Workgroup

Dear Mr. Baggett:

Attached is the final report of the Water Transfer Workgroup, which was established pursuant to your letters of August 14, 2000.

In keeping with our discussions and the objective set forth in your letters, a group of individuals interested in water transfers was assembled. Our intent was to identify ways to facilitate the policies of the Board, CALFED, and the Legislature and Administration, which encourage water transfers, recognizing the statutory and practical constraints. The CALFED program manager for water transfers and representatives from the Department of Water Resources and the Bureau of Reclamation were involved from the start and provided essential input.

The Workgroup met approximately monthly from September 2000 through May 2002. Initially, specific parties known to have been involved in water transfer issues were invited to participate; however, the meetings were open and additional parties often attended. A list of persons who desired to be kept informed of progress was continuously maintained. An e-mail reflector was set up so that all the parties expressing interest could be kept informed. A copy of that interested party list is included as an appendix to the report. About one-third of the parties on the list participated actively by attending meetings and drafting and reviewing work products.

An open process was maintained, and the list of participants expanded as we progressed. The fact that all meetings were held in Sacramento, and the time commitment involved, may have limited participation by some.

In accordance with our discussions, the Workgroup did not operate from an agenda established by the State Board, or any other agency. The Workgroup decided which issues to tackle and how to structure its effort. It was recognized from the outset that unanimous agreement on any issue would be unlikely. The active participants agreed that they would strive for as much agreement as possible, and would concur with publication of a report if minority opinions and the rationale for them were accurately represented. Many compromises were necessary. As a result, nothing in the report should be attributed to any individual, even though the individual actively contributed to the product. By extension, it is obvious that the individuals on the interested parties list who were not actively involved bear no responsibility for the product.

Each section of the report was drafted by a subgroup of interested parties. While most of the sections were discussed at workgroup meetings, there was no formal vote to determine the extent

of agreement with each section's content. For this reason, the following caveat was added to each section:

> The sections of this report were drafted by groups of participants, some large and some small. Early in the process, a ground rule was developed: the conclusions and opinions expressed in the report are not endorsed by all participants, nor are they necessarily majority opinion or position. The sections presented in this report nonetheless are useful in outlining various positions and perspectives, some of which evolved after much discussion. Others more closely reflect the perspective of one or a few participants.

The last draft of the report was circulated for comment on May 15, 2002. Three written comments were received prior to the last workgroup meeting on May 31. The parties attending the last meeting reviewed those comments and agreed to partially incorporate them. They also made several other minor additional changes and agreed to proceed with publication.

The issues that the Workgroup originally identified were addressed to varying degrees. Some, we were unable to deal with; others were considered extensively. The resulting report is far short of a panacea for all the issues, real or perceived, that surround the subject of water transfers. However, I believe that it: (1) does a good job of defining most of the issues specific to transfers; (2) makes several specific recommendations for further actions; (3) provides a bibliography of transfer-related documents published over the past 25 years; and (4) identifies steps necessary to commence resolution of remaining issues.

In view of the diversity of opinion reflected in the report, and the limited number of active participants, we recommend that the Board provide expanded opportunity for input if it elects to follow up on any of the Workgroup's suggestions.

I wish to express my personal thanks to all of the active participants in this process. If the issues were not contentious, there would have been no need for the effort. Despite the differing opinions, the involved parties cooperated fully and worked hard to achieve a useful product. The State Board staff provided essential logistical and administrative support. In particular, I wish to thank Luann Erickson. Ms. Erickson was charged with transforming the drafts, written in different styles with different levels of detail, into a document that would be as coherent as possible, without changing the intent of the numerous authors.

In conclusion, I wish to thank the Board for the opportunity to be involved in this process. All of the Workgroup members recognize that resolution of transfer-related issues will be a lengthy ongoing process. We hope the attached report will contribute to that effort.

Sincerely,

Original signed by

Walter G. Pettit
Water Transfer Workgroup

cc: Board Members
Interested Parties List

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Glossary of Acronyms

af	acre-feet
afa	acre-feet per annum
CALFED	CALFED Bay-Delta Program
cfs	cubic feet per second
CVP	Central Valley Project
CVPIA	Central Valley Project Improvement Act
DWR	California Department of Water Resources
EWA	Environmental Water Account
SB	Senate Bill
SWP	State Water Project
SWRCB	State Water Resources Control Board
USBR	U. S. Bureau of Reclamation
VAMP	Vernalis Adaptive Management Plan

Water Transfer Workgroup Report
Table of Recommendations

	Suggested Follow-up Action	Entity	Reference
1.	Prepare programmatic EIR/EIS for Tier 1 transfers.	DWR/USBR/SWRCB	Section 3, p. 13, et seq.
2.	Adopt standard application form.	DWR/USBR/SWRCB	Section 3, p. 19
3.	Provide technical, financial, policy support for improved groundwater monitoring.	DWR/USBR/SWRCB	Section 3, p. 15 Section 5, p. 41 Section 6, p. 56
4.	Further consolidation of USBR/SWP places of use.	DWR/USBR/SWRCB	Section 3, p.16
5.	Precertify potential buyers of water from groundwater banks.	DWR/USBR/SWRCB	Section 3, p. 17
6.	Establish time limits for responses to applications.	DWR/USBR/SWRCB/ USFWS/NMFS/DFG	Section 3, p. 18
7.	Reach agreement on fallowing criteria.	DWR/USBR/SWRCB	Section 4, p. 20
8.	Develop guidelines regarding imported (recharge) water.	DWR/USBR/SWRCB	Section 5, fn. 28, p. 27
9.	Prepare legislation to define rights to use of vacant aquifer space.	DWR/Legislature	Section 5, p. 31
10.	Define relative state/local authority over extraction and use of water previously stored in groundwater basins.	Not specified	Section 5, p. 37
11.	Establish principles/guidelines committee.	Appropriate entity	Section 5, p. 41
12.	Develop regional groundwater management policies.	Local agencies	Section 6, p. 56
13.	Provide funds and technical assistance to local agencies that develop management plans.	DWR/USBR/SWRCB/ DHS	Section 6, p. 56
14.	Strengthen groundwater management statutes.	Legislature	Section 6, p. 56
15.	Clarify status of Section 1707 transfers to nonriparian land.	SWRCB/ Attorney General	Section 9, p. 68
16.	Define use of Section 1707 transfers to meet nonproject obligations in the Delta.	SWRCB staff	Section 9, p. 68
17.	Condition transfers with Terms 91/93, "balanced conditions" requirements.	SWRCB	Section 10, p. 75
18.	Improve the reliability and predictability of planned drought transfers.	DWR/SWRCB	Section 12, p. 80

Introduction

How the Water Transfer Workgroup Was Established

In mid-2000, the members of the State Water Resources Control Board (SWRCB) recognized that numerous issues remained concerning water transfers, including those described in this report. It was also apparent that several regulatory agencies, numerous project operators, and various groups had substantial interest in resolving outstanding issues. Further, it was apparent that no single agency, acting unilaterally, would be able to effect a resolution.

The SWRCB decided to support formation of an independent group of interested parties charged with analyzing the issues and preparing recommendations. The outgoing Executive Director of the SWRCB was asked to assist in formation of the group and to act as its Chair. Any forthcoming recommendations were to be directed at whichever entity had the best capability to resolve the issue being addressed. It was understood that the SWRCB would provide logistical and administrative support and its staff would participate; however, the SWRCB did not propose to set the agenda for the Workgroup, or to determine how it approached the task. The CALFED Water Transfer Program Manager participated in the Water Transfer Workgroup's efforts in response to the CALFED Record of Decision (ROD), which called for convening a panel of stakeholders, including both transfer supporters and community representatives with concerns about transfers, to draft recommendations for a streamlined transfer approval process.

Based on input from the staff, the Workgroup Chair, and several parties interested in transfers, the SWRCB Chair sent a letter dated August 14, 2000 (Appendix 1) to a number of parties known to be interested in the issues. The letter described prior material that should be considered and how any recommendations should be focused. The first meeting was set for September 14, 2000.

Role of the Participants

Although the invitation to participate was sent to a number of known interested parties, the process was open, and a number of participants joined the group at various stages. All of the meetings were held in Sacramento, which may have limited participation by interested people in other parts of the State. An ongoing roster of active participants and persons who wished to remain on the mailing list for notices, documents, etc., was maintained and is included as Appendix 2. Most of the persons listed on the roster (about two-thirds) did not attend the meetings regularly, or participate in drafting language. In accordance with the SWRCB's request, the group was self-directed; that is, the group defined the issues and organized itself in the manner it considered to be most effective. Participants interested in a particular issue were charged with drafting language for review and comment by the Workgroup.

One important ground rule was established early in the process. It was recognized that the group would be publishing issue statements, and potentially recommendations, that would be the result of consensus insofar as possible. However, it was anticipated that the group as a whole might be willing to publish documents containing specific details with which some participants would not concur. Therefore, it was agreed that any documents that issued from the group must contain a provision that clarifies that no individual participant can be assumed to concur with specific findings or recommendations or that those findings or recommendations are majority opinion or position.. Given the variety of interests represented, omission of that caveat would require that every member be given veto authority, which, in turn, would have doomed any potential product. Virtually all of the individuals participating in the meetings agree that the material contained in the report represents valid descriptions of the issues and of opinions held by active participants. All participants had the opportunity to comment on the several drafts that were distributed, but not all conflicting comments were resolved.

Method of Operation and Duration of the Group Effort

1. **Establishment of subgroups:** The participants decided to organize themselves into four subgroups, based partially on process issues and partially on the type of transfer being addressed.

   The streamlining subgroup focused on ways to make the processes of the Department of Water Resources (DWR), U. S. Bureau of Reclamation (USBR), and SWRCB more efficient in considering transfers. Solutions such as preauthorized intraregional transfer zones, definition of acceptable risk of injury for small/short-term transfers, and expedited application review time frames were considered.

   The surface water subgroup initially identified a number of issues it intended to address. Those included definition of injury, the role of watershed protection statutes and water conservation, and transferability of return flows. Work was also commenced on a number of case studies intended to analyze different types of transfers; however, that effort was dropped. Smaller ad hoc groups worked on several issues to completion, and others were recognized as overarching issues.

   The stored water subgroup originally intended to consider the role of the Watershed Protection Act in defining injury to the SWP and CVP, and to develop terms for applying refill criteria when water was transferred out of reservoirs. The group was unable to identify the resources necessary to do the technical work to support the “refill” analysis. The role of watershed protection statutes was addressed more generally.

   The groundwater subgroup planned to look at use of groundwater in lieu of surface rights that were transferred, transfer of banked water, and direct transfer of groundwater. This group actually concentrated substantial effort on analyzing the situations in which imported water is intentionally recharged into a groundwater basin for later transfer out of the basin, groundwater substitution where a water user replaces surface water use by pumping groundwater, and a discussion of the issues associated with transferring percolated groundwater. These efforts include the most intensive and detailed of all of the activities undertaken by the Workgroup.

CALFED had previously established a separate agency-workgroup to identify the conditions under which land fallowing makes water available for transfer. The CALFED Water Transfer Program Manager chaired that group, and interested members of the Water Transfer Workgroup were invited to participate in this separate workgroup. In effect, this arrangement provided the benefit of a fifth subgroup.

2. **Overarching issues:** A number of factors were identified which affected more than one or all of the specific issues described above. Some were recognized early on, and others emerged as the evaluations proceeded. To the extent the Workgroup was able to deal with them, the subjects are included in this report. The factors are:

- Definition of "injury," as applied to water transfers.
- The extent to which transfers can be relied upon to solve California's water problems.
- Applicability of the public trust doctrine.
- The role of USBR/DWR as both transfer parties and approving agencies.
- Potential input to the implementation EIR being prepared as a result of the report of the Governor's Advisory Drought Planning Panel.
- Effect of the watershed protection statutes.

The next two sections of this report discuss the extent to which transfers have become a major factor in California water management and describe the various types of transfers that occur. The subsequent sections, 3 through 12, report on the individual issues the Workgroup considered.

Section 1. The Importance of Water Transfers*

A water transfer is a reallocation of water among water users. Water transfers provide much needed flexibility in the allocation and use of water in California. In its 1976 report, the Governor's Commission on Water Rights recognized the importance of water transfers to the future of California's water supply and made recommendations regarding the need for specific changes to the Water Code to facilitate the transfer of water. Many of these changes were accomplished in the following years.

Over time, language was added to the Water Code to expedite the review and processing of short-term water transfers; that is, water transfers in effect less than one year. State and federal agencies developed procedures to assist in the processing of water transfers proposed by local or private entities. For example, USBR accommodates water transfer requests within the Central Valley Project (CVP) through the provisions of the Central Valley Project Improvement Act (CVPIA). DWR allows use of its State Water Project (SWP) facilities by its contractors and others under the provisions of Water Code section 1810[1]. Access to pumping plants in the Sacramento/San Joaquin Delta and canal capacities are major factors in accomplishing water transfers from the northern portions of the State to the central and southern areas of California. SWRCB has given priority to processing short-term water transfers to accommodate the changing needs of water users. In response to consecutive drought years, the State Water Bank was established in 1991, and in that year, purchased rights to use 821,000 acre-feet of water from willing suppliers to sell to entities with critical needs.

State and Federal Agency Participation

Historically, water transfers were usually arrangements between two parties, one with surplus water supply and one in need of additional water. These two parties would reach a mutually acceptable arrangement regarding price and quantity. Because public rights in water have always been recognized, approval by appropriate state and federal agencies has been viewed as a necessary part of the process for these independent water transfers.

However, since the signing of the CALFED Bay/Delta Program's Programmatic Record of Decision dated August 28, 2000, the roles of the state and federal agencies in the water transfer process have changed and the agencies have assumed added responsibilities. A key factor in that change is the creation of the Environmental Water Account (EWA). The EWA is a program that

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[1]Water Code section 1810 allows a party transferring or exchanging water to use available capacity within an existing water conveyance or distribution facility in exchange for fair compensation subject to various considerations.

allows state and federal fishery agencies to call for additional reductions in Delta exports above regulatory baselines at key times, generally during the winter and spring, to reduce the entrainment of fish at the state and federal pumping plants. The resulting temporary reductions in water supply from these actions are repaid to the state and federal water projects later in the year at no increased cost to the water projects. Public funds are used to finance the program. Water transfers are a key component of the EWA. During its first year of operation (water year 2001), the EWA obtained 264,000 acre-feet of water from transfers. An additional 72,000 acre-feet held in San Luis Reservoir from water transfers the previous year were also provided to the EWA by USBR. About 40 percent was obtained upstream of the Delta and about 60 percent was obtained in the export areas south of the Delta, making the EWA a major factor in the water market during 2001. In addition, both DWR and USBR instituted dry-year programs and a program to obtain water supplies for wildlife refuges. These three programs obtained water transfers of 363,000 acre-feet in 2001. The water for these transfers was obtained mostly upstream of the Delta for use in areas south of the Delta. Only one relatively small water transfer (10,000 acre-feet) across the Delta, unrelated to the actions by the state or federal agencies, was approved last year. In water year 2001 over 630,000 acre-feet were transferred. The vast majority was transferred either under the guidance of, or funded by, a state or federal program. The complexity of cross-Delta water transfers and the flexibility derived by using the water rights of the DWR and USBR to facilitate these transfers makes the active involvement of these agencies in water transfers a critical factor.

Local Agency Participation

Local leadership and initiative are also important factors in facilitating water transfers. Successful water transfers are typically proposed by local water agencies and benefit from local involvement in the development of these proposals. Some counties have passed local ordinances to regulate groundwater extraction for water transfer purposes. With adequate public notice, disclosure of proposals and meaningful public participation, local communities can best assess their area's need for water supplies and determine if there is a potential for transferring water outside of the local region. They can also develop mitigation monitoring and funding programs to address local concerns with water transfers as they develop. While the state and federal water agencies can assist in moving water from one area to another and ensuring the protection of larger public interests, local agencies can lead in the development of the water transfer proposal.

Also, local government is often concerned about how water transfers affect third parties and the social and economic conditions in the county. Water transfer packages need to take these issues into consideration. Partnerships with local government are one way to better address these issues. For example, DWR is funding a program with Butte County to investigate socio-economic impacts associated with water transfers at the local level. These types of partnerships need to be pursued in water transfer programs to ensure that water transfers do not unreasonably affect resource counties.

Although the parties to the transfer remain responsible for the mitigation of impacts, the optimal approach would be to design programs that minimize or eliminate them. The discussion of options for dealing with third parties impacted by a water transfer, and also options for counties impacted socially and economically by a water transfer, needs to take place during the

development of a water transfer program. This participation up front will allow local government to help facilitate water transfers that will address local concerns.

As each water transfer is being developed, the following three factors, set forth in various sections of the Water Code, must be evaluated regardless of the approval process for the water transfer:

(1) prevention of injury to other legal users of water;

(2) avoidance of unreasonable effects on fish and wildlife; and

(3) if water is moved by the SWP or other state, regional, or local public agency, actions needed to avoid the unreasonable effects on the overall economy in the county from which the water is transferred.

Including these actions as part of the water transfer from its initial design, as well as a brief assessment of how the proposed transfer would serve public interests, will assist greatly in making the water transfer succeed.

Maximizing Public Welfare When Using Water Transfers

The application of market forces can be an effective way to achieve a balance between supply and demand, to facilitate efficiency by disclosing noncompetitive and inefficient water users, and to stimulate use of technical and procedural innovations to maximize water use efficiency.[2] However, it is important to note that use of water involves an unusually complex mix of price responsive and non-price responsive social values. The complexities include interrelations among consumptive water uses, instream public trust needs, and the sometimes contradictory imperatives of managing other relatively nonconsumptive uses such as power generation, flood control, and recreation. Moreover, market forces are less effective when there is a long time lag between the time that a predictable shortage of an essential commodity, such as food, is reflected in a price rise and the time it takes either to increase supply or adapt to the shortage when it occurs. Thus, at times, market forces can fail to achieve the highest social welfare because of interests that are not considered within private bargaining. In these circumstances, focused regulation and government intervention are necessary to protect social interests that are not price responsive.

In particular, concern has been expressed over the extent to which agricultural lands may be lost, and the potential effect of that loss, if transfers are increased. Lands have been dedicated to agricultural use through county zoning, the Williamson Act, agricultural conservation easements, etc. Indeed, the basic provision of water for agricultural purposes at subsidized rates is a reflection of the high social value placed on agriculture in our society. The purpose of these dedications may be compromised if the water does not stay with the intended use. Farmlands, such as rice lands in the Sacramento Valley and Delta corn lands, support large populations of

[2]As declared by the California Legislature, "voluntary water transfers between water users can result in a more efficient use of water, benefiting both the buyer and seller." (Cal. Water Code § 475; see also Cal. Water Code § 109) ["efficient use of water requires certainty in the definition of property rights to the use of water and transferability of such rights").]

wildlife and waterfowl. Some of these farmlands are otherwise protected and some are not. If owners of these lands are encouraged to sell their water, these environmental benefits may be lost. Additionally, policy makers should consider the amount and source of water supply that will be needed to produce adequate food and fiber products for the nation's growing population.

Concern has also been expressed that the urge to rely upon market forces will undermine the purpose and integrity of the public water system. Over the last few years, interest in water marketing has increased substantially, which has generated various proposals that would turn public water resources into profit-making opportunities. While most agree that there are certain conditions under which these proposals would serve both public and private interests, some believe that many of these proposals would negatively affect public water agencies and their employees. Therefore, concern continues to grow that the need for future water sources will drive an unnecessary and/or unintended rush or disregard for public resource protection.[3]

At the same time, the mere possibility of these effects should not be proffered as a rationale to immunize agriculture and public water agencies from market forces. Rather, these concerns warrant focused regulation to address particular problems. For example, to counter the loss of incidental environmental habitat, regulatory protections and mandatory water quantity allowances for fish and wildlife habitat may be appropriate. State and federal statutes and the common law's public trust doctrine already largely provide these protections.[4] Similarly, land use issues should be addressed through land use regulation. While, the current "no injury" laws should be maintained to protect other legal users of water, this doctrine should not be expanded to prohibit transfers in all instances in which a transfer may diminish agricultural production in a particular region.[5] Finally, where there is a true concern that water markets may lead to underproduction of certain essential crops, policymakers might consider subsidizing the production of such crops to make them more competitive with other uses of water.

Similarly, water issues should not continue to be the primary forum for addressing other policy interests that must be dealt with on their face. For example, if impediments to transfers are enacted as an effort to avoid reallocation of water from agricultural locations to urban areas, the

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[3]Some environmental justice representatives believe that the public trust doctrine includes broader economic and social concerns.

[4]*See e.g.* Fish and Game Code section 5937; *see also In the Matter Of The Diversion And Use Of Water From Big Bear Lake And Bear Creek In San Bernardino County By Big Bear Municipal Water District And Bear Valley Mutual Water Company,* SWRCB Order WR 95-4 [1995 WL 92133] (applying Fish and Game Code section 5937); and *National Audubon Society v. Superior Court,* (1983) 33 Cal.3d 419 [189 Cal.Rptr. 346] (applying public trust doctrine).

[5]The California Water Code and the common law's "no injury" rule prevents transfers of water that would cause injury to other legal users of water. Legal users of water include those possessing riparian/overlying and perfected appropriative rights. The "no injury" rule generally does not consider impacts to third-party beneficiaries, such as effects on local agricultural economies. However, if a transfer involves the wheeling of water through a state or local water conveyance system, Water Code section 1810 prohibits the use of such facilities if the transfer would unreasonably affect the overall economy or the environment of the county from which the water is being transferred. Moreover, the California Environmental Quality Act requires that a public agency consider the reasonably foreseeable direct and indirect environmental consequences of transfers when a public agency is involved in the transfer, such as in the case of a change order from the SWRCB.

effect will be to spread urban development into rural communities where the water is located instead of allowing more prudent forms of growth, such as urban infill.

Water Transfers as One Component of a Larger Water Supply Solution

In sum, water transfers inevitably play an important role in California's long-term water supply picture. However, water transfers alone will not solve the current or anticipated water supply deficits that are recognized in both the CALFED Programmatic Record of Decision and DWR's California Water Plan (Bulletin 160-98). New water development projects, water conservation efforts to reduce consumptive demand or irrecoverable losses, and water reclamation programs all need to be pursued if California is to meet the water supply challenges of a growing population and its environmental and agricultural needs. Additionally, a more comprehensive discussion of population growth in California is necessary. In light of the limits on developing additional water supplies, both regulatory and real, population growth threatens to further aggravate the tensions between agricultural, municipal, and environmental water interests.

A goal of the Water Transfer Workgroup is to identify measures that will facilitate transfers within the constraints of statutes and state policy. The 2003 update of DWR's Bulletin 160 should consider the issues discussed above and set forth the role of water transfers in the overall state water management strategy.

Section 2. Types of Water Transfers*

Transfers Among CVP and SWP Contractors

Transfers of water between CVP contractors or between SWP contractors do not require action by the SWRCB unless the point of diversion, purpose of use, or place of use under the CVP's or SWP's water rights need to be changed to accomplish the transfer. About 95 percent of all transfers are of this type, and do not require SWRCB approval. However, for a CVP contractor to transfer water to an SWP contractor outside the CVP service area (or vice-versa), the transferring water right holder (either USBR or DWR) must petition the SWRCB for a change in water rights under the provisions of Water Code section 1725, et seq., for a short-term transfer or the provisions of Water Code section 1735, et seq., for a long-term transfer. Several examples of recent water transfers between SWP and CVP contractors are summarized below in *Transfers Before the SWRCB*. Water Code sections 1725, et seq., and 1735, et seq., are summarized in the paragraph titled *Water Code Provisions*.

Transfers from Pre-1914 Water Right Holders

Water Code section 1706 allows pre-1914 water right holders[6] to change the point of diversion, purpose of use, or place of use, if others are not injured by such change. Thus, pre-1914 water right holders are not required to petition the SWRCB to change the place of use under their right to transfer water. However, there is one situation where a pre-1914 water right holder may choose to petition the SWRCB, and that is for a temporary or long-term change for the dedication of pre-1914 water to instream use under Water Code section 1707. In this case, there are benefits from using a formal process which involves notification of all potential diverters within the instream-use reach of the stream that a portion of the water within that reach of the stream has been dedicated for instream use and is unavailable for diversion. Obtaining SWRCB approval of the change could also protect the water right holder against claims that the water is being abandoned, or that the water right should be forfeited for nonuse during the period of the dedication.

Though transfers of pre-1914 water rights are not required to be reported to the SWRCB, they may be part of a water exchange agreement that requires a petition for temporary change to complete some portion of the exchange and are therefore described in the supporting material submitted with the petition. Based on information contained in a petition submitted on June 19, 2000, Westlands Water District (Westlands) agreed to purchase up to 60,000 acre-feet

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[6]Appropriative water rights established prior to 1914 are not directly subject to the SWRCB's permitting authority.

of Kern River floodwater previously banked with the Kern Water Bank Authority under pre-1914 water rights. In addition, Westlands intended to purchase 20,000 acre-feet of Kern River water from Nickel/Garces LLC, diverted under pre-1914 water rights. Since the Kern Water Bank Authority participants were scheduled to receive in excess of 80,000 acre-feet of water under their SWP entitlements, they agreed to allow DWR to petition to change the place of use with respect to the 80,000 acre-feet of their entitlement, and allow it to be delivered to Westlands. To complete the exchange, 80,000 acre-feet of water banked by the Kern Water Bank Authority were reclassified as banked SWP water. This exchange of surface water for groundwater avoided the need to physically pump the water from the Kern Water Bank Authority, and during the same year bank a like amount of SWP water.

Transfers Before the SWRCB for the Period 1997-2001

Since 1997, the SWRCB has received 40 petitions for short-term transfer, 36 of which have been approved. The four short-term transfers that have not been approved include two withdrawn by the petitioner, one rejected by the SWRCB due to inadequate information on the basis of right, and one petition which was on hold, awaiting further submittal of information by the petitioner, at the time this section was prepared.

The short-term transfers approved by the SWRCB within the last five years may be further broken down into the following categories based on end use or other circumstances:

Irrigation: Fifteen short-term transfers have been approved with irrigation as their primary intended use. This total does not include transfers noted below as *Environmental Water Account* or *Conservation*.

Municipal and Industrial: Three short-term transfers have been approved with municipal and industrial use as their primary intended use. This total does not include transfers noted below as *Environmental Water Account* or *Conservation*.

Instream Use: Four short-term transfers have been approved for salinity control, wildlife enhancement, or other instream uses as their primary intended use. This total does not include transfers noted below as *Environmental Water Account* or *Conservation*.

Groundwater Recharge: One short-term transfer has been approved with groundwater recharge as the primary intended use.

Environmental Water Account: Six short-term transfers have been approved with the Environmental Water Account (EWA) as the transferee. Typically, water purchased by the EWA may be used within the entire SWP or CVP to "make-up" for losses of project water due to project-related instream use demands or may be directly used for instream use. Accordingly, transfers of water to the EWA are conditioned to include the entire SWP and CVP as places of use and include all of the authorized SWP and CVP purposes of use.

Conservation: Seven short-term transfers involving a reduction in consumptive use by conservation methods (pursuant to Water Code section 1011) have been approved by the SWRCB. In 1997, the Natomas Central Mutual Water Company (Natomas) transferred up to

2,000 acre-feet of "conserved" water for municipal and industrial uses. However, the transfer amount was determined in negotiations with USBR, and the transfer was approved on a one-time basis without precedent. In 1999, Natomas again petitioned for a short-term transfer of conserved water and, after a hearing, the SWRCB found in Order WR 99-12 that Natomas had conserved about 2,000 acre-feet of water using weed control. Natomas was allowed to transfer this amount, and weed control was recognized as a valid conservation method resulting in a reduction in consumptive use. Following Order WR 99-12, Sutter Mutual Water Company and Reclamation District 108 each participated in two short-term transfers of water that was conserved using weed control. Natomas has also, subsequently, participated in a short-term transfer of water that was conserved using weed control.

During the same period of 1997 through 2001, the SWRCB has received seven petitions for long-term transfer. The San Joaquin River Group and its members have received approval for four petitions for long-term transfer. The approved petitions were related to providing up to a total of 125,000 acre-feet per annum (afa) of flow for the Vernalis Adaptive Management Plan (VAMP).[7] Additionally, on March 19, 2001, the San Joaquin River Group members petitioned for the long-term transfer of 47,000 afa for VAMP-related flows. This petition is currently scheduled for hearing before the SWRCB.

M&T, Inc., and Parrot Investment Company submitted a joint petition on December 1, 1997, requesting the long-term transfer of up to 40 cubic feet per second of flow for instream use within Butte Creek. Due to a breakdown in negotiations between interested parties, however, this petition was not actively pursued by the petitioners and is currently considered inactive.

The Imperial Irrigation District submitted a petition on July 22, 1998, requesting the long-term transfer of up to 200,000 afa of water to the San Diego County Water Authority and up to 100,000 afa of water to the Coachella Valley Water District. This petition is still before the SWRCB pending hearing.

Transfers Before the SWRCB Beginning October 1, 2000

As a comparison between the five-year period discussed above and the last complete water year of October 1, 2000 through September 30, 2001, the SWRCB approved petitions for a combined total of 14 short-term and long-term transfers pursuant to Water Code section 1725 et seq. and Water Code section 1735 et seq. (see Appendix 5 for discussion of these Water Code sections).

Relevant Documents Regarding Water Transfers

The following documents are useful when considering water transfers. Further information on these documents can be found Appendix 5.

- California Water Code sections 1725, et seq., and 1735, et seq.
- "Programmatic Record of Decision," August 28, 2000, prepared by the CALFED Bay-Delta Program

[7] SWRCB Decision 1641 (Bay-Delta Decision) approved implementation of the VAMP.

- “Draft Recommendations to Streamline State and Federal Water Approval Process in California,” prepared by the CALFED Water Transfer Streamlining Subcommittee

- “A Guide to Water Transfers,” July 1999, Draft, prepared by SWRCB staff

- “The Role of Water Transfers in Meeting California’s Water Needs,” September 8, 1999, prepared by the Legislative Analyst Office

- “Critical Water Shortage Contingency Plan,” December 29, 2000, prepared by the Governor’s Advisory Drought Planning Panel

- Groundwater Management in California, 1999, prepared by DWR

- Water Transfers in California: Translating Concept Into Reality,” DWR 1993

- “The Transfer of Water Rights in California: Background and Issues,” Governor’s Commission to Review CaliforniaWater Rights Law, Staff Paper No. 5, 1977

- “Information to Parties Interested In Making Water Available to the Environmental Water Account (EWA) or the State’s 2002 Dry Year Water Purchase Program,” “Groundwater Substitution Transfers,” and “Water Transfers Based on Crop Shifting and Crop Idling,” (Papers regarding water transfers in 2002 involving the DWR), Draft, Water Transfers Office, DWR 2002.

- “Review of the Laws Establishing the SWRCB’s Permitting Authority Over Appropriations of Groundwater Classified As Subterranean Streams and the SWRCB’s Implementation of Those Laws,” Joseph L. Sax, Project Director, 2002.

Section 3. Water Transfer Approval Streamlining*

The need to streamline the water transfer approval process was identified as one of the CALFED Bay-Delta Program's main elements. Some parties believed the existing permitting and regulatory approval processes impaired the ability of water right holders to accomplish transfers in a timely manner. Agencies with approval authority over water transfers observed that transfer proponents sometimes failed to provide adequate information necessary to conduct the analyses and evaluations required by law, resulting in additional time being needed to determine whether a proposed transfer could be permitted.

The Workgroup recognized the need to identify recommendations for streamlining and expediting the approval process for transfers while protecting legal water users and the affected environmental resources. As a basis for identifying mechanisms for streamlining the water transfer approval process, emphasis was placed on discussions and work previously performed as part of developing the CALFED Water Transfer Program. The following recommendations have been divided into two tiers, the first being those that may be implemented in the near future and the second tier being those that may take longer to implement due to their relative complexity and potential controversy.

Tier 1 Recommendations

Expediting Processes for Predefined Types of Transfers

Certain types of transfers are suitable for streamlined approval. Such transfers include intrabasin transfers, transfers similar to those that have been previously approved and implemented without adverse impacts, instream flow transfers, water quality exchanges, and transfers within the CVP or SWP export service areas.

The programmatic review and approval process used by USBR for certain types of transfers within the same division or unit of the CVP (for example, transfers among CVP contracts within the San Luis Unit) is one example of a potential mechanism to expedite the water transfer approval process. To expedite these transfers, USBR prepares environmental documentation on a regional or unit-by-unit basis and provides a "blanket" evaluation of a series of specific transfers. If it is determined that an individual transfer meets certain parameters, the transfer can

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be immediately approved without further analysis. These programmatic assessments usually cover a period of three to five years, at which time new assessments are made.

Facilitating Transfers Using Minimal Injury Evaluations and Environmental Impact Analyses

Certain water transfers that inherently have minimal potential to (1) injure other legal water users; (2) adversely affect third-party interests; or (3) result in significant environmental impact should be allowed to proceed based on minimal studies and analyses.

For purposes of expediting these transfer types, the volume of water to be transferred should be limited to the amount consumptively used and should not injure other legal water users. These types of transfers should not result in changes to existing land use or alter existing employment at the source location, nor should they change existing land use or induce future growth at the transfer destination. In addition, these transfers should be limited to transfers not involving conveyance across the Delta.

Furthermore, exchanges of water to enable healthier drinking water for urban suppliers and more reliable water supplies for agricultural districts, and that don't change the quantity of water consumed, have also been identified by the CALFED Record of Decision for facilitation by CALFED Agencies.

Transfers meeting these criteria differ from temporary water transfers exempted from environmental impact review requirements in accordance with CEQA Guidelines section 15282(v) and Water Code section 1729. This group of transfers includes certain long-term and permanent transfers that would not injure other parties or result in adverse environmental effects, including potential cumulative effects.

The specific analyses and time needed to review and consider these water transfers would be similar to those transfers now reviewed in accordance with section 1725 of the Water Code.

Facilitating Intrabasin Transfers

A mechanism should be established whereby approval of certain intrabasin transfers could be expedited with a focused or reduced regulatory review. This process would require meeting specific pre-defined criteria and undergoing a programmatic review to identify potential environmental impacts, injury to legal users and third parties, and mitigation measures.

Following are recommended steps for implementing this mechanism:

- Define geographic areas, or regions, in which a series of intrabasin water transfers could occur using an abbreviated approval process based on a checklist of criteria or other list of criteria (for example, establishing pilot areas to customize criteria and programmatic reviews).

- Obtain federal, state, and local regulatory agency agreement to recognize and employ the abbreviated approval process;

- Prepare a programmatic environmental/socioeconomic, third-party, and legal water user injury analysis to determine the criteria for a suitable water transfer, and necessary mitigation measures.

- Establish minimum water transfer application requirements to facilitate the subsequent evaluation of individual water transfers.

- Establish a monitoring program for intrabasin water transfers to gauge the actual volume and type of water transfers implemented and the environmental/socioeconomic changes occurring within the region as a result of actual transfers. This will be the basis for validating or refining water transfer suitability criteria and the abbreviated approval process. (See also the discussion of monitoring needs under "general issues", commencing on page 43, Section 6).

Each region's size and location should correspond to environmental and socioeconomic conditions found within its boundaries that could be affected by multiple water transfer approvals. Because each intrabasin area may have unique environmental and socioeconomic attributes, water transfer suitability criteria may only be applicable to specific or limited intrabasin areas. Possible criteria to assist in the determination of potential significant impacts are as follows:

- Limits on how water is made available for transfer.

- Limits to individual and cumulative volumes of water to be transferred.

- Limits to cumulative land use changes (including but not limited to land fallowing, new irrigated lands being brought into production, and agricultural to municipal and industrial transfers).

- Limits to cumulative wildlife habitat changes.

- Limits to increased groundwater extraction or changes in groundwater quality.

Facilitating Interbasin Transfers

Interbasin transfers should be expedited using a preapproval approach similar to the one described above for intrabasin transfers. However, because of the increased complexity of issues associated with these transfers, including the need for use of state and federal conveyance facilities, it is critical that DWR and USBR take an active role in the approval studies needed to address these transfers.

In particular, these agencies would need to undertake specific analysis of the cumulative effect that the transfers may have on the operations of their respective conveyance facilities, as well as other resources over which they have jurisdiction. The involvement of USBR, as a federal

agency, would also require the consultation and coordination of other federal authorities when endangered specie issues arise, including the U.S. Fish and Wildlife Service and the National Marine Fisheries Service.

It is also recommended that preapproval studies be performed for water transfers when the final destination of the transferred water is not yet known. Certifying the known portion of the transfer would still expedite the overall approval process. Upon identifying the transfer destination and use, it would be necessary to perform remaining studies to document any effects on delivering and usage of water at the transfer destination. (See also the following subsection and Section 12 regarding potential prequalifications of prospective pruchasers.)

Establishing Shared Places of Use

Establishing shared places of use for the CVP and SWP would facilitate both interbasin and intrabasin transfers. It may, however, have its greatest application with intrabasin transfers. This action would reduce one layer of the approval process by allowing an overall SWRCB review and approval of the authorized place of use, thereby reducing the number of steps needed to gain approval of a proposed transfer.

With shared places of use, all or portions of the SWP and CVP places of use would have similar geographic area and in some cases, the proponent would only need approval from DWR and/or USBR, depending on the nature of the transfer proposal. Although the action leading to SWRCB Decision 1641 (Bay-Delta Decision) was taken to allow greater flexibility in the operation of the CVP, the decision took a step in the direction of facilitating water transfers by approving the partial consolidation of the place of use for the CVP.

In order for the SWP and CVP to share places of use, the SWRCB would need to change the terms and conditions of existing water right permits issued for these projects. This change would result in the expansion of the CVP place of use beyond the traditionally authorized service area. However, section 3405(a) of the CVPIA has authorized CVP water contractors to transfer all or a portion of their water to other water users anywhere in California irrespective of traditional CVP service area boundaries. This effort could be limited to portions of the SWP and CVP places of use or phased in over time, allowing the earlier consolidation of areas most likely to be the subject of prospective water transfer proposals. Other measures capable of facilitating the consolidation of these places of use include limiting suitable transfers to those that would result in:

- No land use changes.
- No growth-inducing effects.
- No adverse effects on species or habitats designated in accordance with federal or state endangered species protection acts.

Establishing Processes to Allow Groundwater Banking Projects to Easily Sell Water

This recommendation focuses on those transfers that could occur when an approved groundwater-banking project intends to sell water to potential buyers. (The transfer of water from its original source to the groundwater bank is currently not part of the expedited process discussed above, and would be addressed as a separate action requiring agency approval.)

Two possibilities for expediting the sale of water from an approved groundwater-banking project to potential buyers are:

- Certifying specific buyers whose proposed projects satisfy specific predefined criteria at the water destination such as no change in land use, no change in system capacity, no growth-inducing impacts, etc. An adequate water conservation program must also be in place.

- Establishing a requirement that buyers must satisfy applicable National Environmental Protection Act (NEPA) and California Environmental Quality Act (CEQA) requirements.

The first mechanism would expedite the process for buyers who demonstrate that no changes would occur to land use, system capacity, or result in growth-inducing impacts. An expedited approval process, including an abridged analysis of injury and environmental impact issues should be required for those buyers demonstrating that no land use or growth-inducing impacts will occur. This process would be similar to the process for expediting approval for other intrabasin water transfers.

The second mechanism requires that impacts associated with the delivery and use of water at the proposed transfer destination be addressed as a condition of sale from the water bank. The buying party would be responsible for completing the necessary NEPA/CEQA documentation addressing potential impacts resulting from the delivery and use of water bought from a water bank.

Some workgroup participants do not agree that divorcing the different parts of this process is appropriate or that this could actually reduce the total processing time for a transfer. In addition, some workgroup participants believe that divorcing the parts of the process disqualifies this as a first tier action because of the yet-to-be resolved issues and processes regarding the transfer of water from its original source. However it is accomplished, the process needs to recognize that water is available to put into storage at one time and may need to be withdrawn for later use by an entity which is not identified at the time of storage (see Section 12, Improving the Reliability and Predictability of Planned Drought Transfers).

Tier 2 Recommendations

Expediting Collateral Approval Processes

For water transfers requiring SWRCB approval, it is recommended that other agencies with jurisdictional authority over the transfer or use of federal, state, or local conveyance facilities coordinate with the SWRCB and abide by its findings. This recommendation would apply when certain water transferors, such as federal or state water contractors, must obtain approval from USBR or DWR for a water transfer in accordance with their respective contracts or when these agencies' approvals are needed to use state or federal conveyance facilities to implement the transfer.

The intent of this recommendation is to avoid duplicative and potentially inconsistent determinations by the SWRCB and other state and federal agencies. Where the SWRCB has jurisdiction over a factual or legal determination and makes such determination, and the parties have adequate opportunity to participate in the process leading to that determination (and challenging it if the parties so choose), additional state and federal agency approvals should be required to adhere to the determination ultimately made by the SWRCB or reviewing court. This would not confer additional jurisdiction to the SWRCB, such as over use of water conveyance facilities, but would reduce the burden on transfers of multiple processes and determinations where there are overlapping issues.

Water transfers not within the jurisdiction of the SWRCB, but which require the approval of another jurisdictional entity, such as a court or watermaster, would also benefit from increased coordination between agencies. In such cases, approval from USBR or DWR to use their respective facilities should be coordinated with the jurisdictional entity, and it should abide by their findings, provided the agencies have adequate opportunity to submit terms and conditions regarding transfer approval and use of federal or state conveyance facilities.

Establishing Time Frames for DWR/USBR Consent Processes, Minimizing Time Frame for Agency Response to Transfer Applications

USBR and DWR should establish specific time periods in which action would be taken on water transfer proposals involving: (1) approval of water transfers involving CVP or SWP contract water, and (2) use of federal or state facilities by anyone for conveyance of transfer water. In order for transfer proponents to submit complete information for USBR and DWR consideration, standard application materials and information needs should be defined and made available. All necessary information for evaluation purposes should accompany these transfer requests.

The Workgroup suggests that a 45-day time period be established by these agencies to respond to all but the most complex transfer proposals. Both USBR and DWR should also identify specific information needed to evaluate a transfer proposal and those conditions for which this time period might be unreasonable; for example, defining types of complex transfer proposals that may require additional time for adequate consideration.

The Workgroup also recommends that USBR and DWR work with the respective federal and state environmental resource management agencies that would participate in the approval process and establish similar response time frames for their participation. This effort, at a minimum, would need to include the U.S. Fish and Wildlife Service, National Marine Fisheries Service, and the DFG. USBR and DWR should establish a process of approval from these agencies for proposals that would have inherently minimal effect on threatened or endangered species or habitats.

Defining Specific Water Transfer Application Information Requirements

All agencies with permit or approval authority over future water transfers should define and establish specific application requirements and make these requirements available to proponents upon request. USBR, DWR, and SWRCB should jointly develop a uniform set of requirements that could be satisfied by a single application package. The use of a single application package capable of addressing the concerns of all these agencies would aid water transfer proponents who are now burdened with preparation of separate and distinctly different requests for information for each agency.

Section 4. Estimating Transferable Water Based on Short-Term Fallowing Proposals*

The inability of interested parties to agree on the volume of transferable water associated with the short-term fallowing of agricultural lands has caused substantial controversy and delays in approving certain water transfer proposals. The primary issue for interested parties is whether a fallowing-based transfer proposal would actually increase the burden on the CVP and SWP to maintain water quality and flow conditions in downstream portions of the Sacramento River and Delta because upstream transfer proponents were allowed to transfer what might prove to be "paper" water.

At the time this effort commenced, DWR and USBR, under the auspices of CALFED, had convened a separate group to address this issue. That group sought to develop a standard method to calculate transferable water produced from the short-term fallowing of agricultural lands which could be reviewed and concurred upon by all parties within a 45-day time period. Using such a method would provide all parties an accepted mechanism for the streamlined review of fallowing-based transfer proposals. Development of this method would not preclude and should not be prejudicial to the use of other methods proposed by transfer proponents. However, the use of other methods might be subject to lengthier review and analysis.

The separate group made regular oral reports on its progress to the Water Transfer Workgroup. The method under discussion to calculate transferable water generated from short-term fallowing was based upon the quantity of surface water conserved for each qualifying fallowed acre of cropland. The participants reportedly concluded that analysis of the preceding five years' water use is necessary to make the most reasonable approximation of water use that would have occurred had the acreage not been fallowed.

In early 2002, DWR published papers with information pertaining to fallowing. These documents, titled "Information to Parties Interested In Making Water Available to the Environmental Water Account (EWA) or the State's 2002 Dry Year Water Purchase Program" and "Water Transfers Based on Crop Shifting and Crop Idling," are available from DWR's Water Transfers Office.

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Section 5. Transfers of Water Into and Out of Actively Recharged Groundwater Banks*

The Need for Legal Clarification and Improved Baseline Data

Background

This analysis is applicable generically to actively recharged groundwater banking projects.[8] These projects generally involve the importation of foreign surface water originating from a source not hydrologically connected to the groundwater banking site.[9] The imported water is then injected underground or is applied to spreading grounds where it percolates into the aquifer. The banked water will then be pumped and transferred to nonoverlying users during dryer years. The recharge and recovery will be conducted by (or under contract with) an overlying landowner, water district or groundwater management authority. The Kern Water Bank and the Arvin Edison/MWD arrangement are examples of this type of conjunctive use project. The sequence can also be reversed in the case of full aquifers, most commonly found in the Sacramento Valley, such that native groundwater is first extracted and exported to create storage space, and then subsequently replenished from an imported surface source. To win the support of local groundwater users, this mode of groundwater banking requires firm assurances that the artificial recharge will actually occur. One way to do that is to convey rights to water in reservoir storage before the extraction takes place so that the local groundwater managers can control the replenishment themselves.[10]

Alternatively, the recharge can be accomplished through substitution of surface water supplies for existing groundwater usage, and recovery of the recharged water can be accomplished by reversing this arrangement. From an aquifer mass balance standpoint, "*in lieu*" storage may be similar to active recharge projects.[11] In effect, groundwater users would agree to forebear

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[8]This analysis treats intentional groundwater banking projects where the intention to recover the water is explicit. It does not treat the recovery of incidental or unintended groundwater recharge such as occurs through deep percolation of irrigation water. See footnote 26 for further discussion of this distinction.

[9]For the purposes of this analysis, "imported water" refers both to "foreign water imported from a different watershed" or water that comes from an inbasin source that is not hydrologically connected with the banking site within a relevant period of time (e.g. surplus flows of a river). *City of Los Angeles v. City of San Fernando*, 14 Cal. 3d 199, 261 fn. 51 (1975). Note that this definition would include water that originates within the same hydrologic basin as the banking site, provided that it would not be available for extraction at that site but for the physical act of bringing it to that location as recharge water.

[10]Such "front-end" assurances distinguish this approach from transfers of native groundwater with "back-end" mitigation.

[11]Despite the similarities, this analysis focuses upon active recharge; there are special circumstances

pumping groundwater during some periods and instead use surface water which they would not otherwise use, and the conjunctive use program would then utilize groundwater during drier years, over and above historical extractions, and export it or a like amount of surface water from the basin. This differs from groundwater substitution projects, which do not involve the export of groundwater and its replenishment through imported recharge water. *In lieu* banking may be more appropriate than recharge by percolation through spreading grounds in areas with low permeability soils, as is the case in the east side of the Sacramento Valley. The Semitropic Groundwater Banking Program in the San Joaquin Valley is an example of *in lieu* recharge.

Active recharge and *in lieu* groundwater banking must as a practical necessity be developed with the cooperation and consent of overlying landowners, groundwater appropriators, water districts and groundwater management authorities.[12] Indeed, the recharge and recovery operations will generally be conducted by such local interests. There is no realistic prospect of "outside" interests imposing a water bank on reluctant local communities. But, projects will also entail consensual contractual arrangements with a source water right holder (i.e., a reservoir operator and/or direct diverters with the capacity to utilize groundwater) and one or more end use beneficiaries. Sufficient financial and/or hydrologic rewards must accrue to each of these parties to induce all parties to participate in the banking scheme. The contractual arrangements may include liquidated damages provisions, contracts for delivery of alternative water sources, and cash payments. The geohydrologic complexities and legal uncertainties described in this section will not be overcome without this requisite degree of concurrence among the stakeholders.

The need for clear rules to avoid and arbitrate disputes arises in part because of the very real possibility of disagreements among the local landowners themselves over whether an aquifer should be utilized for groundwater banking purposes. Usually, the proponents propose to bank water for the benefit of end-users outside of the groundwater basin. That, after all, is the purpose of groundwater banks. This is the situation that has characterized groundwater banking controversies historically in California, such as the Madera Ranch and Azurix projects in Madera County. Other members of the Workgroup believe that the differences between "outsiders" and local interests are substantial – and the distrust by local interests of "outsiders" even more substantial – and that these issues of good faith and fair dealing by parties without any vested interest in rural areas pose a very serious threat to the ability of any "outsider" (and often, any local interest) to effectuate a conjunctive use transfer.

associated with *in lieu* recharge that are not currently accounted for in this analysis.

[12]In an adjudicated groundwater basin the necessary participants may include the adjudicated water right holders, the watermaster, and/or the court.. Additionally, storage projects in these basins may require authorization within the operating basin judgment.

Issues

Technical Issues

In general, a proponent of a conjunctive management project bears the burden of establishing that the recharge and withdrawal of water will not adversely affect, or "injure" other "legal users" of the groundwater basin.[13] The scope of this protection is not certain because of significant disagreement over who comprises the "legal user[s] of the water. " Some argue that the protection extends to any person or entity that uses the water in a manner that is authorized and consistent with the law. Others argue that the protection is limited to riparian, overlying landowners, and the holder of water rights. This analysis, however, does not attempt to resolve this dispute.

Determining injury in the groundwater banking context is difficult due to the different standards governing surface water and groundwater.[14] Nevertheless, at a minimum, the groundwater banker must avoid raising the groundwater table to a level that invades the root zones of neighboring crops or neighboring structures, or cause risk of liquefaction. It must avoid unreasonably lowering the groundwater table below the level that would result in the dewatering of neighboring wells or increasing the power requirements for pumping, and/or causing subsidence or seawater intrusion.[15] The banker must also avoid degrading the quality of the *in situ* groundwater.

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[13]*See e.g.* Cal. Wat. Code § 1702 (applicable when a change order from the SWRCB is required).

[14]It is important to note a distinction relating to the concept of "injury" that makes the analysis much more uncertain (and so raises the question of clarification). With regard to groundwater, California law is relatively clear (given the paucity of cases) that, in order to state a claim for interference with an overlying right, a plaintiff must show that the defendant's use of its overlying right has not been reasonable, based, in all likelihood, on the impacts on the plaintiff. This standard of reasonableness means that not every extraction of groundwater that causes a reduction in static water levels rises to the level of an "injury." By contrast, there is less flexibility in the concept of injury in connection with surface water. In that context, a physical solution can only require a senior water right holder to suffer "de minimis" costs and/or changes in the availability of water in order to make water available to a junior water right holder. Much of the remainder of this analysis addresses questions based upon the concept of an "injury" and relies upon cases and statutes that have involved surface water. It is simply not clear how these two different standards will be reconciled in the case of interconnected water supplies, as are involved in a conjunctive use transfer. Thus, this question of the appropriate standard to measure "injury" must be kept in mind and addressed in each context described below.

Furthermore, there is significant uncertainty as to how the concept of injury applies to water quality impacts associated with a groundwater transfer. The common law rule is that a right holder is entitled to protection against acts that "materially deteriorate the quality of water for the uses to which [the right holder] wishes to apply it." (Hutchins, The California Law of Water Rights (1956) p. 123. See generally id. pp. 122-124, 265.) This common law rule appears to apply equally to groundwater and surface water. Thus, the "no injury" rule clearly seems to apply to water quality changes associated with groundwater banking. The legal uncertainty is the degree of deterioration that would be regarded as sufficiently "material" to constitute legal injury.

Two examples may suffice. Assume a stream with water quality of 100 ppm TDS and groundwater nearby of 400 ppm TDS. The groundwater meets all drinking water standards but its introduction into the stream will increase TDS in the stream by 10 ppm TDS. Is there an injury? To take a more difficult example, assume that the

basin as a result of the project, which is greater than the amount that would have occurred under a natural state, should be considered imported water, available to the project and/or its beneficiaries unless the additional project water has been abandoned.

In many cases, where the subject groundwater basin has not been adjudicated, the critical uncertainties will not concern who owns the imported water, but how that ownership right can be enforced where there are numerous groundwater right holders with unquantified rights to pump from the naturally available water supply. Basin adjudications can solve this problem by quantifying and fixing the amount of water that each pumper (or pool of pumpers) may extract pursuant to the respective rights.

Property Interests in Aquifer Storage Space

Groundwater banking must, as a practical necessity, be developed with the cooperation and consent of overlying landowners, water districts, or groundwater management authorities. There is no realistic prospect of some outside entity seeking to impose a groundwater bank on unwilling local interests. However, where there is local opposition to a locally initiated project, the issue may arise as to who has the paramount right to use the dewatered storage space and in what circumstances may one entity exclude others from doing so. *Katz v. Walkinshaw* overturned the rule of absolute ownership of groundwater,[29] traced back to *Acton v. Blundell*,[30] and rejected the notion that a landowner owns everything from the "heavens to the center of the earth." It made groundwater a common property resource in that groundwater resources must be shared in a correlative fashion by the overlying landowners. But *Katz* did not consider storage rights or whether an overlying landowner may restrict a water importer from using the free space in an aquifer. There is a split of opinion among the Workgroup concerning property interest in the use of dewatered storage space, and particularly whether overlying owners can enjoin or bring a takings claim against a storage project that proceeds without their consent. The legal grounds for both positions are discussed below.

Although the issue of groundwater storage rights is far from settled, the California Supreme Court has upheld the right to store water in aquifers.[31] *City of Los Angeles v. City of Glendale* and *City of Los Angeles v. City of San Fernando* uphold Los Angeles Department of Water and Power's importation and storage of water underground despite Los Angeles's status as an appropriator and lack of any statutorily authorized groundwater management authority. The

operations of this sort an act of importation, utilizing a natural channel to bring in water that would not otherwise be available to the aquifer but for the reoperation, if part of the intended purpose is to bank groundwater downstream? If so, shouldn't the USBR be entitled to pump that increased recharge and deliver it to, for instance, the San Joaquin exchange contractors in exchange for Mendota Pool water that could be wheeled to the Friant Water Users to make them whole? On the other hand, the Gravelly Ford groundwater users point out that that increased flow, to more closely mimic the natural hydrograph, is water that would have been available to them as recharge water if Friant Dam had not been built. Thus, the reoperation merely restores a degree of the natural conditions to which they are entitled. The issue of the hydrologic and temporal baselines for determining what constitutes "imported water" permeates this analysis and is a matter on which the Workgroup recommends that principles and guidelines be developed.

[29]141 Cal. 116 (1903). *Katz* analogizes groundwater to the common law of riparian rights and establishes the rule of correlative rights with a reasonable use restriction. *See Katz*, 141 Cal. at 134-37.

[30]12 Mees. & W. 324 (Exchequer) (1843).

[31]For a detailed discussion of the cases that follow, *see* Victor Gleason, "Water Projects Go Underground," 5 Ecology L. Q. 625 (1976).

court in *San Fernando,* analogizing groundwater banking to a surface water reservoir, deems this an economical and efficient method of "natural storage," only subject to the limitation that storage and withdrawal does not harm other legal users, including interference with natural recharge. In *Niles Sand and Gravel Co. v. Alameda County Water Dist.,*[32] Niles Sand and Gravel was prohibited from draining groundwater from its quarry because it violated a condition of its operating permit which prohibited interference with a statutorily created county groundwater replenishment program to prevent saltwater intrusion.[33] The court cited the statutory declaration of the need for water conservation and salinity management of the Niles Cone area in stating that the law imposes a "public servitude" upon overlying users which prohibits uses to the contrary.[34] [35]

It is thus possible that the courts would regard the storage space in an aquifer as a shared asset that any entity can use where there is no shortage of supply of available storage space in relation to demand, and that in such circumstances, no entity, including overlying landowners, can exclude others from using the aquifer storage space nor exact a "rental" fee for such use.[36] Accordingly, it is also possible that not only overlying landowners would be entitled to use the storage space, but also groundwater appropriators such as public agencies undertaking storage projects, for the benefit of large numbers of people. In some circumstances, a public agency may be best positioned to undertake such projects in partnership or contract relation with one or more overlying landowners or other right holders in the basin.[37]

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[32]37 Cal.App.3d 924 (1974).

[33]*See id.* at 927 (f.n. 3).

[34]*See id.*

[35]The meaning and precedential value of *Niles* is disputed by peers in the legal community. Some opine that the "public servitude" discussed in *Niles* solely refers to the constitutional requirement not to waste water under article X, section 2 of the California Constitution, and that this discussion is not precedent for the proposition that a special district charged with replenishing the basin has absolute jurisdiction over all storage in the basin.

[36]In *County of Park* v. *Park County Sportsmen's Ranch* (2002), 45 P.3d 693, the Colorado Supreme Court held that owners of overlying land have no right to prevent use of aquifer storage space, absent some harm to their use and enjoyment of the property. If overlying users own a correlative share of the aquifer storage space, they arguably would have to be compensated for use of that space, whether or not they are injured. The *City of Los Angeles v. City of Glendale* and *City of Los Angeles v. City of San Fernando* holdings make no provision for compensation for use of aquifer storage space. Indeed, referring to Los Angeles' entitlement "to use the San Fernando basin for temporary storage of its water by means of artificial recharge and subsequent recapture…," the court explained that "[N]o necessity is shown for interfering with this right to use the basin for storage, for there does not appear to be any shortage of underground storage space in relation to the demand thereof." *City of Los Angeles v. City of San Fernando,* 14 Cal. 3d 199, 264 (1975). The California Supreme Court's sanctioning of such storage without any recognition of a proprietary right on behalf of overlying owners suggests that overlying owners cannot object to groundwater storage beneath their property absent a showing of injury to a recognized right associated with their property ownership, such as their right to extract their correlative share of the aquifer's native yield. Moreover, storage rights are not included in a riparian's correlative surface water rights, and thus by analogy, it could be argued that storage rights are not part of an overlying owner's correlative groundwater rights.

[37]In adjudicated basins, the local participants are likely to be the adjudicated rights holders, or the basin's watermaster acting on their behalf. The watermaster or some other representative entity can assist in organizing, marketing, and monitoring storage capacity to be made available to outside participants for a fee. Main San Gabriel Watermaster and Chino Basin Watermaster are good examples of this approach. The Chino Basin Watermaster has recently assembled over 500,000 acre-feet of storage space, which it intends to lease on behalf of the adjudicated rights holders. Other comprehensively managed basins have been able to accomplish the same result without adjudication. See, e.g., Sacramento Groundwater Authority.

Under the current state of the law, it is unclear whether the right of groundwater appropriators to utilize aquifer storage space is subordinate to the right of overliers, or the extent to which coordination with existing rights holders is a prerequisite to a public agency's use of storage space. However, it is fairly clear that any storage project cannot alter existing groundwater rights, impair water quality, or harm surface infrastructure. Rather than characterizing the issue of rights to storage space as one of trespass on a property interest, it is probably more accurate to regard it as just another application of the "no injury" rule.[38] Thus, the existing right holders are probably legally entitled to prevent a water banking project from reducing the natural infiltration capacity of the aquifer on which they depend to capture and store the naturally occurring percolating groundwater, or to otherwise adversely impact their water rights.[39]

Under this view, where storage space is plentiful, the real issue is not "who owns the storage space," but how does one calculate the amount of water to which the importer is entitled. The basic theory supporting the importer's exclusive right, and for the inapplicability of the "no injury" rule under these circumstances, is that, but for the importation, the water would not be there for the overlying landowners to extract.[40] To the extent that the water would be still there in the absence of the importation, because the importation supplants natural recharge or the importation increases losses, the basic theory does not justify giving the importer any right at all, let alone an exclusive right. It is also important to distinguish two different questions, the availability of space in storage and the quantity in storage. Making most effective use of surface reservoirs has led to elaborate rules on which water "spills" first and under what circumstances. These rules may apply equally appropriately in the context of aquifer storage. One who utilizes aquifer storage space for artificial recharge may not reduce the right of the overlying landowners to natural recharge of that aquifer. Thus, if infiltration is reduced due to lack of aquifer storage capacity, the water banker takes the loss, not the users of native groundwater.

It is also possible that California courts would adopt the alternative view that storage space is a type of shared asset, based on Civil Code section 829, which provides that a fee owner has the right to anything situated below the surface of the parcel.[41] This view already has substantial support in California law governing the storage of oil and gas.[42]

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[38]This "no injury" approach is analogous to the rule applicable to temporary use of a surface stream for transfer of foreign waters. Use of the surplus capacity of the stream is generally allowed and no liability arises absent an injury to existing right holders or injury to the riparian properties over which the stream passes (e.g. flooding). *See* Water Code § 7075; *Stevens v. Oakdale Irr. Dist.*, 13 Cal.2d 343 (1939). Another similar analogy is the rule applicable to overhead flight and surface property. A landowner may not enjoin air traffic over his or her property unless it is at such a low level as to result in injury to the enjoyment of the surface property. *See* Pub. Util. Code §§ 21402 and 21403; *United States v. Causby*, 328 U.S. 256, 261 (1945); and *Strother v. Pacific Gas & Electric Co.*, 94 Cal.App.2d 525, 627, 535-36 (1949).

[39]In the case of interference, imported water will likely be deemed to "spill first" if an aquifer becomes fully recharged. *See* Slater, *Cal. Water Law & Policy*, (1998); *City of Los Angeles v. City of San Fernando*, 14 Cal. 3d 199 (1975).

[40]*City of Los Angeles v. City of San Fernando*, 14 Cal. 3d 199, 261 (1975).

[41]*See also Loretto v. Telepromptor Manhattan CATV Corp.*, 458 U.S. 419 (1982) (permanent, physical occupation of property is a per se taking). Banking of water underground is arguably a compensable physical invasion of overlying landowners' property.

[42]In recent years, the storage of oil and gas in depleted oil or gas fields has become relatively common. California law treats storage space for oil and gas as an asset of the overlying property owner. There are, of course, differences between the general "rule of capture" that governs oil and gas law in California and the correlative standard governing extraction of percolating groundwater, but it is unclear to some members of the Workgroup why that difference should dictate the standard for the "re-use" of storage space as compared to the standard for the

In sum, tort-based decisional rules may serve well to protect landowners and other right holders from physical injuries or water supply impacts associated with groundwater banking. They may not serve as well to apportion unsaturated aquifer storage space among the various parties competing to bank imported surface water. In many cases, overliers will be seeking to operate recharge and recovery facilities under contract with a non-overlying end-user such as a municipality. The municipality may own property overlying the basin as well. Several potential allocation formulas could be applied: (1) correlative rights to storage: like the right to extract native groundwater, each overlying landowner has an equal right to access and utilize the aquifer storage space subject to mutual avoidance of harm and subject to the paramount right of other overliers to the natural recharge of that aquifer; (2) equitable apportionment of aquifer storage considering populations served by the banked water, investments in effecting it, etc.; (3) "first in time is first in right," analogizing to the appropriative rights doctrine to encourage and reward initiative to create groundwater banks, or (4) some other allocation formula that replicates or borrows from the existing water rights allocation system. There are significant public policy issues resident in the allocation mechanism, but no known precedents to tell us how, ultimately, these aquifer apportionment issues will be resolved.

It would obviously facilitate groundwater banking if the legislature would make clear that the interests of overlying owners in the subterranean space beneath their property does not include a right to exclude non-injurious use of the unoccupied aquifer storage space beneath their property for storage of imported water. Such clarification could recognize that the subterranean property is technically part of the overlying owner's property interest, but that it is subject to non-injurious invasion for groundwater storage. As noted above, a similar rule has been articulated with regards to overhead flight and use of surface streams to transport foreign water across private parcels.[43]

Restricting Groundwater Users to Historical Usage

Can pre-existing groundwater users be restricted to historical levels of usage to assure that they are not taking imported water that has been banked in the same aquifer?[44] This issue is regarded by some members of the Workgroup as the most important and difficult in those circumstances where the groundwater basin is unadjudicated and/or not in an overdrafted condition. The general rule is that, subject to the avoidance of mutual harm, groundwater users are entitled to as

extraction of the resource in the first instance. It apparently is fairly common in California for companies seeking to store oil or gas in empty formations to purchase the right to store such minerals (together with the right to extract them at the appropriate time, less leakage) from overlying landowners. Further, it appears that there are commingling rules of the type that one would expect to protect both the stored oil or gas and the ability of the overlying owner to extract what may remain of the native supply. Such rules could be used as the basis for determining the priority rules associated with an actively managed groundwater basin.

[43]*See supra* note 31.

[44]Correlative rights are like riparian rights: they are neither quantified nor prioritized by historical use. The only limitations on their exercise is reasonable and beneficial use and the mutual avoidance of harm (as defined by exceeding the pumper's correlative share of the safe yield). Suppose a groundwater bank is recharged for two years and then water is extracted in the third year. Suppose there are three overlying groundwater users, A, B, and C. In the first two years (of recharge) A and B greatly exceed their historical rates of pumping to take advantage of the new recharge, and in the third year they revert to historical levels. In that third year, the program also seeks to extract. The combined pumping increases C's lifting costs above the historical baseline. May C sue to prevent the project from extracting its water? May the project sue in the first two years to prevent A and B from increasing their rates of pumping?

much groundwater as they can beneficially use as long as the "safe yield" of the aquifer is not exceeded. This is true irrespective of their historical usage. If their historical use is less than their correlative share of the safe yield or the amount available for appropriation under their priority of right, restricting these users to their historical usage thus diminishes their current entitlement.[45]

The problem may be more apparent than real, however. Groundwater banking programs are most likely to be established in two circumstances: (1) where there is a pronounced pre-existing cone of depression that can be filled (the San Joaquin Valley), or (2) where aquifers are already full such that groundwater will have to be extracted first in order to create storage space (the Sacramento Valley). In the first instance, the aquifer may already be in overdraft. In this situation, current users are not entitled to increase their pumping because that would necessarily injure other right holders.[46] In the second case, increased pumping by historical users is unlikely to adversely affect other users, including the groundwater banking project, because the aquifer is so full.

The problem is also less likely to arise in areas of groundwater use that are incorporated within water district boundaries, even those that do not regulate groundwater. Where water districts operate a groundwater bank within their service area, such as the Semitropic, Kern Water Bank and Arvin Edison projects, it presumably does so with the consent and support of those members who rely on groundwater.[47] Similarly, this problem will probably not arise in adjudicated basins where the pumpers are limited by the operating judgment to a fixed amount of annual extraction and the watermaster will likely oversee and monitor groundwater banking projects.

In the intermediate case—where the basin is close to balance and the groundwater bank is in an unincorporated area—the appropriate principle would seem to be that existing uses can be allowed to increase only to the level that would represent safe yield, absent the groundwater bank, but no further. The problem in applying that principle is the difficulty in establishing the safe yield level short of adjudicating the basin. Even in the relatively rare circumstances where these conditions exist, groundwater banking may be practical without adjudication if the bank can tolerate some increase in groundwater pumping or can purchase forbearance from pumping increases from existing groundwater users.

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[45]The right of overlying owners to prospectively exercise their correlative share of the surplus safe yield for reasonable and beneficial use on their overlying property is protected by article X, section 2 of the California Constitution. *See Tulare Irr. Dist. v. Lindsay Strathmore Dist.*, 3 Cal.2d 489, 525, 531 (1935); *In re Waters of Long Valley Creek Stream System*, 25 Cal.3d 339, 350 (1979); and *Wright v. Goleta Water Dist.*, 174 Cal.App.3d 74 (1985). However, such rights may potentially be subordinated to existing appropriative rights in an overdrafted basin. *See City of Barstow v. Mojave Water Agency* (2000) 23 Cal.4th 1224 1249 (f.n. 13); *Long Valley*, 25 Cal.3d at 359.

[46]There is an enforcement problem, however. Water users are typically aware when pumping exceeds safe yield, but the costs of curtailing pumping and/or initiating an adjudication inhibit legal action for abatement. Also, an individual user has at least a theoretical argument that it can increase its pumping as its needs increase, even when the basin is in overdraft. The fact that total use exceeds the safe yield does not rule out the possibility that some of the overlying users are entitled to increase their pumping (i.e. their correlative share happens to be higher than their current pumping, because their needs have substantially increased. *See City of Barstow v. Mojave Water Agency*, 23 Cal. 4th 1224 (2000). Of course, the total basin pumping cannot legally increase, but they could argue that others' correlative share must be reduced to accommodate their increased need.

[47]However, the fact that the land is within the boundaries of a district that delivers surface water does not necessarily mean that the district regulates groundwater extractions.

Who Has Regulatory Authority Over Transfers Into and Out of Groundwater Banks?

State Water Resources Control Board: There is some uncertainty concerning the nature and extent of SWRCB jurisdiction over projects that import surface water stored in groundwater basins. A water right permit issued by the SWRCB is required for the appropriation of surface water for use in a groundwater recharge project, except where the project can be carried out based on a pre-1914 or other right not requiring a SWRCB permit. When it issues a permit, the SWRCB may condition the permit on terms that, in the SWRCB's judgment, will best develop, conserve and utilize in the public interest the water sought to be appropriated.[48] Thus, it seems clear that the SWRCB has authority to regulate the storage of water underground and the subsequent use of the stored water as a condition of a water right permit to appropriate surface waters for underground storage.

The Water Code specifies that an appropriation must be for beneficial use.[49] An appropriation of water diverted to groundwater storage is for a beneficial use, provided that "the water so stored is thereafter applied to the beneficial uses for which the appropriation for storage was made."[50] Consistent with this requirement, SWRCB regulations require that applications for appropriations for underground storage include maps showing points of diversion or rediversion to underground storage, the locations of the underground storage areas, and the place of use.[51] The SWRCB has issued permits to store surface water underground that specify both the place of underground storage as well as the beneficial use to which the water will ultimately be put when it is subsequently diverted out of storage.[52] The SWRCB's jurisdiction stems from its permitting authority over the original diversion from a natural watercourse, and its control extends to not only the diversion but also over the subsequent use. The SWRCB retains authority over the permittee's use of water diverted from a natural watercourse even if it is first diverted to storage in an offstream reservoir. Its jurisdiction does not depend on whether the reservoir is characterized as a "natural channel"[53] as long as the water diverted into the reservoir was diverted from a stream, lake or other body of water. For purpose of SWRCB jurisdiction over

[48]Wat. Code § 1253.

[49]*Id.*, § 1240.

[50]*Id.*, § 1242. This code provision had been analyzed in published opinions by both the Assembly Legislative Counsel (Op. Leg. Counsel, 1957 A.J. 4034, 4035) and the Attorney General (27 Ops. Atty. Gen. 217, 218 (1956)). The Legislative Counsel opinion makes clear that water placed into underground storage becomes an appropriative right subject to enforcement by the courts. The Counsel explained that once "water has been introduced into the underground basin for storage, the overlying landowners would have no rights to such water…."

[51]Cal. Code Regs., tit. 23, § 722.

[52]*See, e.g.,* In the Matter of Application 17002 . . ., Decision No. D. 894, at 3 (Mar. 25, 1958)(approving an application for water that, after appropriation, will be placed into underground storage and later released for municipal, domestic, irrigation, and recreation purposes over 18,100 acres of land); In the Matter of Application 20621 . . ., Decision No. D. 1235, at 3, 29 (Aug. 25, 1965)(approving the Navy's application to store 4,000 afa underground from which it will be pumped for military, domestic, municipal, and agricultural purposes, both within and without the watershed.) In another decision, the SWRCB weighed competing permit applications for development of certain water resources in the Santa Clara River basin near Oxnard. The United Conservation District planned to appropriate water year-round for domestic, industrial, irrigation, and salinity control purposes, with a portion of the water first being placed in underground storage. In approving United's application, the SWRCB, as a condition of United's permit, held that it retained authority to ensure the use of the water was consistent with the permit. (In the Matter of Application…to Appropriate Water from Sespe Creek in Ventura County, Decision No. D 1129 (Apr. 29, 1963).

[53]*See* Cal. Wat. Code § 1201.

rediversion and use of water first stored to a reservoir, the Water Code does not distinguish between surface and underground reservoirs.[54]

There remains some uncertainty as to when a change petition is required for a groundwater storage project involving an existing permitted appropriation. The Water Code requires approval of the SWRCB for a change in the point of diversion, the place(s) of use, or the purpose(s) of use specified in a water right permit or license.[55] It is unclear whether a change petition is required for an underground storage project that does not involve any new point of diversion or rediversion from a surface watercourse, and does not expand the area in which the water ultimately is used after it is rediverted from groundwater storage. SWRCB regulations and practice do generally require a change order in such instances where a project is modified to add additional storage.[56]

However, the SWRCB's practice has not been entirely consistent with respect to whether a change order is required for banking of water within the service area of large water wholesalers such as the State Water Project, Metropolitan Water District, or the Central Valley Project. Since their permits allow a wide variety of beneficial uses throughout their service territory, SWRCB practice has been to not require a change order. Still, unless groundwater banking is expressly authorized in the permit, it would be prudent to obtain a change order in order to assure that the project will be eligible for a permanent license.

Whatever the SWRCB's *de jure* authority over groundwater banking, however, there is a compelling practical limit to the SWRCB's ability to regulate groundwater recharge and recovery operations. Where the SWRCB claims jurisdiction, it bases its jurisdiction on its authority over the diversion of surface water used for underground storage, and has not asserted authority, independent of its authority over the permittee or licensee, over the water in storage. While the SWRCB may act to protect native groundwater users from the effects of a groundwater banker, it apparently could not act to protect the banker from the other groundwater users.[57] This is because the water right permit and license system does not apply to the latter. This asymmetry may render its nominal authority in the aquifer ineffectual in a practical sense.[58]

Others believe the SWRCB jurisdiction is much more limited. They argue that the SWRCB has no jurisdiction over water in underground basins because it is not water flowing in "surface streams" or in "known and definite channels." This position is based on the premise that once surface water is put into aquifer storage it becomes groundwater outside of the SWRCB's authority to regulate, and that local agencies (at least under most circumstances) do not have

[54]*See id.* § 1266.

[55]*Id.*, § 1702.

[56]Cal. Code Regs., tit. 23, § 791, subd. (e).

[57]The SWRCB may have some authority over diversions from groundwater under specified circumstances, (*see* Wat. Code §§ 275, 2100, 2500.5..), but lacks the more comprehensive authority it has over surface water diversions.

[58]The SWRCB must make an injury determination when approving the change order transfer into the aquifer for storage and subsequent rediversion. Parties potentially affected by the banking operation would have the opportunity to protest the project as well as seek protection from the SWRCB if the project operation affects their rights. On the other hand, the SWRCB's authority to protect the *banker* is not symmetrical; the SWRCB does not have the power (and arguably, not the legal authority) to prevent groundwater pumpers from taking the banked water.

jurisdiction over the transfer. This view raises the question of the applicability of the *Baldwin v. County of Tehama* analysis to groundwater transfers.

Despite the differing views, the more important issue is how that authority is to interface with the powers asserted by local groundwater management entities. That issue is treated after the next two headings.

Local Groundwater Agencies: AB 3030 (Cal. Wat. Code §§ 10750-10753.9) permits existing water agencies to create groundwater management districts. But AB 3030 district authority is limited to the powers of the enabling statute because local districts, unlike cities or counties, do not have police powers. These districts may determine safe yield and impose modest restrictions on withdrawals (Cal. Wat. Code § 10753.7)[59], replenish supplies (Cal. Wat. Code § 10754.2), impose fees and assessments on extractions (Cal. Wat. Code § 10754), but cannot make binding determinations on matters related to water rights (Cal. Wat. Code § 10753.8(b)). AB 3030 districts are not explicitly authorized to prevent the exportation of groundwater.

There are ten specially enacted groundwater management districts[60] and several other local agencies with groundwater management authority.[61] The authorities of these districts and agencies are varied, and a few require a permit for withdrawal or export of groundwater.

City and County Regulation: Groundwater regulation is within the municipal police power.[62] Accordingly, "a local ordinance may be enacted subject to the constitutional constraints applicable to all legislation, unless the power so to do has been preempted by state legislation, i.e., only if it conflicts with general law."[63] *Baldwin v. County of Tehama* held that state law, namely AB 3030, specially enacted local districts, and California Water Code section 1220 do not preempt city and county management of groundwater resources.[64]

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[59]The authority to limit or suspend extractions may only be exercised if the district determines that replenishment programs or supply of alternate water sources is infeasible or inadequate. *See* Cal. Wat. Code § 10753.8(c).

[60]The ten special districts are Willow Creek Groundwater Management Agency (Lassen Co.), Honey Lake Groundwater Management District (Lassen Co.), Long Valley Groundwater Management District (Lassen Co. and Sierra Co.), Sierra Valley Groundwater Management District (Sierra Co.), Mendocino City Community Services District (Mendocino Co.), Mono County Tri-Valley Groundwater Management District, Pajaro Valley Water Management Agency (Santa Cruz Co.), Ojai Groundwater Management Agency (Ventura Co.), Fox Canyon Groundwater Management Agency (Ventura Co.), and the Monterey Peninsula Water Management District (Monterey Co.). *See* California Department of Water Resources, "Water Facts: Groundwater Management Districts or Agencies in California" (1996).

[61]Such as the Orange County Water District, Santa Clara Valley Water District, and the Monterey County Water Resources Agency.

[62]*See In re Mass*, 219 Cal. 422, 424-25 (1933); *Ex parte Elam*, 6 Cal.App. 233, 237 (1907).

[63]*Baldwin v. County of Tehama*, 31 Cal. App. 4th 166, 173-74 (1994, 3rd Dist.); *review denied*, Cal. Sup. Ct., March 17, 1995.

State law preempts local ordinances only when "the subject matter has been so fully and completely covered by general law as to clearly indicate that it has become exclusively a matter of state concern . . ." or "the subject matter has been partially covered by general law couched in such terms as to indicate clearly that a paramount state concern will not tolerate further or additional local action. . . ." *Baldwin*, 31 Cal.App.4th at 174, *citing Galvan v. Superior Court*, 70 Cal. 2d 851, 859-860 (1969) (internal citations and quotations omitted).

[64]*Baldwin v. County of Tehama* addressed a challenge to a 1992 Tehama County groundwater management ordinance by parties desiring to appropriate groundwater for irrigation of lands outside the county. *See* 31 Cal.App.4th at 171-72. The ordinance requires a permit "to extract groundwater for the purpose of use on land other than where the extraction occurs" and prohibits withdrawals of groundwater that would result in overdraft and other

There has been a great increase in the number of counties passing groundwater management ordinances, especially in the last few years.[65] The ordinances vary greatly in terms of purpose (e.g., monitoring, replenishment, export restriction) and type of restriction (e.g., permit compliance, impact analysis, fees). Most of the ordinances require a permit to export groundwater[66] outside of the county or to extract groundwater *in lieu* of surface water use.[67] Few of them distinguish between native groundwater and imported water. A few counties explicitly recognize the value of conjunctive management and provide an exception to the permit requirement where it is demonstrated that the activity will result in net annual recharge.[68]

Dealing with the Potential for Conflict Between State and Local Jurisdictions. As noted above, the SWRCB sometimes asserts jurisdiction over permitted surface water that is temporarily stored underground, essentially treating it like surface storage. Counties also assert jurisdiction over water that is temporarily banked in their local aquifers, generally through ordinances creating groundwater planning and permitting authorities. Demarcating the division of regulatory labor between these levels of government in advance would help demystify groundwater banking, and reduce the regulatory risk factors.

Jurisdiction could be shared sequentially or concurrently. In a groundwater banking operation, the water moves through a series of discrete steps from a surface water source, through a conveyance channel (which may be a natural channel) to a recharge facility, to an aquifer, through a recovery well, through a conveyance facility (which, again, may be a natural channel) to a point of ultimate beneficial use. Through each link, the banking operation has the potential to affect other water rights or cause injury to other legal uses of water, including instream beneficial uses. If the source water is subject to permit, clearly the SWRCB has jurisdiction at that point. Is there then some point in the chain at which the SWRCB loses its jurisdiction? Or

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adverse effects to the aquifer. *Id.* The court of appeal rejected plaintiffs' argument that Cal. Wat. Code sections 104-105 (State's interest in water resources), 1215-1222 (export from Sacramento Delta-Central Sierra Basins), and 10750-10753.9 (AB 3030) occupy the entire field of groundwater management and thereby preempt county regulation. *Baldwin*, 31 Cal.App.4th at 181.

A critical holding of Baldwin is that local management authority is not limited to the provisions of AB 3030. The court held that the statute does not completely cover the field of groundwater regulation and does not imply that the field will bear no other or further local action. The court also suggests that since the purpose of AB 3030 is to induce *local water agencies* to address groundwater management, AB 3030 does not apply to counties. AB 3030 authorizes existing *local agencies* that provide specific types of water management, such as water service or groundwater management and replenishment, to develop groundwater management plans; AB 3030 therefore does not categorically apply to counties. *Id.* at 181 fn.9.

[65]The following counties have passed groundwater management ordinances that govern the extraction and exportation of groundwater (dates of the most recent amendment are noted): Butte Co. 1996; Colusa Co. 1998; Fresno Co. 2000; Glenn Co. 2000; Imperial Co. 1998; Inyo Co. 1998; Kern Co. 1998; Lake Co. 1999; Madera Co. 2001; Modoc. Co. 2001; Napa Co. 1999; Sacramento Co. 1952 Water Act (Sec 32 on GW mgmt added 1985); San Benito Co., 1995; San Diego Co. 1991; San Joaquin Co. 1996; Shasta Co. 1998; Siskiyou Co. 2001; Tehama Co. 1994; Yolo Co. 1996. Ordinances have been proposed or are pending approval in a number of other counties. Carl Hauge, California Department of Water Resources, pers. comm.; Antonio Rossman, pers. comm.

[66]Groundwater is generally defined as "all water below the surface not in known and definite channels."

[67]The Workgroup notes that there may be constitutional limitations on ordinances which express an outright export ban or discriminate the export of water solely on arbitrary definitions of place of use, such as beyond county boundaries. Such ordinances could violate the Equal Protection or Commerce Clauses of the US Constitution or Article X, section 2 of the California Constitution.

[68]For example, *see* Colusa County Code §§ 43-3, 43-4 and Shasta County Ordinance No. SCC 98-1, §§ 18.08.030, 18.08.040.

does it retain jurisdiction to the point of end use? Some believe that when the imported water is commingled with native groundwater, SWRCB jurisdiction ceases. The Workgroup has not been able to find any precedent or other legal support for this view, however. Moreover, it is not apparent why surface water stored underground should be treated any differently than water stored in a surface reservoir for purposes of the State's administration of water rights.

However, as stated above, the SWRCB's practical ability to regulate groundwater recharge and recovery operations is limited, since the SWRCB could not feasibly protect the banker from the other groundwater users. This asymmetry may render its nominal authority in the aquifer ineffectual in a practical sense. If, not withstanding this asymmetry, jurisdiction is to be shared concurrently, then it would seem that the SWRCB pre-empts or supplants local regulation of the stored surface water only to the extent of actual conflict.[69] This raises the question whether the local authorities are able to go beyond the SWRCB's extent of jurisdiction or only beyond its scope of jurisdiction. In other words, may the local jurisdiction prescribe measures that are more protective of the other "legal uses of water" or is it restricted to protecting against types of injury not covered by SWRCB regulation, such as impacts to structures or crops from rising water tables, not impacts on other water uses? Under the latter approach, county regulation that substantially affects the definition or exercise of water rights, especially post-1914 appropriative rights, may be preempted.[70] For instance, the SWRCB's determination as to the volume or rate of banked water that can be extracted without adverse consequence to users of native groundwater would preclude contrary determinations by the local jurisdiction.

As noted above, there are outstanding questions regarding the jurisdiction over permitted surface water that is temporarily stored underground. Thus, demarcating the division of regulatory oversight between these levels of government in advance would help demystify groundwater banking, and reduce the regulatory risk factors.

[69]Legal counsel to the SWRCB suggests that the instances of actual conflict may not be frequent in that, in situations where there is a competent local regulatory regime, the Board would likely defer to the local authority and exercise its authority only when necessary.

[70]Baldwin does not address the extent to which local ordinances may be preempted by the state law of water rights to surface waters (and underground streams in known and definite channels). It is an open question whether the county could regulate extractions of imported surface water beyond regulation to make sure that what is being extracted is in fact the net addition caused by the importation. Concurrent jurisdiction could exist when the SWRCB makes injury determinations in approving a change order and when counties require a permit and analysis of impacts to extract groundwater. Because SWRCB injury determinations would not address every issue subject to county regulations, there is little argument for field preemption, but conflict preemption could occur on a case-by-case basis for those county and state standards or determinations that are irreconcilable.

Delta Protection

California Water Code section 1220[71] prohibits the export of groundwater from the "combined Sacramento and Delta-Central Sierra basin" unless the pumping is in compliance with a groundwater management plan approved by the county board of supervisors and subsequently approved by popular vote. The statute does not distinguish native groundwater from imported, foreign water.[72] Notwithstanding that imported water transferred into storage under a permit issued by the SWRCB can properly be distinguished from native groundwater, the application of Water Code Section 1220 to the re-export of imported recharge water has not been decided. Since its apparent intent is to apply Delta protections to groundwater, it is possible that the courts will ultimately limit its application to exports of native groundwater, not imported recharge water. However, the Workgroup does not universally accept this prediction as to the nonapplicability of the area of origin statutes.

Recovering Water Banked Through "*In Lieu*" Arrangements

Under an *in lieu* arrangement, the groundwater banker would enter into arrangements with the groundwater basin right holders who already use groundwater for all or a portion of their supply and also have access to surface water deliveries. During periods when the banker desires to recharge groundwater, the overlying landowners would forego pumping and use a substitute surface water supply instead. The aquifer recharges "passively" from natural recharge and, in some cases, from percolation of the applied surface water. When the program desires to extract groundwater for export, the landowner would curtail its surface water use and substitute or increase groundwater pumping. The mass balance in the groundwater basin will be the same whether the water is actively recharged or delivered *in lieu* of groundwater pumping. In both cases during years of storage, more water is contained within the basin than would have been stored absent the program. Other institutional arrangements should be implemented to minimize the risk that nonparticipants will take banked water and to provide a contingency should the banking injure nonparticipants' water rights.

One difficulty with *in lieu* banking is that the program will not be withdrawing groundwater that it has directly and physically put into the aquifer through an active recharge program. Instead, it will require groundwater right holders in some years to forego pumping water that they are otherwise legally entitled to extract and to offset that forbearance by drawing more heavily on the aquifer in other years. California Water Code sections 1005.2 and 1005.4 treat *in lieu* use of an imported surface water supply as the equivalent of the use of the groundwater, thus legally preserving one's rights to the supply left *in situ*.[73] As is the case with active recharge, there are

[71]Cal. Wat. Code § 1220: "(a) No groundwater shall be pumped for export from within the combined Sacramento and Delta-Central Sierra Basins . . . unless the pumping is in compliance with a groundwater management plan that is adopted by ordinance pursuant to subdivision (b) by the county board of supervisors, in full consultation with affected water districts, and that is subsequently approved by a vote in the counties or portions of counties that overlie the groundwater basin, except that water that has seeped into the underground from any reservoir, afterbay, or other facility of an export project may be returned to the water supply of the export project. . . ."

[72]Arguably imported water is not "pumped for export from" the combined basin.

[73]Cal. Wat. Code § 1005.2 and 1005.4 states that where a nontributary source of water (imported foreign water or conserved water otherwise unavailable to the aquifer) is used *in lieu* of groundwater pumping, a reduction or cessation of groundwater pumping to permit groundwater replenishment is deemed a beneficial use of water and

problems of enforcement and accounting. In years of forbearance, the other pumpers might extract the water that the program intended to store. In years of extraction, the contracting landowner's rates of withdrawal may impair the rights of the correlative pumpers.

Of course, some difficulties associated with *in lieu* recharge may be avoided where groundwater basins have been adjudicated such that the particular extraction rights have been quantified. This is the situation with a number of groundwater basins in Southern California. Among the drawbacks of adjudication are the time and cost associated with the process. In nonadjudicated basins where rights have not been quantified, other institutional arrangements can be implemented to provide sufficient reliability to assure that a banking entity can recover the banked water.

Findings and Conclusions

1. Groundwater banking projects must be developed with the consent and for the benefit of overlying landowners, groundwater appropriators, water districts, and groundwater management authorities.

2. In general, a proponent of an active recharge or *in lieu* storage project should design the project such that the recharge and withdrawal of water will not adversely affect other legal groundwater users.

3. Among the key technical issues are determination of the aquifer baseline conditions, including the extent of unsaturated aquifer space, and implementation of mechanisms to ensure the recovery of imported water without causing injury.

4. A water user is entitled to protection against adverse impacts or other actionable claims caused by an active recharge project, such as reduction in the quantity of water rights, increased pumping costs, and water quality degradation.

5. The “no injury” requirement is satisfied by a “physical solution” that the courts, the SWRCB (to the extent of its jurisdiction), or a local groundwater management authority (to the extent of its jurisdiction), find will make legal users of groundwater hydrologically or financially whole.

6. A legal user of water may not enjoin a groundwater banking project that offers to provide a “physical solution” to such legal user, whether or not that offer is accepted, provided that a court or appropriate regulatory authority finds that the physical solution would have constituted adequate mitigation.

7. Under some circumstances, the project may have to obtain a “change order” from the State Water Resources Control Board, authorizing the transfer from a surface source to the actively recharged groundwater bank.

    a. If the underground storage would change the point of diversion, place of use, or purpose of use specified in the permit, then a change order is clearly required.

will not result in loss, reduction or forfeiture of the groundwater rights.

b. If the storage would not change the point of diversion, place of use, or purpose of use, but is in conflict or inconsistent with an express term of the permit, then a change order is required from the SWRCB.

c. If the storage is not inconsistent with the terms of the permit (e.g., permits of large water wholesalers), then a change order may not be required.

8. A water right holder who imports the water with the purpose of later extracting it has the paramount right to extract that water for use either on the overlying lands or on remote locations provided that legal users are not injured.

9. The paramount right of the importer to redivert imported waters stored in an aquifer does not extend to waters that would be present in the aquifer in the absence of the importation, including any waters attributable to natural recharge that would have occurred but for the storage of imported water, unless a substitute water supply is furnished. The SWRCB's asserted jurisdiction over water imported into groundwater storage stems from its permitting authority over the original diversion from a natural watercourse. The Board has authority to regulate the banking project but not the native groundwater users. This asymmetry may disable the Board from supervising the groundwater recharge and recovery operations, and leave this to the discretion of the local authorities.

10. A groundwater banker may not enjoin the extraction of native groundwater by overlying landowners for use on overlying lands at rates that are, collectively, less than or equal to the safe yield of the basin. In a basin where there is no overdraft, a groundwater banker may seek to enjoin appropriative users of groundwater if the groundwater banker can demonstrate that the prior appropriators are extracting stored groundwater rather than a portion of the basin's safe yield. In an overdrafted basin, a groundwater banker may seek to enjoin overlying landowners if, absent prescription, the groundwater banker can demonstrate that such landowners are extracting stored groundwater in addition to native groundwater.

11. Groundwater regulation is within the municipal police power and state law, namely AB 3030, specially enacted local districts, and California Water Code section 1220, do not preempt municipal and/or county management of groundwater resources.

12. Water Code section 1220 does not apply to imported water, since its intent is to apply area of origin protection to groundwater.

Recommended Resolution of Issues

1. Improved geohydrologic baseline information, including information on the depths of existing wells, would greatly assist in devising successful conjunctive use projects and in ameliorating local concerns. DWR's update of its groundwater report, Bulletin 118, now mandated by the legislature, is not detailed enough to serve as the vehicle. Use of Proposition 204 and Proposition 13 funds should be investigated for this purpose. If this is not an eligible use of funds, the legislature should consider substantial appropriations for this specific purpose.

2. The SWRCB or other appropriate entity should convene a process involving its staff and outside experts to develop principles and guidelines for resolving the critical legal uncertainties identified in this Section. That process may serve as either a precursor to, or a substitute for, clarifying legislation or judicial rulings.[74] In order to assure continuity, the participants in such a process should be formally appointed and represent a diverse set of interested parties. The Workgroup proposes that the principles and guidelines incorporate the above findings and following precepts:

   a. There is legal ambiguity concerning the full extent of property rights in aquifer storage space enjoyed by overlying landowners. Moreover, there is virtually no judicial or legislative guidance to determine how conflicts will be resolved between competing interests when the supply of available storage space is limited in relation to demand. Resolution of these issues will help provide the certainty required to justify the investments in property and infrastructure necessary for most storage projects. We recommend the use of the laws of nuisance rather than trespass as the most appropriate legal mechanisms through which to resolve issues regarding the property rights in question. We acknowledge that the larger issue of paramount rights to use limited storage space will be highly contested and difficult to overcome. At this point, we only recommend that whatever legal doctrine is ultimately adopted be suitable for addressing such conflicting demands across a variety of basins with differing regulatory and hydrological conditions.

   b. County ordinances and local groundwater management authorities adopted to protect other water users may not restrict recovery and re-export of "foreign" water imported into the groundwater basins, except to the extent necessary to prevent injury to other legal users of the groundwater basin, as that principle is understood under existing law.

[74]Many members of the Workgroup observed that the legislature will be reluctant to venture into these complex issues until it is clear that there is a problem to fix; that is, until actual controversies arise. At that stage, conflicting interests tend to impede legislative resolution. In the view of these members, informal principles and guidelines that are widely embraced may prevent controversies from arising in the first place.

Section 6. Technical, Legal, and Institutional Issues Related to Implementing a Groundwater Substitution Transfer*

A groundwater substitution transfer occurs when a water user agrees to transfer surface water diverted under a surface water right to another water user and instead pump percolating groundwater (i.e., groundwater not subject to the SWRCB's permitting authority) to satisfy the seller's water needs. To help illustrate the issues associated with groundwater substitution transfers, following is a hypothetical example of a dry-year transfer of surface water by Agency A, a project contractor located north of the Delta, to Agency B, another project contractor located south of the Delta.[75]

Agency A has agreed to pump groundwater to compensate for the reduction in post-1914 appropriative surface water deliveries. The parties agreed that Agency B would pay for (1) the market value for the transferred water, (2) Delta carriage water costs, and (3) distribution costs. The focus of this analysis is on the technical, legal, institutional, and political issues that will need to be addressed to allow a successful transfer while protecting the long-term use of the aquifer and the parties affected by the transfer. This analysis assumes that no changes in land use result from the transfer by way of land fallowing or cropping patterns.

Background

Agency A lies adjacent to the Sacramento River in California's Sacramento Valley. It uses a mix of contract supply and groundwater to meet water demands. Groundwater is pumped from an extensive unconfined to semi-confined aquifer that is hydraulically connected to the Sacramento River. The supply of water to be transferred comes from Agency A's contractual entitlement. Agency A normally uses all of its entitlement, so any reduction in contract supply translates into a similar increase in groundwater pumping. The contract with the project specifies that Agency A always receives its full project supply even in the driest years. Agency A provides only surface water to water users within its boundaries. The individual water users maintain and operate their own groundwater pumping systems.

Agency B is located south of the Delta and is primarily urban with an extensive water supply system. It receives contract water from the project in addition to water from several of its own

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* The sections of this report were drafted by groups of participants, some large and some small. Early in the process, a ground rule was developed: the conclusions and opinions expressed in the report are not endorsed by all participants, nor are they necessarily majority opinion or position. The sections presented in this report nonetheless are useful in outlining various positions and perspectives, some of which evolved after much discussion. Others more closely reflect the perspective of one or a few participants.

[75] For the purposes of this section, the term "project" generally refers to the State Water Project or Central Valley Project, but can also apply to the surface water project of a local agency.

systems and has sufficient supplies for all but drought years (approximately 1 year in 7). Agency B routinely purchases supplemental water during drought years at market values.

During a dry year Agency A agrees to transfer a portion of its contract supply to Agency B. The primary incentive for Agency A to participate in the transfer is the ability of Agency B to purchase the water at market rates which translates into several million dollars in revenue for an otherwise economically challenged agency. The generated revenues will be used to compensate water users for increased pumping costs, maintain the existing water supply system, and install a fish screen on the existing surface water diversion facility.

Issues

From a water supply point of view the transfer described above is straightforward. Agency A foregoes part of its surface water diversion and pumps groundwater to make up the deficit in supply. Agency B receives the transferred water less Delta carriage water required to move the water from Agency A to Agency B. However, to successfully accomplish the water transfer described above, several technical, legal, and institutional/political issues must be addressed. A successful transfer is defined as one that will encourage the parties, and others, to participate in similar exchanges in the future and does not have significant long-term negative impacts on participants, people not party to the transfer, or the environment.

Technical Issues

General Issues

A lack of understanding of the hydrologic, geologic, and engineering factors of utilizing aquifers for water supply can create significant barriers to implementing water transfers. This lack of certainty regarding aquifer behavior may make groundwater substitution transfers appear too risky to potential participants. While it is never possible to completely quantify the response of the aquifer to different natural and human-induced stresses, it is possible, with sufficient and reliable data, to make reasonable estimates. A hydrogeologic investigation is generally required to gain a better understanding of the aquifer and how it interacts with surface water bodies.

Hydrogeologic investigations can be as simple as reviewing previous studies and data, but are usually very detailed evaluations of the surface and subsurface conditions in a basin. It is often necessary to drill bore holes to a depth of several hundred feet, conduct geophysical testing and install monitoring wells or stream gages to gather the required information. The major areas of evaluation are:

- surface and subsurface geology
- aquifer properties
- water quality
- water levels

- land subsidence
- land use
- existing water management practices
- legal, institutional, and environmental issues
- groundwater recharge/discharge areas

The information obtained can assist in formulating a conceptual model of the aquifer including its interaction with surface water bodies. The conceptual model can be used to estimate results from hypothetical scenarios like the water transfer described above. A mathematical model is an extension of the conceptual model and can assist in quantifying aquifer and surface water behavior under various conditions if sufficient data exists or can be obtained. The following questions should be considered when initiating a water transfer where one party will reduce its surface water diversion by substituting groundwater:

- How will the water table respond to the additional pumping during the transfer, and how will it respond after the transfer period?
- Domestic wells are often drilled to a shallower depth than agricultural wells. Will increased groundwater pumping cause water levels to decline below existing domestic or agricultural wells?
- Will increased groundwater pumping cause interference with other wells?
- Groundwater substitution transfers typically occur during dry years when natural recharge to the aquifer is low. What is the combined effect on the aquifer of increased pumping and reduced natural recharge?
- How quickly will the water table recover after the transfer period is completed and surface water deliveries are resumed?
- Where are the recharge and discharge areas of the aquifer?
- What is the nature and extent of the hydraulic connection between surface water bodies and the aquifer? To what extent will increased groundwater pumping reduce surface water flows by either inducing additional seepage to the aquifer or decreasing discharge from the aquifer to the surface water body?
- What is the quality of water in the aquifer? Will increased pumping induce poor quality water from deeper depths or laterally to migrate into the project areas?
- Will the aquifer experience subsidence as a result of the increased pumping? Is there a record of historical subsidence?

- Does an infrastructure exist for water users to switch from surface water to groundwater?
- Does a monitoring network and data exist that will allow answers to the technical questions?
- How will a monitoring program and data management system be developed and utilized?

Third- Party Technical Issues

One of the major technical issues related to water transfers is the need to describe and evaluate impacts to third parties. Third parties can generally be described as any entity that is potentially impacted by a proposed project but is not directly involved in project formulation. Following are examples of third-party impacts:

- Declining groundwater levels caused by changes in traditional pumping patterns can result in increased groundwater pumping costs and in extreme cases the need to drill deeper pumping wells.
- Water quality impacts caused by migration of poor quality water either laterally or vertically can require changes in crop selection, groundwater treatment, drilling deeper pumping wells, or alternative sources of supply.
- Impacts to wildlife as a result of reduced groundwater or surface water flow to a wetland area.

From a technical point of view, it can be difficult to establish that a project will have no significant third-party impacts given the uncertainty of future hydrologic conditions, regulatory requirements, and project operations. In addition, it is difficult or impossible to quantify individual groundwater rights except in basins that have been adjudicated. Historical groundwater pumping patterns may be used to estimate the amount of groundwater that can be substituted without harm to the water rights of others. However, records of historical groundwater pumping are often not available, so pumping volumes must be estimated. In addition, landowners are not legally restricted to pumping at their historical rate except in basins that have been adjudicated. Lastly, in areas experiencing long-term overdraft, any additional pumping will likely be viewed as a significant third-party impact.

Legal Issues

Water Rights

For a successful water transfer to occur, each of the project participants must have sufficient water rights to implement the proposed transfer. Also, because Agency A maintains a contractual right to obtain project water, Agency A must determine whether the transfer of project water is within the conditions of the underlying contract. The contract defines the obligations and entitlements between the parties, including Agency A's ability to transfer the water to a third party. Contractors of the State Water Project or Central Valley Project must abide by the specific guidelines developed by each Project for water transfers.

Physical Transfer of Water

The parties must be able to utilize conveyance facilities to practically and physically transfer the water. From an operational standpoint, California law facilitates the transfer.

Water Code section 1810 provides "neither the State, nor any regional or local public agency may deny a bona fide transferor of water the use of a water conveyance facility which has unused capacity, for the period of time for which that capacity is available, if fair compensation is paid for that use." Fair compensation is "the reasonable charges incurred by the owner of the conveyance system, including capital, operation, maintenance, and replacement costs, increased costs from any necessitated purchase of supplemental power, and including reasonable credit for any offsetting benefits for the use of the conveyance system." Section 1810 of the Water Code also requires that "use of a water conveyance facility be made without injuring any legal user of water and without unreasonably affecting fish, wildlife, or other instream beneficial uses and without unreasonably affecting the overall economy or the environment of the county from which the water is being transferred."

Thus, so long as (1) the requirements of Water Code section 1810 are satisfied; (2) unused capacity exists in a conveyance system which connects Agency A and Agency B; and (3) the agencies compensate the owner of the conveyance system for the reasonable charges incurred, the law facilitates the water transfer. There are a number of unresolved issues, however, regarding the actual meaning and effect of the water transfer statutes. Recent California Court of Appeal decisions have highlighted disputed terms within the water transfer statutes, such as "fair compensation" and "available capacity."

Protection from Adverse Impacts

In general, a water transfer cannot result in injury or harm to downstream water rights, adjacent groundwater users, fish and wildlife, recreation, etc. The Water Code affords those protections under sections 380, et seq., 1702 and 1725. The Water Code also governs transfers based on pre-1914 water rights.

Although infrequently or never used as a basis for a transfer, Chapter 3.6 of the Water Code, sections 380 through 387, authorizes public agencies that do not otherwise have the authority, to transfer water for use outside the agency only if "the change may be made without injuring any legal user of the water and without unreasonably affecting fish, wildlife, or other instream beneficial uses and does not unreasonably affect the overall economy of the area from which the water is being transferred."

Water Code section 1702 is more often used to assure impacts are considered. This section similarly imposes, as a condition precedent to SWRCB approval of a water transfer, that the party seeking the transfer establishes, to the satisfaction of the SWRCB, "that the change will not operate to the injury of any legal user of the water involved."

Finally, section 1725, in a manner similar to section 386, requires that before a temporary change in the point of diversion, place of use, or purpose of use is authorized for a transfer or exchange of water or water rights, it must be demonstrated that the proposed change "would not injure any

legal user of the water, and would not unreasonably affect fish, wildlife, or other instream beneficial uses."

Therefore, to transfer the water, Agency A must comply with provisions of the Water Code by demonstrating that legal users of water and fish and wildlife are protected in accordance with law.

As third parties to most transfers through the Delta, the State Water Project, Central Valley Project, and their respective contractors take the position that they could be adversely impacted by groundwater substitution transfers. The issue is whether increased groundwater pumping by the transferring agency results in either reduced groundwater discharge to the river or increased surface water recharge from the river to the aquifer. Either of these scenarios is possible when additional pumping by the transferring agency significantly reduces groundwater levels in aquifers near rivers that are tributary to the Delta. A significant reduction in groundwater levels in turn changes the hydraulic gradient between the river and the aquifer. Either scenario may require the Projects to release additional water from upstream storage or reduce Delta exports to meet water quality and flow requirements in the Delta.

The Projects place a Delta carriage water requirement on exports south of the Delta to ensure that exports do not violate Delta water quality standards. Delta carriage water is the extra water needed to carry a unit of water across the Delta to the pumping plants while maintaining a constant salinity. In practice, for water transfers, the Projects subtract the Delta carriage water requirement from the amount being transferred. However, some water agencies that receive water from the Delta believe Delta carriage water cannot be accurately determined; as a result, some believe that an excessive Delta carriage water requirement is placed on exports under certain conditions. Previously, DWR estimated carriage water requirments based on rough estimates of average conditions. However, DWR currently uses the best available Bay/Delta water quality model (DWR DSM2) to determine the carriage water impacts for each transfer on a case-by-case basis using real-time hydrologic and water quality data at the time of the transfers through the Delta. This actual carriage water requirement is then assessed to water transfers as they occur.

From a practical standpoint, and to comply with Water Code section 1810 when wheeling is involved, the parties proposing a groundwater substitution transfer must be aware of and consider the potential social and/or economic impacts on those affected by the transfer to ensure a successful program. Social and economic impacts may be considered, indirectly, as part of the environmental review required by the California Environmental Quality Act, if the social and economic impacts are related to physical impacts. (*See* 14 Cal. Code Regs. § 15131.) Some also argue that the protections afforded under section 1702 of the Water Code prohibit a change in the point of diversion, place of use or purpose of use that causes adverse social or economic impacts, and therefore, such impacts must be considered as part of the considerations necessary to comply with section 1702. However, the dispute over the scope of section 1702 extends beyond the nature of the injury protected. There are also differing views as to who are "legal users."

Pumping of Replacement Groundwater

Agency A does not need a permit from the State to pump groundwater[76] to make up for the reduction in surface water, as such water rights are outside the state permit system. Each groundwater user can drill a well and pump groundwater without a water right permit. In certain areas of the State, local ordinances have been enacted to protect local water resources. These ordinances usually require a permit to transfer water, require that the transferor identify and monitor for potential impacts to third parties, and may place conditions or limits on pumping. Pumping may also be limited if the groundwater basin has been adjudicated. Local groundwater management plans adopted under Water Code sections 10750 et. seq. (AB 3030) may place further limits on increased pumping from a basin.

Water Code section 1745.10 further provides that a water user that makes a short-term or long-term transfer of surface water may not replace that water with groundwater unless the groundwater use is (a) consistent with any groundwater management plan adopted for the affected area, and (b) approved by the water supplier from whose service area the water is to be transferred and the water supplier, if a groundwater management plan for the area has not been adopted, determines that the transfer will not create, or contribute to, conditions of long-term overdraft in the affected basin.

A third party could challenge or object to the transfer if the basin is in a state of overdraft, or if the increased pumping adversely impacts the water rights of other overlying owners who pump from the same basin.

Regulatory Issues

Successfully implementing a groundwater substitution transfer will require navigating through numerous local, state and federal regulatory procedures. Complying with the various regulations may add several years and significant costs to the process. The time required and the chances for approval will be enhanced in areas where a comprehensive understanding of the aquifer exists, where the aquifer is managed adequately, and where third-party impacts are mitigated. Some of the major regulatory requirements that may be applicable to groundwater substitution transfers include:

- National Environmental Policy Act (NEPA)
- California Environmental Quality Act (CEQA)
- State and federal endangered species acts
- Executive Order 11990 (Protection of Wetlands)
- Local Permits (County groundwater or transfer ordinances, etc.)

[76]For the purposes of this discussion, groundwater is defined, generally, as water in aquifers which lack bed and banks.

Authority for Development, Adoption, and Implementation of Groundwater Management Plans

The information in this section was taken verbatim from the 1999 DWR report titled "Groundwater Management in California."

California does not have a statewide program for management of groundwater. Groundwater management in California is a local responsibility accomplished under the authority of the California Water Code and a number of court decisions. There are six possible methods for groundwater management under present law. Groundwater management is achieved by a combination of one or more of these methods. To assist with these efforts, the Department of Water Resources is currently developing a model groundwater management ordinance as part of the update to Bulletin 118, *California's Groundwater*. The model ordinance will be designed to be used by local governments in cooperation with local water agencies to manage groundwater resources more efficiently.

Overlying Rights

Overlying property rights allow anyone in California to build a well and extract their correlative share of groundwater, which is not defined until the basin is adjudicated. The availability and use of groundwater has increased local prosperity in some areas, and in some cases, has provided enough money to construct a water project that can convey surface water into the local area. Even though the management of groundwater may not have been closely coordinated, this has been called a form of "management."

Local Agencies

Twenty-two kinds of districts or local agencies are identified in the California Water Code with specific statutory provisions to manage surface water. Some of these agencies also have statutory authority to impose some form of groundwater management. Some of the agencies have done so; others have not.

Adjudicated Basins

In basins where a suit is brought to adjudicate the basin (e.g., *Alhambra* vs. *Pasadena*), the groundwater rights of all the overliers and appropriators are determined by the court. The court also decides: (1) who the extractors are; (2) how much groundwater those well owners can extract; and (3) who the watermaster will be to ensure that the basin is managed in accordance with the court's decree. The watermaster must report periodically to the court. There are 16 adjudicated groundwater basins in California.

Special Legislation Districts

In some parts of California, special legislation has been enacted to form groundwater management districts, or water management agencies. This legislation allows such districts to enact ordinances to limit or regulate extraction. There are nine of these water management agencies in California and three that have acquired similar authority through amendments to the Water Code.

AB 3030

Sections 10750-10756 of the California Water Code (AB 3030) provide a systematic procedure for an existing local agency to develop a groundwater management plan. This section of the code provides such an agency with the powers of a water replenishment district to raise revenue to pay for facilities to manage the basin (extraction, recharge, conveyance, quality). One hundred forty-nine agencies have adopted groundwater management plans in accordance with AB 3030. Other agencies have begun the process. In some basins, groundwater is managed under other statutory or juridical authority.

City and County Ordinances

In 1995 the California Supreme Court declined to review a lower court decision (Baldwin vs. Tehama County) that holds that state law does not occupy the field of groundwater management and does not prevent cities and counties from adopting ordinances to manage groundwater. Butte, Imperial, Inyo, Kern, San Diego, San Joaquin, Shasta, Tehama, and Yolo Counties now have groundwater management ordinances. Kern County's ordinance applies only to that portion of the County east of the Sierra Nevada. While cities and counties have the authority to regulate groundwater, the exact nature and extent of their police power is presently uncertain.

Guidelines for Implementing Groundwater Substitution Transfers

The following guidelines represent the views and opinions of the authoring agencies, elements of which are disputed by some participants in the Water Transfer Workgroup.

Groundwater Substitution Transfers Paper

In March 2002, DWR's Water Transfers Office released the draft document "Groundwater Substitution Transfers - How to Make Them Work in the Sacramento Valley in 2002." The paper was written with contributions by technical experts from within DWR and USBR and by interested parties in the Sacramento Valley. The purpose of the paper is to provide technical guidance to local parties who wish to sell water to the State's 2002 Dry Year Water Purchase Program or the Environmental Water Account through water transfers. The focus of the paper is on water transfers from areas in the greater Sacramento Valley to areas south and west of the Sacramento-San Joaquin River Delta and is intended to assist parties in developing the data and materials needed to support agreements for water transfer purchases and water conveyance with DWR.

The paper describes several areas that should be addressed by agencies seeking to conduct water transfers under the programs. These are (1) the placement and characteristics of the wells from which groundwater will be pumped, (2) the groundwater pumping program in terms of volume, schedule of the additional groundwater pumping, and the method of documenting and reporting the additional groundwater pumping, (3) a monitoring program to assess in real-time the effects of the groundwater substitution program on local groundwater users and surface water diverters, and (4) a mitigation program to be used to alleviate possible injury issues.

CALFED's Environmental Water Account and DWR's Dry Year Water Purchase Program

In March 2002, DWR's Water Transfers Office released the draft document, "Information to Parties Interested In Making Water Available to the Environmental Water Account or the State's 2002 Dry Year Water Purchase Program," which describes the needed technical considerations when making transfers under the Dry Year Purchase Program and the Environmental Water Account (EWA). The Dry Year Water Purchase Program builds on previous efforts by DWR to facilitate the short-term purchase of supply by areas experiencing temporary water shortages. The program is operated by DWR in cooperation with USBR and local agencies. The EWA was developed by the CALFED Bay-Delta Program to provide water for the protection and recovery of fisheries beyond water available through existing regulatory actions related to SWP and CVP operations. The EWA program is currently developing an EIR/EIS for future water transfers conducted by the program.

As outlined in the draft document, the main types of transfers the programs are interested in are (1) transfer of stored water, (2) groundwater substitution transfers, and (3) transfers involving crop shifting or idling. The key principles identified that should be considered when conducting a water transfer under the programs are:

- Local Leadership - DWR will work cooperatively with local water associations, their member agencies, local government and other leaders in the Sacramento Valley and other regions to assure that local interests have the opportunity to manage their resources in a manner that meets local objectives.

- Assuring Adequate Local Supplies - DWR will work with local water agencies and associations and other local interests in the Sacramento Valley and other regions to assure that supplies are reasonably available to meet local needs in those regions.

- Locally Developed Programs - Strategies for making water supplies available need to be locally driven and developed in cooperation with local public leaders.

- Third-Party Impacts - Water transfers should be designed to avoid injury to other legal users of water and unreasonable effects on the overall economy in the counties from which the water proposed for transfer originates.

- Environmental Protection - Actions to develop additional supplies for water users need to be implemented in a manner that is compatible with ongoing environmental protection and restoration programs.

- Statewide Perspective - In fulfilling its obligations, DWR recognizes that it must represent the interests of all parts of the State, both those areas needing additional supplies and those that can make supplies available.

Water Transfers by CVP Contractors

CVP contractors proposing groundwater substitution transfers in the Sacramento Valley must submit an application to the USBR for approval. USBR has established guidelines for evaluating potential impacts to the CVP by such groundwater substitution transfers. The primary area of concern is the possible extraction of CVP water flowing in streams adjacent to the groundwater extraction area. The following guidelines are used to evaluate impacts:

- Generally, wells located farther than two miles from a major river, stream, or CVP facility will be accepted to participate in transfers.

- Wells less than two miles from a major river, stream, or CVP facility require submittal of well construction information and demonstration that the wells will not impact the CVP.

- Wells in areas with groundwater overdraft, evidence of historical land subsidence, or water quality problems must be evaluated for impacts to the groundwater basin.

- All transfers are approved for one year. Participants of long-term transfers must reapply every year so that potential impacts can be reevaluated.

Water Transfers by SWP Contractors

Currently, DWR does not have specific guidelines related to groundwater substitution transfers by SWP contractors. Such transfers are evaluated on a case-by-case basis and will be allowed if they are in accordance with contract requirements and state and local laws related to water transfers. DWR intends to look at issues such as well location and potential for injury to other water users when evaluating groundwater substitution transfers by SWP contractors.

Institutional/Political Issues

Several institutional issues need to be addressed to effectively implement water transfers where groundwater substitution is involved. These institutional issues can be organized into three categories: groundwater management, economics, and environmental requirements. Each one of these categories provides significant challenges to implementing transfers.

Groundwater Management

Regional groundwater management can be defined as the oversight of groundwater resources from a basin or subbasin perspective to ensure the long-term viability of the resource. Basins and subbasins are usually defined by geologic or hydrologic boundaries that partially or fully separate groundwater flow in the subbasin from adjacent subbasins. Political boundaries are also used to define a basin or subbasin. The recent draft of Bulletin 118 by the DWR defines all of the significant water bearing basins and subbasins in the State.

The lack of regional groundwater management in many areas poses a significant barrier to implementation of a groundwater substitution transfer. The primary reason for this is that all groundwater users within a subbasin share the same resource. Increases in groundwater pumping

caused by the transfer may affect many users in the subbasin, not just those that are party to a transfer agreement. For this reason, protection of third parties generally cannot be addressed by a single landowner trying to implement the transfer. The impacts are felt far beyond the boundaries where the landowner has control. As a result, the failure to protect third parties will likely cause legal or political action that may defeat a project or significantly delay implementation. Regional groundwater management can provide a long-term mechanism to protect third parties if properly implemented.

Regional groundwater management options include:

- Developing basin management objectives for water levels, water quality, and subsidence. Triggers can be set in place to modify or terminate the transfer when objectives are violated.

- Offering groundwater users incentives to limit the timing or, in extreme cases, the quantity of pumping in certain locations to reduce specific problems such as declining water levels, intrusion of poor quality water, or land subsidence induced by pumping. Limiting pumping in one area can be mitigated by importing additional surface water where available or increased pumping in another area where conditions prevent the negative impacts experienced in other locations.

- Restrictions on land use to protect the aquifer from human-induced impacts. For example, restrictions may be placed on the siting of a landfill near aquifer recharge or discharge areas.

Protection of third parties, and by extension groundwater substitution transfers, is easier to implement where regional groundwater management is in place relative to areas without it. However, developing and implementing a regional groundwater management policy is itself a difficult task because groundwater rights are tied closely to individual property ownership. All the infrastructure costs for utilizing groundwater are typically paid for by landowners. Landowners are reluctant to accept groundwater management dictates unless there is a clear benefit such as improved water supply reliability, reduced pumping costs or other economic compensation.

Another reason regional management is difficult to implement is that it often requires the cooperation and coordination among several local agencies, each with independent authority over resources within their boundaries. Consensus among hundreds of individual groundwater users about how the aquifer should be utilized conjunctively with surface water supplies may be required to successfully implement basin- or subbasin-wide groundwater management. A mechanism is also needed to enforce groundwater management policies while protecting individual landowner rights. Some areas have overcome these obstacles by forming a joint powers authority comprised of representatives of each individual agency.

Economic

As noted above, a major technical issue related to a groundwater substitution transfer is the lack of a comprehensive understanding of the aquifer and its interaction with surface water bodies. The corresponding institutional barrier is the high cost of developing such an understanding and formulating a regional groundwater management policy that protects all water users in the basin.

Developing a comprehensive understanding of the basin requires significant capital and operational costs including investments in infrastructure and human resources. There are additional costs related to the monitoring and implementation of a groundwater substitution transfer.

Infrastructure costs can include:

- Installation of monitoring wells to measure groundwater levels and water quality.
- Installation of equipment to measure surface water flow and water quality to evaluate known or potential linkages with the aquifer.
- Installation of extensometers to measure land subsidence.
- Drilling test holes to perform geophysical testing of the subsurface in order to evaluate the extent and characteristics of the subsurface.
- Drilling additional pumping wells and distribution facilities for those areas that previously received only surface water and are required to switch to groundwater.

Human resources costs include the combined work of geologists, hydrologists, engineers, environmental specialists, mediators, and legal professionals to:

- Design the monitoring system.
- Collect and evaluate the data obtained through the monitoring system both initially and over time.
- Develop a data management system to effectively evaluate collected data.
- Develop conceptual and mathematical models of the aquifer and its interaction with surface water bodies to predict the response to stresses such as pumping or drought.
- Assist in developing options for management of the aquifer conjunctively with surface water supplies.

Environmental Issues

Groundwater substitution transfers generally involve moving water directly from surface storage to the transfer destination. This transfer is made possible when the agency that has the right to the water substitutes this supply by pumping groundwater. Other than possible impacts to other groundwater users, the potential environmental impacts of a groundwater substitution transfer are usually relatively small compared to groundwater banking operations, which may require extensive recharge or conveyance systems. In general, a groundwater substitution transfer requires only limited new facilities and, ideally, there is no direct reduction in stream flows. Potential impacts are described below.

Impacts from New Facilities

In most cases, a groundwater substitution transfer requires only limited construction for new facilities. While it may be necessary to drill additional pumping wells and construct local conveyances, none of the recharge or stream diversion facilities that are needed for in-lieu or direct recharge projects are required. This significantly reduces potential environmental impacts associated with siting recharge facilities and constructing stream diversion facilities.

Impacts to Surface Water Bodies

Under ideal conditions, a groundwater substitution transfer will not result in a direct reduction in stream flow because the same quantity of water is released from storage—only the final destination changes. In reality, the timing of storage releases may change and thereby reduce stream flows during one period and increase flows during another period. These temporal changes in flow may have significant environmental impacts if reductions occur during low-flow periods or during fish migrations. Increases in flows during other periods may result in increased flooding potential. However, higher flows may have beneficial effects on stream channel geomorphology.

There may be significant long-term impacts to flows and water levels in streams, lakes, or wetland areas as a result of a long-term switch to increased groundwater pumping. Over time, increased groundwater pumping may lower groundwater levels and, where a hydraulic connection exists, either reduce the discharge from the aquifer to surface water bodies or increase seepage from the surface water body to the aquifer. These impacts are difficult to define due to the dynamics of surface water/aquifer interaction. The potential for these impacts, however, can be reduced by allowing aquifer levels to naturally recharge between successive transfers.

Impacts to Energy and Air Quality

Groundwater substitution transfers will result in additional groundwater pumping above what would have occurred without the transfer, which in turn, will result in additional energy usage to drive the pumps. If the pumps are connected to the State electrical grid, there may be significant impacts to the State energy supply and impacts to air quality from the power plants generating the electricity. The impact will be more significant if groundwater pumping occurs during peak energy demand periods. Wells driven by diesel or other fuel motors will not affect the State electrical grid but may have significant impacts to air quality.

Summary

The most significant barriers to implementing groundwater substitution transfers that are identified in this section are:

- Lack of a comprehensive understanding of the affected aquifer necessary to evaluate impacts from proposed transfers.

- Limited local economic resources available to develop a comprehensive understanding of the affected aquifer.

- Failure to protect third parties from impacts from proposed transfers.

- Lack of regional groundwater management on a basin or subbasin level to serve as a forum for addressing the aforementioned barriers and for developing policies promoting the long-term viability of the groundwater resource.

Recommended Resolution of Issues

Third-party protection is a key component of a successful groundwater substitution transfer. The most effective way of protecting third parties is through regional groundwater management at the basin or subbasin level. Regional groundwater management policies should be developed by agencies with groundwater management authority at the basin or subbasin scale, and must be developed in a way that allows stakeholders to have input into groundwater management decisions. It is recommended that the State undertake the following tasks to facilitate groundwater substitution transfers:

- Provide technical assistance and loans or grants to agencies to conduct hydrogeologic investigations on a basin or subbasin scale.

- Provide technical assistance and loans or grants to agencies seeking to develop basin or subbasin conjunctive use projects.

- Give priority for financial and technical assistance for the above items to those agencies that have implemented a groundwater management plan that seeks to ensure the long-term reliability of groundwater resources within the basin and that allows for stakeholder participation in groundwater management decisions.

- Provide technical assistance and loans or grants to local agencies seeking to develop a local stakeholder process for developing and implementing a groundwater management plan on a basin or subbasin scale.

- Technical information obtained on groundwater basins from public funding should be made available to public agencies for planning purposes.

- Strengthen existing groundwater management statutes to require that each groundwater management plan be reviewed annually by a basin advisory panel comprised of stakeholders.

- Continue to improve upon existing guidelines for the evaluation and approval of groundwater substitution transfers with input from all parties that could be affected by such transfers.

Section 7. Issues Associated With Transfer of Water Percolated Underground*

Water Code sections 484 and 1725 specifically identify consumptively used water that is available for transfer to include water that has percolated underground.

> **484.** (a) The temporary transfer of any water or water right that otherwise would have been consumptively used or stored by the transferor in the absence of the temporary transfer, does not in any way prejudice the transferor's right to the use of the water in the future. (b) *"Consumptively used," for purposes of this section, means the amount of water which has been consumed through use by evapotranspiration, has percolated underground, or has been otherwise removed from use in the downstream water supply as a result of direct diversion.* (emphasis added)

> **1725**. A permittee or licensee may temporarily change the point of diversion, place of use, or purpose of use due to a transfer or exchange of water or water rights if the transfer would only involve the amount of water that would have been consumptively used or stored by the permittee or licensee in the absence of the proposed temporary change, would not injure any legal user of the water, and would not unreasonably affect fish, wildlife, or other instream beneficial uses. *For purposes of this article, "consumptively used" means the amount of water which has been consumed through use by evapotranspiration, has percolated underground, or has been otherwise removed from use in the downstream water supply as a result of direct diversion.* (emphasis added)

Definition of Water That "Has Percolated Underground"

Both Water Code sections 484 and 1725 define "consumptively used" water to include water that "has percolated underground or has been otherwise removed from use in the downstream water supply." The phrase "or has been otherwise removed" clarifies that only the portion of the underground percolation that is removed from the downstream supply qualifies as consumptive use under the Water Code. The portion of underground percolation that makes its way back to useable water supplies downstream does not qualify as consumptive use as defined in the Water Code. The Water Code definition of what aspects of underground percolation constitute consumptive use is consistent with the technical definition of consumptive use as "water lost

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from the overall water supply system." Further, all water transfers must not cause injury to other legal users of water. The transfer of underground percolation that, absent the transfer, would have ultimately returned to the surface streams or useable groundwater supplies could cause injury to surface water or groundwater users. Therefore, the consumptive use portion of underground percolation is best defined as either:

1. Water that percolates underground from a use and becomes unavailable for other beneficial uses (for example, percolates to a saline sink), or

2. Water that percolates underground from a use and is not relied upon for subsequent use downstream or down gradient.[77]

In the latter case, an analysis to determine if the transfer would injure any legal user of the water, or unreasonably affect fish, wildlife, or other instream beneficial uses would be required.

Potential Effects of Transferring Percolated Water

Transferring water that would otherwise percolate underground to useable water sources could affect other beneficial uses and legal water users in several ways, including:

1. Directly reducing the volume of water that reenters a downstream surface waterway where the groundwater is hydrologically connected to the surface waterway;

2. Indirectly reducing the volume of water that enters a downstream surface waterway by reducing the hydraulic head which influences the volume and rate of groundwater entering a surface waterway; and

3. Reducing groundwater recharge induced by irrigation practices.

The following factors contribute to the period of time in which a reduction in surface flow, resulting from implementation of a transfer, could be observed:

- Distance to the waterway

- Seasonal hydrologic continuity

- Other groundwater pumping

- Geologic conditions

These factors, among numerous other influences, complicate the interaction of groundwater with surface water to the degree that there is no concise way to estimate the effect of transferring

[77] Minimal or insignificant impacts may not be valid grounds to prevent an otherwise beneficial transfer under Article X, section 2 of the California Constitution.

percolated groundwater on a general basis. Site-specific evaluations are needed to portray the relationship of this interaction in a specific geographic area.

For example, in areas of the San Joaquin Valley, irrigation water percolates underground, combining with unusable groundwater, which contributes to local high water tables that can damage agricultural productivity. In these areas, reductions in percolation of water beyond the root zone benefits other uses of water. Such reductions in percolated water would be transferable. However, in the Sacramento Valley, most of the water that percolates underground either flows to usable groundwater or makes its way back to the river system. Specific studies would be needed in the Sacramento Valley to identify exceptions, including areas of salt sinks where water percolates underground and is no longer useable.

Effects to Legal Users of Water

Surface Water Users

The transfer of water that, absent the transfer, would have percolated underground and ultimately made its way to usable surface water supplies could constitute an injury to other legal users of water. Downstream water diverters make use of this percolated water in a manner similar to that which would have occurred absent the appropriation of water. Therefore, downstream users could be injured if the underground percolation component of the appropriation was identified and transferred in a manner that precluded its use by the downstream water user.

Groundwater Users

Irrigation practices can induce recharge to a useable groundwater basin greater than that which would have taken place absent the appropriation of water. The transfer or reduction of this artificial recharge could affect other groundwater users. However, this effect may not constitute legal injury because, absent the appropriation, this artificial recharge would not occur. The effect of the reduction or transfer of this artificial percolation on groundwater users should be identified in the appropriate CEQA document and mitigated where feasible. However, these effects may not constitute injury under the Water Code.

Section 8. Water Code Section 1707 Transfers*

Water Code section 1707, which was added to the Water Code in 1991, and amended in 1999, states:

> 1707. (a) (1) Any person entitled to the use of water, whether based upon an appropriative, riparian, or other right, may petition the board pursuant to this chapter, Chapter 6.6 (commencing with Section 1435) or Chapter 10.5 (commencing with Section 1725) for a change for purposes of preserving or enhancing wetlands habitat, fish and wildlife resources, or recreation in, or on, the water.
>
> (2) The petition may be submitted for any of the purposes described in paragraph (1) and may, but is not required to, be submitted in combination with a petition to make any other change authorized pursuant to this part. The petition shall specify the time, location, and scope of the requested change, and other relevant information relating thereto.
>
> (b) The board may approve the petition filed pursuant to subdivision (a), subject to any terms and conditions which, in the board's judgment, will best develop, conserve, and utilize, in the public interest, the water proposed to be used as part of the change, whether or not the proposed use involves a diversion of water, if the board determines that the proposed change meets all of the following requirements:
>
> (1) Will not increase the amount of water the person is entitled to use.
>
> (2) Will not unreasonably affect any legal user of water.
>
> (3) Otherwise meets the requirements of this division.
>
> (c) (1) Upon the request of the petitioner, the board may specify, as part of its approval of the petition, that the water that is subject to the approval pursuant to this section shall be in addition to water that is required, if any, to be used for instream purposes to satisfy any applicable federal, state, or local regulatory requirements governing water quantity, water quality, instream flows, fish and wildlife, wetlands, recreation, and other instream beneficial uses. If the request is approved by the board, state and local agencies, as well as the courts, shall not credit the water subject to that petition towards compliance with any of the regulatory requirements described in this subdivision. A federal agency shall comply with the requirement imposed by this paragraph to the extent required by federal law, or to the extent that it chooses to comply.
>
> (2) For the purposes of this subdivision, "requirements" include requirements or obligations that have not been formally established or allocated at the time of the petition, and obligations under any agreement entered into to meet those requirements. Neither any petition filed pursuant to this section nor any documents or statements made in connection therewith shall be construed or used as an admission, evidence, or indication of any obligation to meet any of the requirements described in this subdivision.
>
> (d) Except as provided in subdivision (c), water that is subject to a petition granted pursuant to this section shall be used to meet, in whole or in part, any requirement described in subdivision (c) if any of these requirements exist. The water shall be credited to the petitioner, or to any other person or entity designated by the petitioner, whenever that person or entity has, or may have, obligations to meet one or more of the requirements described in subdivision (c). The water shall be credited towards compliance with any requirements described in subdivision (c), by state and local agencies, as well as the courts. A federal agency shall comply with the requirement imposed by this subdivision to the extent required by federal law, or to the extent that it chooses to comply.

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This section was a result, in part, of a determination by the courts that an appropriative water right permit could not be granted by the SWRCB for instream flow use. The court concluded that the water sought for instream use by filing an application to appropriate water would not in fact be appropriated because the applicant would not be diverting or taking control of the water, one of the required elements of an appropriation.[78] The state legislature created a way to solve this problem by enacting Water Code section 1707. Section 1707 authorizes the SWRCB to approve a petition to change an exisitng right specifically for the purpose of preserving or enhancing wetlands, fish and wildlife, or recreation in or on the water, in contrast to protecting such uses by conditioning other permits, which was the only option available in the past. Such a change requires that the original use under the existing right cease or be reduced in the amount of the change.

Only a few petitions for change under 1707 have been approved. Notably, section 1707 has been used to protect flows being released from reservoirs on San Joaquin River tributaries between the point of release and the Delta. Protection sought under section 1707 is intended to keep these releases from being diverted by users along the San Joaquin River although no enforcement action has actually taken place.

Because of the rather limited use of section 1707, many issues regarding it have never been addressed. There has been much discussion about this statute in an abstract legal sense, but no hearings with testimony and evidence and resultant legal briefing have occurred. Therefore, the following discussion is a summary of issues associated with section 1707 and some possible scenarios regarding those issues.

Issues

Who has authority to approve section 1707 changes?

The statute states: "Any person entitled to the use of water, whether based on an appropriative, riparian, or other right, may petition the board pursuant to this chapter ... for a change for the purposes of preserving or enhancing wetlands habitat, fish and wildlife resources, or recreation in, or on, the water." A plain reading of this would indicate that such authority resides with the SWRCB. The statute does not specify, however, whether the SWRCB's jurisdiction is exclusive. A court with jurisdiction over an adjudication decree has approved a section 1707 change on a pre-1914 right, without SWRCB review of the change. Whether the court has authority to do so is unclear.

The issue of jurisdiction is not unique to section 1707 changes. Uncertainty also persists in adjudicated watersheds regarding which rules apply to water right changes and transfers. Some of the most recent decrees expressly provide for transfers, but most are silent on the issue. The Water Code is unclear about the circumstances under which adjudicated rights may be changed or transferred, and could be interpreted to limit these actions. Water Code section 1740 only

[78] The SWRCB may issue a permit where diversions are made for purposes of protecting instream uses, as occurs where waters are diverted to storage for purposes of making releases to provide additional flows at a later time, or where water are diverted from one watercourse to another for purposes of increasing flows in the watercourse which receives the diverted flows.

addresses transfers under post-1981 statutory adjudications. This is an issue that could be resolved through legislation. In comments regarding SB 970 (1999 Reg. Sess.), the SWRCB proposed amendments that would have set out a roadmap for changes and transfers of adjudicated rights, spelling out the roles of the SWRCB and the courts. Although the sponsor of the bill, the Association of California Water Agencies (ACWA), did not include the proposal in its bill, it informed the SWRCB that they did not see a significant problem with the proposal.

Can a section 1707 change be made from one parcel of land to another?

This issue arises from the inclusion of riparian rights in the statute. For example, can a change in a riparian right be accomplished under section 1707 in order to transfer water used on a riparian parcel of land to another parcel of land to establish wetland habitat, as would typically be done in a transfer to a wildlife refuge?[79] Clearly a riparian user can forego use of water under a riparian right and dedicate that use to the purposes designated under section 1707. However, the question exists as to whether section 1707 allows a riparian right holder to divert to nonriparian land. Unlike appropriative water rights, which can be transferred from one parcel of land to another, the riparian right is "part and parcel" of the land to which it attaches. Except as provided in section 1707, the riparian right comes with the land and remains with the land, and cannot be transferred. Does this implication in section 1707 take precedence over a long-standing doctrine in California water law?

On its face, section 1707 allows changes to riparian rights, including changes in place of use. Section 1707 expressly applies to riparian rights, and expressly allows changes under Chapters 6.6 and 10.5 of the Water Code, which allow changes in place of use. It also appears that section 1707 was intended to allow changes in place of use under riparian right as part of a change for instream beneficial uses. A change in riparian right may be used to provide instream flows, not just adjacent to the water right holder's riparian lands, but also downstream. For example, riparian rights in the Delta or upstream of the Delta could be changed to provide increased Delta outflow to meet water quality standards. Indeed, section 1707, subdivisions (c) and (d) expressly allow for use of changes approved under section 1707 to meet flow or other water quality or water quantity standards or to provide additional protection. The usefulness of section 1707 for this purpose would be undermined if riparian rights could not be changed to provide instream flows downstream of the riparian land involved.

A more difficult question may be presented by a proposal to change a riparian right to divert water to nonriparian land. The core purpose of section 1707 is to allow water to be dedicated to instream beneficial uses. On the other hand, nothing in section 1707 precludes a change involving a diversion from the stream if the purpose of the diversion is preserving or enhancing wetlands or wildlife habitat. Section 1707 includes provisions for the protection of third-party water right holders and the environment. The change cannot increase the amount of water that the water right holder is entitled to use and cannot unreasonably affect any legal user of water. The change must also comply with the protections for third-party water right holders and the environment provided by the specific Water Code sections under which the transfer is processed. So long as these requirements are met, allowing changes has the potential to promote the constitutional policy of putting the waters of the state to maximum beneficial use.

[79] If this right was an appropriative right this would not be an issue as such a transfer would not be done pursuant to Section 1707; it would be done pursuant to Section 1435 or Section 1725.

It should also be noted that section 1707 grants the SWRCB broad discretion to condition changes in the public interest. The SWRCB included this provision in the legislation because it recognized that section 1707 would allow for substantial deviations from long-standing water right law, including the transfer of riparian rights and the establishment of water rights for instream flows. As a result, it was not possible to anticipate all of the ways section 1707 might be used or all of the problems that might arise. The SWRCB's discretion to review section 1707 changes in the public interest provides a means of addressing unanticipated problems and responding to potential abuses. The potential for section 1707 to be used for a change involving a riparian right, with the proposed use of water on nonriparian land, is an example of a novel use of section 1707 that can best be addressed in the context of a specific proposal, to assess the potential benefits and problems with allowing such changes.

What is the quantity of water that can be transferred pursuant to section 1707?

Section 1707 provides for changes to be processed under other provisions of the Water Code. One of these provisions, Water Code section 1725, limits the quantity of water that may be transferred under a temporary change in water right to that which would have been consumptively used or stored in the absence of the transfer. Where a section 1707 change is proposed as a temporary change under Water Code section 1725, the express limitations of section 1725 apply. For changes processed subject to other provisions, such as section 1702, there may be no express limitation to the amount of water consumptively used or stored, but the application of the “no injury” rule often may dictate the same result. As a general rule, it may be possible to approve changes to instream flows based on the gross diversion, but only for the reach of the stream between the point of diversion and the point where return flows enter the river. Downstream changes are likely to be limited to the amount by which the change reduces consumptive use. For example, a change proposal could be made for the decommissioning of a run-of-the-river hydroelectric project. The SWRCB could approve the change to provide for instream flows in the bypass reach, even though the project does not involve any storage or consumptive use. But there does not appear to be any basis for approval of a change to provide instream flows downstream of the bypass reach.

Although a riparian right cannot be lost through nonuse and can be initiated for use at any time, the amount of water a riparian user is entitled to use is not necessarily a value that has been quantified or can easily be quantified if there has been no use. If such a riparian right has not been used, can any water under that right be transferred? Clearly, transfer of an unused or dormant riparian right cannot be used to establish an instream flow right that could be invoked to prevent third-party water right holders from diverting, as such a result would be inconsistent with the “no injury” rule. For temporary water transfers processed under Water Code section 1725, the limitation to water that would have been consumptively used or stored in the absence of the transfer would also prevent the SWRCB from approving a transfer based on a dormant or unexercised riparian right.

Section 1707 Changes to Instream Purposes to Satisfy Regulatory Requirements

Section 1707 permits a transfer to be made to instream purposes to satisfy any applicable federal, state, or local regulatory requirements. In practice, such requirements are often on streams of some size and are typically much larger than an individual right on those streams. Dealing with very small water rights to meet very large flow requirements raises the issue of whether such a transfer serves any useful or reasonable purpose. Cumulative transfers could, to some degree, resolve this issue. However, in the case of proposals that have been made concerning transfers to meet requirements for Delta outflow, even cumulative transfers may not make more than a minimal contribution to such requirements.

Would a section 1707 change actually go to meet a regulatory requirement?

The actual result of section 1700 changes that have been proposed for the purpose of meeting regulatory flow requirements has been to allow the party responsible for the flow requirements to make water available for other, usually consumptive, uses. Subdivision (d) of section 1707 expressly allows use of 1707 changes for this purpose. The outcome is for more efficient or inexpensive compliance with instream flow requirements, and not to increase protection of instream beneficial uses. This use of section 1707 promotes the constitutional policy of making maximum beneficial use of the waters of the State. Taken as a whole, the result or outcome of such a section 1707 change is no different than a section 1435, 1702, or 1725 transfer.

What should be the areal extent of a section 1707 change?

As noted above, section 1707 changes may be of such small quantities that they serve no practical or reasonable purpose. Should such transfers be limited to streams or reaches of streams where the additional flow has a measurable effect on the waterway? For example, if a section 1707 change of five cfs is made on a tributary stream to the Sacramento River, which has a normal low flow of 25 cfs, should that change end at the mouth of the stream where it flows into the Sacramento River, which has a normal low flow of 5,000 cfs, since an addition of five cfs to 5,000 cfs cannot be measured and has no practical environmental benefit? On the other hand, it can be argued that numerous similar transfers on tributary streams could provide a significant cumulative benefit, and that limiting approvals to tributary streams may preclude counting the transfer toward required flows in the Sacramento River if at some later time enough section 1707 changes have been approved which taken together could make a significant contribution to Sacramento River flows. However, the task of coordinating and protecting from unauthorized diversion numerous small section 1707 changes could present some thorny administrative problems. As a practical matter, parties proposing section 1707 changes will need to weigh the benefits of a relatively simplified approval by limiting their proposals to a limited stream reach against dealing with the potential controversy associated with the expansion of the stream reach to areas where the benefits are dubious (i.e., no measurable effect).

Transfers of Riparian and Pre-1914 Water, and Requirements of Water Code Section 5100

Water Code section 5100 requires most riparian and pre-1914 water right holders to file a Statement of Water Diversion and Use with the SWRCB. The SWRCB staff proposed that petitioners for water transfers under Water Code 1707 who claim riparian or pre-1914 water rights must comply with section 5100 before the SWRCB staff will process the water transfer request. Many members of the surface water subgroup expressed concerns with this position, in light of the Water Code provision ensuring that not filing the statement results in "no legal consequences." Upon further review, the SWRCB staff agreed that refusal to process a water transfer because a Statement of Water Diversion and Use was not on file would constitute "a legal consequence." The SWRCB staff has indicated, therefore, that they will process water transfers of riparian or pre-1914 water rights provided there is a valid claim of right, but without regard to whether a Statement is on file. The SWRCB does, however, have authority under Water Code section 5105 to collect information and bill the water user.

Nature of Water Transferred Pursuant to Section 1707

Claims have been made that water transferred to instream uses has a “super priority” and “rides on top” of other water, such that it is not subject to losses. This is not the case. Water transferred pursuant to section 1707 is dedicated for a particular purpose of use, has associated with it a priority, and is subject to losses as is other surface water.

Conclusion

In the course of this review of section 1707 issues, the Workgroup addressed a number of possible scenarios, including (1) how a water right is quantified for transfer or for other purposes, (2) how water should be valued for transfer and what the implications are for other transfers and for a water transfer market; and (3) the issues associated with the transfer of paper water. The above scenarios raised a number of issues that were more related to water transfers, in general, than to section 1707 changes, specifically, and therefore, although important, are not addressed in this summary.

Section 9. Surface Water Transfers*

Areas of General Consensus

Following are areas of general consensus among members of the Workgroup:

Baseline From Which to Determine Transferable Water

An important factor when determining the baseline from which to calculate transferable water is separating the consumptive use and nonconsumptive use components of water savings. The principles related to the transferability of these two components are different, and the impacts on other users, fish, wildlife, and third parties associated with transferring these two components of water savings are also different.

Water Conservation Savings and Water Code Section 1011

Water Code section 1011 allows a legal water user to preserve the right to water no longer used due to water conservation efforts. Water conserved under section 1011 may be transferred provided it is done in conformance with other sections of the Water Code that pertain to water transfers. However, water conservation savings that occurred prior to the passage of section 1011 in 1979 might not be able to be taken into account when the amount of water available for transfer is calculated. The Water Code also requires the savings to be quantified and reported to the SWRCB in order to be credited.

Water Conservation Efforts

In SWRCB Order WR 2000-01, regarding petitions for reconsideration of Order WR 99-12, which authorized the temporary transfer of water from Natomas Central Mutual Water Company to users in Contra Costa Water District, the SWRCB clarified the intent needed to support water conservation efforts under Water Code section 1011. In this order the SWRCB stated that water conservation efforts must be intentional, "that a deliberate effort be made or program implemented that results in a water savings," to qualify as an "effort" under Water Code section 1011. In addition, the proponent of a water transfer must demonstrate that these efforts have actually saved water. However, the water user need not "establish the reason why a given water conservation effort was made, so long as the effort results in a water savings."

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Effect of the Watershed Protection Act on Surface Water Transfers

The Watershed Protection Act affects the determination of "injury" as it relates to the operations of the CVP and the SWP. This issue is discussed in detail in Section 10, "The Role of the Watershed Protection Act in Relation to Water Transfers."

Burden Of Proof

There is general agreement that the burden of proof issues related to a water transfer, either short-term or long-term, should follow the criteria set forth in the amendments to the short-term water transfer statutes enacted in 1999 (Water Code section 1725, *et seq.)*. These sections require the party requesting the transfer to make a prima facie showing that the transfer will not injure legal users of water or unreasonably affect fish and wildlife.

The Workgroup generally agrees that a showing of reduction in consumptive use constituted a prima facie showing. Upon this showing of reduction in consumptive use, the burden should shift to the opponent of the transfer to prove injury. Following is a hypothetical example:

> In January, Farmer A decides to fallow land in the upcoming summer and transfer the saved water. Farmer A says he would have planted rice, and he can establish that he would have planted rice. He now calculates the amount of water that would have been consumed by the planted crop using one of many available methods (ETAW, ETC, water balance, single-crop average, etc). This demonstration of reduced consumptive use would constitute prima facie evidence of no injury in a transfer since it wouldn't have been available to the system anyway. The burden of proof then shifts to the transfer opponent to prove that injury will occur.

Areas for Further Discussion

Areas that need further discussion include:

- Several issues relating to transfers under Water Code section 1707 and statements of water diversion and use were identified by the subgroup. (Please see Section 9 of this report for a discussion of those issues.)

- The role of Water Code section 1707 related to protecting water supplies already required by instream flow standards as part of an order by a regulatory agency.

- Role of Water Code section 1707 related to protecting water supplies provided in addition to required instream flow standards.

- The standard of review for transfers related to the Endangered Species Act (ESA). The issue is the proper role of the ESA agencies in requiring conditions to prevent "take" versus flows needed for "restoration" of fishery resources.

- Effects of recent actions related to the Environmental Water Account and other state and federal governmental programs to acquire water and an independent water market.

- Ability to transfer riparian water rights to nonriparian lands for use on the land (as opposed to in the channel) for fish or wildlife uses. This issue was debated at length, resulting in the proposal of a possible request for a formal legal opinion from the SWRCB Chief Counsel or the Attorney General's Office. Clarification of the law through legislation was also proposed.

- Use of Water Code section 1707 to meet water quality standards in the Delta. SWRCB staff has agreed to draft a review of this issue and whether section 1707 allows users other than those who have an obligation to meet delta standards (the CVP and SWP) to accept water intended to meet these standards.

Section 10. The Role of the Watershed Protection Act in Relation to Water Transfers*

Legal Issues

Overview

Water Code sections 1702, 1706, 1707, 1725 and 1735 establish that water transfers (involving changes to water rights) cannot cause injury to any legal user of water. This "no injury" rule is common to all water transfers that involve changes to water rights and is discussed in the SWRCB's Guide to Water Transfers beginning on page 3-7. The "no injury" rule protects third-party water right holders, including those who hold rights that are junior in priority to the right being changed. The effect of the "no injury" rule is to preclude a change in point of diversion, place of use or purpose of use under circumstances where prior rights would bar issuance of a new permit for a project having the same impacts as the change. However, some would argue that the Watershed Protection Act (Water Code 11460) can be interpreted to limit when a water transfer causes "injury" to the water exporting projects of the SWP and the CVP.

Watershed Protection Act

The Watershed Protection Act applies to the operators of the projects that now generally make up the SWP and the CVP. These projects are operated by DWR and USBR, respectively. The Watershed Protection Act states that, in the operation of these projects, DWR and USBR cannot directly or indirectly deprive (1) the watershed[80] or (2) area wherein the water originates or (3) area immediately adjacent that can be conveniently served from the watershed, of the prior right to all the water reasonably required to adequately supply the beneficial needs of the watershed. The Watershed Protection Act effectively establishes a reversal of priority as between the priority dates of the CVP and the SWP[81] water rights and any later filed applications for use of water within the protected area. This reversal of priority applies to the diversion of natural and abandoned flows for export use by the CVP and SWP.

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[80] Watershed is often referred to in this analysis as basin or protected area. The use of the term watershed, basin or protected area refers to all three criteria set forth in Water Code section 11460 as summarized here.

[81] Many of the water rights of the CVP and SWP have a priority dates of 1927 and 1931.

Interpretation of the Watershed Protection Act

The Watershed Protection Act has been interpreted by the SWRCB in numerous water right decisions. In Decision 1485, the SWRCB used the Watershed Protection Act and numerous other laws to implement water quality standards in the Bay/Delta Estuary as a requirement of the water right permits of the CVP and SWP. Later, in water right Decision 1594, the SWRCB established that new water right permits in the Sacramento River and San Joaquin River watersheds issued since about the mid-1960s should also contain conditions to help meet Bay/Delta standards.[82] The method used by the SWRCB to accomplish this is discussed below under Technical Issues. Importantly, Decision 1594 utilized the Watershed Protection Act to allow new inbasin water users first priority to natural flows for all inbasin purposes before the more senior water rights of the CVP and SWP to export natural flows.

Decision 1594 establishes that no water is available for appropriation, and new water right holders are not permitted to divert, when water needed to satisfy water quality standards and prior right holders within the watershed exceeds the amount that would be available in the absence of any release from storage by the SWP and CVP. Waters available for appropriation are natural flows and abandoned water or return flows from other diversions to the extent these flows are in excess of those needed to meet Delta Standards and the needs of inbasin uses.

Decision 1594 established that new water right holders are not allowed to divert when storage releases by the CVP and SWP are needed to augment natural flows in order to meet Delta Standards. However, Decision 1594 does allow new water projects that propose to use water within the watershed of origin to divert natural flows or abandoned flows historically used by the CVP and SWP for export purposes outside the watershed. These new inbasin water projects would have a water right priority junior to the CVP and SWP based on the typical "first in time, first in right" water right system. The reversal of priority established by the Watershed Protection Act allows these new users to appropriate natural flows for inbasin use with a priority higher than the CVP and SWP export uses.

The operation of D1594 allows new inbasin water users to divert natural flows that can adversely affect the exportable yield of the CVP and SWP thus causing "harm" to the CVP and SWP. However, this kind of "harm" is exactly what was envisioned in the Watershed Protect Act and as such does not constitute "injury" under the water code. Decision 1594 prevents the operators of the SWP and the CVP from using their superior water right priority and massive water rights to deprive inbasin water users rights to appropriate natural flows. As stated above, Decision 1594 does protect the storage releases of the CVP and SWP when these flows are needed to augment natural flows to meet Bay/Delta standards.

[82] D1594 was initiated in furtherance of jurisdiction from findings contained in Water Right Decision D-990. D-990 found that natural flow no longer existed to satisfy new inbasin water projects during the months of July and August. Water right decisions since D-990 excluded the months of July and August from the season of diversion of new inbasin projects in the Sacramento River watershed.

What would happen without the Watershed Protection Act?

Without the watershed protection statues, the typical water right priority system of "first in time, first in right" would be the rule when deciding the amount of water available for appropriation for new projects. It would also be used in times of water shortages to decide which water users should stop diverting to protect those with senior water rights. This priority system would protect the water rights of the CVP and SWP from any later priority diversion that would reduce the diversion capability of the CVP and SWP. As discussed below under Technical Issues, when the Delta is in "balanced conditions," any additional diversions would harm the CVP and SWP water diversion capability. The typical water right priority system would stop any non-CVP/SWP diversions of natural flow for any use including inbasin uses with a priority date after 1927 (the priority date of many of the CVP and SWP projects) when the Delta is in balance. It would allow the export of natural flow by the CVP and SWP but would stop inbasin diversions with a priority date after 1927. Many water rights in the Sacramento Valley have priority dates after 1927.

The impact of granting large water rights to export projects under the typical "first in time, first in right" water right priority system was understood at the time the CVP was authorized by the legislature in the 1930s. The project was subsequently constructed by the federal government. The Watershed Protection Act was intended to provide inbasin water users assurances that their water rights to divert natural flows would be protected over those for export uses.

The Watershed Protection statutes cast aside the typical "first in time, first in right" priority system. Inbasin users get first call on natural flows over export use regardless of the priority date. However, the Watershed Protection Act does not allow the diversion of CVP or SWP storage for inbasin use unless these users compensate the CVP or SWP. Diversions during periods when natural flows are not sufficient by themselves to meet Delta Standards and inbasin diversions would, in effect, require additional releases of stored water by CVP and SWP. These additional releases without compensation are not included under the umbrella of the Watershed Protection Act.

Application of the Watershed Protection Act to Water Transfers

Changes to water rights and specifically water transfers can cause impacts to the SWP and CVP similar to those of new water diversions. Return flows from inbasin water users during the summer are used by the SWP and CVP to help meet Bay/Delta standards. Also, stored water transfers can create refill impacts that can have effects on the SWP and CVP similar to a new water storage facility. The CVP and SWP could claim that any water right change that would affect their exportable yield should not be approved since such a change would "injure" their contractors. However, some would argue that the same principles discussed above related to the Watershed Protection Act and new water projects can be applied to water transfers when determining "injury" to the CVP and SWP.

Inbasin water transfers should be conditioned so that the effects of these transfers do not affect the stored water releases made by the SWP and CVP to meet Bay/Delta standards. However, under the above interpretation of the Watershed Protection Act, such conditions would allow

inbasin water transfers to impact the SWP's and CVP's historical ability to divert natural flows and such impacts would not be considered an "injury" under the Watershed Protection Act and the Water Code. It should be noted that USBR, State Water Contractors, individual export contractors, and others do not support this interpretation of the Watershed Protection Act.

This argument would not provide similar protections to out-of-basin water transfers. The uses in an out-of-basin transfer are by definition outside the "area wherein the water originates" and therefore these water needs are not covered by the Watershed Protection Act. In these out-of-basin transfers, injury would occur to the SWP and CVP anytime the effects of the transfer would impact the water delivery capability of the SWP or CVP to divert natural flows.

Technical Issues

Balanced Conditions

The water rights of the CVP and SWP in the Sacramento and San Joaquin River Basins include over 55 percent of the total storage in these two basins. The SWP and CVP have direct diversion rights in the Delta often equal to or greater than the flow of the Sacramento River in the summer time. These two projects also have the responsibility to meet water quality and flow standards in the Bay/Delta Estuary necessary to protect municipal supplies, agricultural water quality, fish, wildlife, and other beneficial uses in the Estuary. The SWP and CVP are required to bypass flows and release stored water to meet these standards. During about half of the year in normal years and most of the year in dry years, these two water projects control the flows to the Delta so that water quality and flow standards are just met. They do this by either (1) modifying the collection of water to storage or storage releases from their reservoirs, or (2) changing Delta exports. When these two projects are just meeting Bay/Delta standards, the system is said to be "in balance" or "balanced conditions" exist. Any new non-CVP or non-SWP consumptive water diversion during times when the Delta is in balance will require the CVP/SWP to reduce exports or to increase storage releases.

Term 91

Water Right Decision 1594 established water right Term 91.[83] This water right term is added to all new water right permits in the amount equal to or greater than one cfs or 100 afa in the

[83]No diversion is authorized by this permit when satisfaction of inbasin entitlements requires release of supplemental Project water by the Central Valley Project or the State Water Project.

a. Inbasin entitlements are defined as all rights to divert water from streams tributary to the Sacramento-San Joaquin Delta or the Delta for use within the respective basins of origin or the Legal Delta, unavoidable natural requirements for riparian habitat and conveyance losses, and flows required by the State Water Resources Control Board for maintenance of water quality and fish and wildlife. Export diversions and Project carriage water are specifically excluded from the definition of inbasin entitlements.

b. Supplemental Project water is defined as that water imported to the basin by the projects plus water released from Project storage which is in excess of export diversions, Project carriage water, and Project inbasin deliveries.

The State Water Resources Control Board shall notify permittee of curtailment of diversion under this term after it finds that supplemental Project water has been released or will be released. The Board will advise permittee of the probability of imminent curtailment of diversion as far in advance as practicable based on anticipated requirements for supplemental Project water provided by the Project operators.

Sacramento and San Joaquin River Basins. Term 91 does not allow new water projects to divert when SWP and CVP stored water is being released to augment natural flows in order to meet Bay/Delta standards.

Term 91 conditions exist for a much smaller period of time than balanced conditions. Figure 1 compares three different years: wet, normal and dry years. [84]

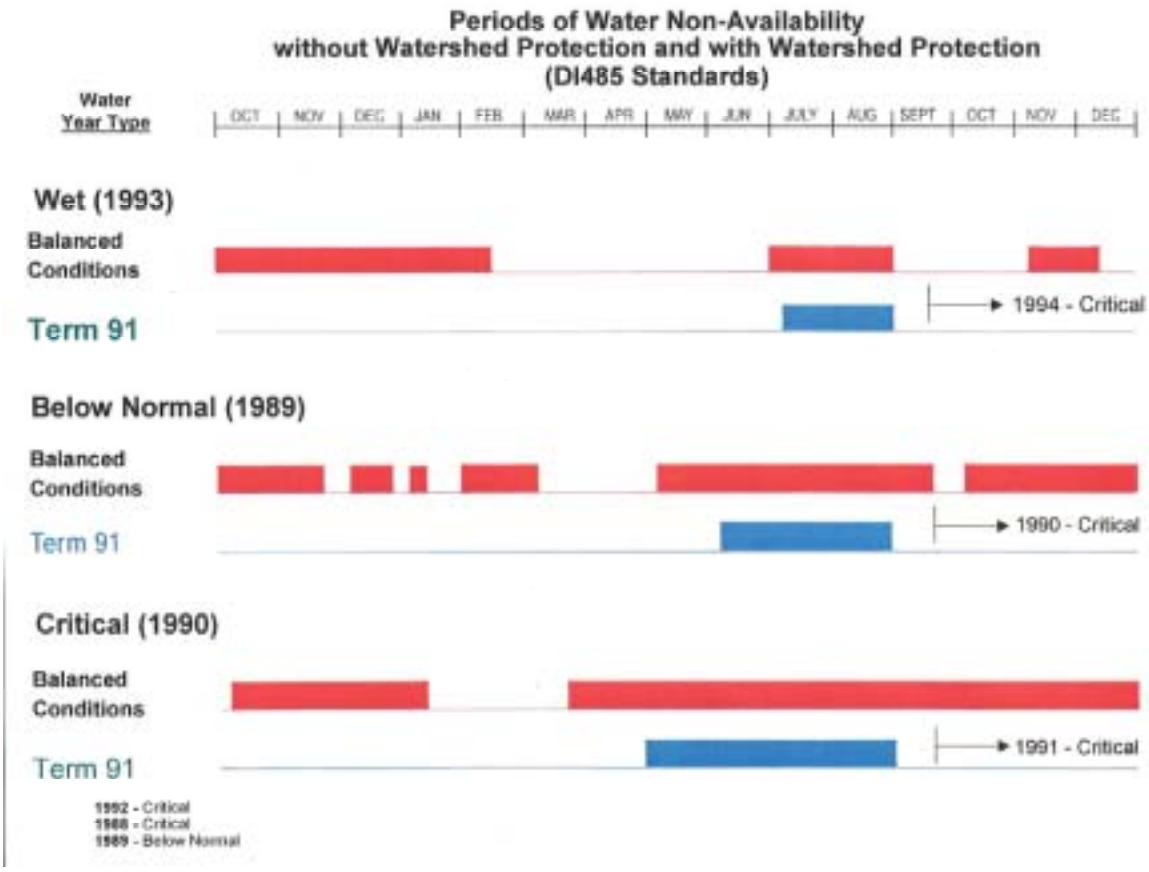

Figure 1

The first bar for each year shows the times that the Delta was in balance. The second bar shows the times that Term 91 was in effect. The difference between the two bars for each year represents the benefit of the Watershed Protection Act to inbasin users. Without the Watershed Protection Act, the existence of "balanced conditions" would require the appropriations of inbasin water users with a priority after the 1927 and 1931 rights of the CVP and SWP to cease diversions. Term 91 allows for water diversions for a much greater period of the year than does balanced conditions. Due to runoff patterns in the Sacramento Basin, Term 91 does not get triggered within the water storage season for most new reservoirs. However, the San Joaquin

[84]The water years prior to and subsequent to the years shown in Figure 1 are either critical or below normal years.

River system is more affected by snowmelt run-off that occurs later in the year due to its higher mountain ranges than the Sacramento River system. Term 91 can affect the capability of new water projects to store water in the San Joaquin River watershed.

Water availability for new inbasin projects in the Sacramento and San Joaquin River Basins is determined using Term 91 together with any local conditions that may be more restrictive. Water availability for new out-of-basin projects is determined using balanced conditions as was done for Los Vaqueros in SWRCB Water Right Decision 1629.

Water Transfers

Water transfers have been treated similarly to new water right applications by the SWRCB. Water transfers involving stored water for use within the Sacramento Valley have recently included the concept of Term 91 to protect the CVP and SWP against refill impacts of inbasin transfers. As stated above, refill impacts in the Sacramento River Watershed occur rarely. However, water transfers for out-of-basin use have included refill criteria based on "balanced conditions."

The same principles of the Watershed Protection Act should be used for water transfers that involve water rights intended for direct use. Programs to reduce direct diversions to allow water transfers can come in two parts: (1) those that decrease consumptive use and (2) those that decrease return flows. Efforts that decrease consumptive use of water have been approved by the SWRCB as having no injury to downstream users. Water previously consumed, but due to intentional efforts is no longer consumed, can now flow downstream when in the past it did not. The transfer of this "new water" to the system would typically not cause injury to other users of water. The real question that needs to be answered is whether the action produces any transferable water (i.e., reductions in consumptive use or the release of water that would not otherwise be released.)

The transfer of return flows previously used by downstream water users could remove this water supply and thus cause injury. If the removal of the return flows occurs at a time when the Delta is "in balance," the CVP and SWP would be harmed. Under "balanced conditions" the CVP and SWP would have to modify their operations to adjust for this lost water supply. However, if the provisions of the Watershed Protection Act stated above are interpreted to apply to inbasin water transfers, injury would not occur to the CVP and SWP until these return flows were needed to meet the other inbasin needs including Delta Standards and Term 91 conditions.

Defining the Watershed or Basin for Water Transfers

Defining the area that constitutes a protected area under the Watershed Protection Act is done on a case-by-case basis. Past SWRCB decisions have found that the San Joaquin River Basin is a separate watershed from the Sacramento River and Delta. Also, Water Code section 1220 establishes that no groundwater can be exported from the Sacramento and Delta-Central Sierra Basins as defined in DWR Bulletin 160-74 unless specific measures to ensure protection of inbasin users are met. Therefore, water transferred from the Sacramento River/Delta system to the San Joaquin River system is an out-of-basin transfer.

Transfers can and do occur within the Sacramento and San Joaquin River Basins. For example, water can be transferred from the Merced River Basin to the waterfowl refuges on the westside of the San Joaquin River through the Delta Mendota canal. For the purposes of the Watershed Protection Act, these intrabasin transfers within the greater San Joaquin River system or within the greater Sacramento River System are not considered exports.

There are several new water right applications pending before the SWRCB where the definition of watershed or area immediately adjacent under Water Code section 11640 is a key issue. This report does not deal with these issues. These issues will be addressed separately during the processing of these water rights applications.

Recommended Resolution of Issues

The SWRCB should condition water transfers in the Sacramento and San Joaquin River Basins that could affect the SWP and CVP with Term 91 (and Term 93[85] as appropriate) when the use of the transferred water is within the watershed of origin as defined under the Watershed Protection Act. Water transfers intended for use outside the watershed of origin that could affect the SWP and CVP should be conditioned so these effects do not occur during balanced conditions. Further discussion may be necessary to resolve the issue of the impact of the Watershed Protection Act on the "no injury" rule with respect to inbasin transfers of return flows during balanced conditions when Term 91 is not in effect.

Additional work needs to be done to define the boundaries of the "watershed or area wherein the water originates" for specific transfers to ensure the Watershed Protection Act is applied equitably.

[85]SWRCB standard Term 93 is included in all SWRCB permits upstream of the Vernalis gaging station, except those not altering the rate or quantity of flow entering the Delta (nonconsumptive, direct diversion permits). Term 93 reads as follows:

> "No diversion is authorized by this permit under the following conditions: (1) when in order to maintain water quality in the San Joaquin River at Vernalis at a level of 500 parts per million (ppm) Total Dissolved Solids (TDS), the Bureau of Reclamation is releasing stored water from New Melones Reservoir or is curtailing the collection of water to storage, or (2) during any time of low flows when TDS levels at Vernalis exceed 500 ppm. These restrictions shall not apply when, in the judgment of the State Water Resources Control Board, curtailment of diversion under this permit will not be effective in lowering the TDS at Vernalis, or when in the absence of permittee's diversion, hydraulic continuity would not exist between permittee's point of diversion and Vernalis. The Board shall notify permittee at any time curtailment of diversion is required under this term."

Section 11. Alternatives to Typical Reservoir Refill Criteria*

Typical reservoir refill criteria include daily accounting of reservoir refill to determine injury to other legal users of water, including SWP and CVP.[86] Daily refill accounting procedures are complicated and time consuming to implement; therefore, many of those who deal with these procedures would like to find an acceptable alternative. The following discussion addresses some possible alternatives to the current procedure. These alternatives are presented for discussion purposes only. Implementation of some of these alternatives may not be possible; however, they should be considered and evaluated in more detail to determine their feasibility.

No Reservoir Refill During Times When There Would Be Injury to the SWP, CVP, and Other Legal Users of Water

Following a release of transfer water from a reservoir, a reservoir operator would agree to bypass inflows to the reservoir during times that would otherwise result in injury to other legal users of water. The timing of the inflow bypasses would be dependent on whether the transfer involved keeping water within the basin of origin (inbasin transfer) or involved movement of water across the Sacramento/San Joaquin Delta (out-of-basin transfer). In either case, real-time accounting of SWP and CVP reservoir operations to meet Delta requirements must be performed to evaluate whether an injury occurred and, if so, to what extent. Performance of real-time accounting provides information regarding injury as it occurs. Reservoir operators can either (1) keep account of water appropriated at times when injury occurs and release this water later in the year to mitigate for this injury or, (2) bypass inflows at times when the appropriation of the inflow would cause injury to legal users of water.

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[86]The analysis in this section assumes the validity of reservoir refill requirements. There has been considerable debate over this in the water community. There is also a question whether the area of origin laws exempt at least inbasin transfers from refill requirements. The SWRCB's 1999 Guide to Water Transfers (Draft) indicates that the Watershed Protection Act should apply to transfers, in which case the refill impacts to the CVP and SWP would not be valid "injuries" for an inbasin transfer. There are also questions about the frequency with which the impacts physically occur. In many instances, refill formulae have been applied as conditions on transfers, but no refill has ever been owed. This, in combination with the fact that it is very difficult to even determine refill impacts for multi-year transfers, raises the concern that the refill impact approach unduly burdens and deters transfers. At a minimum, a more efficient approach should be developed.

A Guide to Water Transfers, July 1999, Draft, (Division of Water Rights, State Water Resources Control Board) provides a more detailed explanation of refill criteria for inbasin and out-of-basin transfers of stored water. The transfer guide may be accessed at:

http://www.waterrights.ca.gov/watertransfer/watertransfer.htm

Discount Storage Water Transfers Up Front

An up-front discount applied to storage water transfers would reduce the total amount of transfer water available to the buyer by an agreed upon quantity and could be provided to the SWP and CVP (Projects) or other legal users of water to offset potential injury resulting from a storage water transfer. The discount would be determined based on the amount needed to prevent injury to the SWP, CVP, or other legal users of water over the period of the transfer. This approach works best for long-term transfers that extend over several years.

The best way to assess risk is to evaluate the potential injury to the Projects using simulated operations studies of the storage water transfer and Delta conditions. This assessment would provide statistical data on how often and by how much the Projects may be injured as a result of refilling the storage space vacated by the storage water transfer. These results would also translate into a reduction in the amount of transferable water for a given release of storage. For example, if the long-term average impact due to refill at times of injury is 20 percent of the transferred amount, then a release of 100 units of water would only result in the transfer of 80 units of water due to likely refill impacts. This concept presumes that the Projects could use the 20 percent at the time the water was transferred, which might not be realistic. Other "losses" due to impacts of the transfer would also be assessed in addition to the refill impacts.

Insurance Policy for Potential Refill Impacts

Either the buyer or seller could initiate purchase of an insurance policy from a third party who would guarantee that there would be no release of additional water from the storage reservoir to repay the Projects for injury resulting from the storage water transfer. If there was an injury to the Projects resulting from refill of vacated storage from a storage water transfer, the insurance provider would make available to the Projects a quantity of water commensurate with the amount of the injury. Groundwater bankers or entities with water stored in groundwater banks might be potential insurers. Cost of such insurance would be subject to actuarial analyses that would most likely include simulated studies of reservoir operations and Delta conditions to assess the degree of risk commensurate with the potential for injury.

Payment for Potential Injury or Actual Injury Sustained from a Storage Water Transfer

The payment for potential injury or actual injury sustained from a storage water transfer would be paid to the injured party, most likely DWR or USBR, on behalf of the Projects. Payment could take two forms:

1. The payment for potential injury could be incorporated into the price of water thus increasing the total cost of water. This option would only work if the SWP or CVP were the buyers.

2. The payment could be based on actual injury to the Projects. This option would require accounting of reservoir refill to determine if there is actual injury to the Projects and if so, the amount of injury. This payment would appropriately be made by the buyer of the transferred water to reflect the true cost of the water transfer. The amount of the payment could reflect the replacement cost of the water supply loss to the CVP and SWP.

These payments could potentially be collected over time to help fund additional storage projects to mitigate for lost water supply due to the refill impacts of the water transfer. However, this delayed mitigation may not be acceptable to CVP and SWP customers. The Projects may not be receptive to cash payment for potential injury or actual injury sustained from a storage water transfer because the injury reduces water available for Project use while the payment to offset the injury comes in the form of cash and possible water supply mitigation in the future.

Payback of Injury Prior to Additional Storage Water Transfer

The payback method works only for long-term transfers.

Once all the transfer water is released from a storage water transfer and an injury is identified as a result of refilling the storage vacated by the transfer, additional storage release transfers from the reservoir causing the injury would not be allowed until injury is discharged. To analyze whether an injury occurs and, if so, to what extent, daily accounting procedures are needed. These daily accounting procedures are included in typical refill criteria. The injury may be discharged in either of two ways:

1. Prior to releasing any future transfer water from the reservoir, DWR, USBR, and the reservoir operator agree on a reservoir operation schedule for the release of additional water over and above normal operating requirements sufficient to compensate for the earlier injury.

2. Alternatively, the buyer of the transferred water might make the payback by compensating DWR or USBR to make the necessary releases from Lake Oroville or Lake Shasta. The original transfer would need to identify the SWP and CVP places of use to allow this payback to take place appropriately.

Borrowing from Future Entitlements to Repay Injury

This alternative only works for buyers who also have contracts with the SWP or CVP. As buyers, they could agree to assume the risk of refill injury. If an injury from a storage water transfer is identified after the fact, the amount of the injury is repayable by the buyer. The buyer could borrow from their share of future water allocations to repay the Projects their share of the injury.

Section 12. Improving the Reliability and Predictability of Planned Drought Transfers*

The recent adoption of SB 221 (Stats. 2001, ch. 642) establishes formal criteria to determine whether water supplies are sufficient to serve new developments exceeding 500 homes. The local water agency or approving body must determine that water available during single or multiple dry years within a 20-year projection is sufficient to meet local demands including those of the new developments. Section 4(a)(2) of the bill states that the available water may include reasonable reliance on ".... other water supply projects such as…water transfer, including…programs identified under federal, state, and local water initiatives such as CALFED...." Current DWR implementation of a drought water bank will not fulfill SB 221 objectives if its supplies cannot "reasonably be relied upon." A mechanism is needed to increase reliance on future dry-year water transfers. Even without considering significant units of growth, many California water utilities are operating at continually decreasing margins of assurance to existing users that drought-related hardships will be minimized.

The challenge is to devise a form of water insurance, administered by a government agency, or under the oversight of a government agency, that can pool the risk of dry-year shortage and provide third-party impact protection in advance. Such a program could reduce conflicts over the adequacy of water availability determinations required by SB 221, provide significant benefits to holders of unused water rights, and potentially reduce the growing complexity of the transfer process. There are a number of issues that need to be resolved, including maintenance of the existing individual water transfer program, implementation of improved transfer mechanisms such as those recommended in this report, maintaining buyer and seller relationships, and financial and other mechanisms needed to protect third parties.

The Report of the Governor's Advisory Drought Planning Panel dated December 29, 2000, contains a principal recommendation, under the title "Implementation Actions," to create a Critical Water Shortage Reduction Marketing Program. This program has the following features:

- Tier 1 - Preparedness activities by state and local agencies including contract formats, local efficiency measures, needed transfer facilities, and groundwater management activities.

- Tier 2 - State acquisition of purchasing options and allocation of water during the early stages of a hydrologic drought or other critical water shortage; declaration by local agencies

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of an impending shortage absent a transfer; and demonstration of maximization of local resources.

- Tier 3 - A state of emergency declaration; continuation of Tier 2 actions, with the addition of state financing and assistance with response measures.

In concept, the critical change that would achieve predictable reliability would be to modify and expand the “Tier 1” activities to include a program of state-guaranteed purchases, providing a basic set of criteria to be met by local water users. Then the user could rely upon guaranteed acquisition of supplies during defined times of shortage to meet defined supplemental needs. This would maintain the concept of a market based on the value of water at the time of purchase. It would also provide a responsible long-range basis for guaranteeing water supplies to those who can most economically use the water, while at the same time provide economic benefit to water right holders who would periodically be called upon to change their water use programs.

The Workgroup suggests that DWR consider augmenting the Drought Planning Panel's Marketing Program to provide confidence in the future reliability of the State’s urban and other high-value water supplies. This program could be established based on a plan developed by experts in management, engineering, and economics, with oversight by a representative group, perhaps an existing CALFED committee or one formed for this specific purpose.

Appendix 1: Letter from State Water Resources Control Board Initiating Water Transfer Workgroup

August 14, 2000

WATER TRANSFERS WORKGROUP

You are invited to participate on a workgroup being assembled on September 14, 2000, by the State Water Resources Control Board (SWRCB) to assist in addressing issues related to water transfers in California. This workgroup will be chaired by Mr. Walt Pettit, who has agreed to volunteer his time to this task. The workgroup will be asked to perform several tasks over the next several months. These tasks include:

- Review the Legislative Analyst's report on water transfers, CALFED's program plan for water transfers and the SWRCB's staff draft *Guide to Water Transfers*.

- Propose revisions to the draft *Guide to Water Transfers* that reflect areas of consensus of the group. Focus on areas that are within the authority of the SWRCB and related to the definition of transferable water. For areas of significant disagreement, propose alternative analysis of existing law.

- Propose the preferred methods to get formal SWRCB rulings or legislation on outstanding controversial water transfer issues (e.g. SWRCB decision on bifurcated hearings on transferable water, or regulations or legislation, etc.)

- Provide the SWRCB with a status on water transfer related issues outside the authority of the SWRCB, and propose possible ways these issues could be resolved.

- Identify for CALFED mechanisms to streamline the processing of water transfers by Department of Water Resources, U. S. Bureau of Reclamation and the SWRCB.

The first meeting of the workgroup will be on Thursday, September 14, 2000, at the SWRCB First-Floor Hearing Room, Paul R. Bonderson Building, 901 P Street, Sacramento, between 10:00 a.m. and 2:30 p.m. I look forward to your participation in this effort. If you are able to participate or if you have any questions, please call Mr. Jerry Johns, Assistant Chief of the Division of Water Rights, at (916) 657-1359.

Sincerely,

Original Signed by:

Arthur G. Baggett, Jr.
Acting Chair

cc: Enclosed Mailing List

Appendix 2: Roster of Interested Parties

Following is a roster of active participants and persons who wished to remain on the mailing list for correspondence, notices, and documents. Given the variety of interests represented in the Workgroup, no individual participant can be assumed to concur with specific findings or recommendations. The majority of those individuals participating in the meetings supports the distribution of this report, but not necessarily the content of each section. The material contained in the report represents descriptions of the issues and of the opinions held by certain participants.

Art Aguilar
Central/West Basin
Municipal Water District

David Aladjem
Downey, Brand, Seymour, and Rohwer

Bob Aldridge
Department of Water Resources

Tony Amor
Cal Agua, Inc.

Ed Anton
SWRCB/Water Rights

Dave Beringer
SWRCB/Water Rights

Naser Bateni
Department of Water Resources

Gary Bobker
Bay Institute

Alf Brandt
U. S. Department of the Interior

John Burke
U. S. Bureau of Reclamation

Virginia Cahill
Department of Justice

Bob Campbell
San Diego County

Christopher L. Campbell
Baker, Manock & Jensen

John Coburn/Terry Erlewine
SWP Contractors

Mark Cowin
CALFED

Marshall Davert
Montgomery Watson Harza

John Davis
U. S. Bureau of Reclamation

Bill Dendy
Bill Dendy & Associates

Anisa Divine
Imperial Irrigation District

Rob Donlan
Ellison & Schneider

William DuBois
California Farm Bureau
Federation

Jim Easton
Easton Water Resources, Inc.

Dan Flory
Department of Water Resources

Chris Frahm
Hatch & Parent

Jim Ganulin
Baker, Manock & Jensen

Ramon Garcia
Western Water Company

Greg Gartrell
Contra Costa Water District

Michael George
Western Water Company

Jerry Gilbert
Jerome B. Gilbert & Associates

Art Godwin
McDonough, Holland & Allen

David Guy
Northern California Water Agencies

Ellen Hanak
Visiting Fellow
Public Policy Institute
of California

John Hancock
Hancock Environmental

Renee Hawkins
Department of Fish and Game

Gail Heffler-Scott
U. S. Bureau of Reclamation

Travis Hemmen
Jones & Stokes

John Herrick, Counsel
South Delta Water Agency

Tom Hickmann
MBK Engineers

Mary Hildebrand
San Joaquin Farm Bureau

Andy Hitchings
Somach, Simmons & Dunn

Lyle Hoag

Richard Hunn
Water Transfer Program Manager
CALFED

Peter Jacobsen
Metropolitan Water District of
Southern California

Mary Johannis
U. S. Bureau of Reclamation

Jerry Johns
Water Transfers Office
Department of Water Resources

Rich Juricich
Department of Water Resources

Dan Keppen
Klamath River Water User's Association

Peter Kiel
Natural Heritage Institute

Steve Koffroth
AFSCME Local 1902

Martha Lennihan
Lennihan Law

Steve Macaulay
Chief Deputy Director
Department of Water Resources

Ed Manning
Kahl/Pownall

Liz Mansfield
Water, Parks, & Wildlife
Committee/Assembly

Roger Masuda
Turlock Irrigation District

Carolyn McCapes
Kahl/Pownall

Brett McFadden
Legislative Advocate
ACWA

Russell McGlothlin
Hatch & Parent

Mark Meeks
Department of Water Resources

Darryl Miller/ Suja Lowenthral
Central/West Basin
Municipal Water District

John S. Mills

Jonas Minton
Deputy Director
Department of Water Resources

Petrea Moyle
Assembly Member
Helen Thomson's Office

Vickie Newlin
Butte County

Kevin O'Brien
Downey, Brand, Seymour & Rohwer

Colin Pearce/Tom Berliner/Jon Rubin
Duane Morris, LLP

Walt Pettit
Workgroup Chairman

Tim Quinn/Randall Neudeck
Metropolitan Water District
of Southern California

Kerry Rae
U. S. Bureau of Reclamation

Bob Reeb
Legislative Advocate
ACWA

John Renning
U. S. Bureau of Reclamation

James Roberts
Metropolitan Water District
of Southern California

Henry Rodegerdts
California Farm Bureau

Ray Sahlberg
U. S. Bureau of Reclamation

Samatha Salvia
Contra Costa Water District

Andy Sawyer
SWRCB/Legal

Cliff Schulz
Kronick, Moskovitz, Tiedemann & Girard

Scott Slater
Hatch & Parent

Jim Snow
Westlands Water District

Curtis Spencer/Dan Flory
Department of Water Resources

Bob Stackhouse
Central Valley Project Water Assn.

Mark Stretars
SWRCB/Water Rights

Tim Stroshane
Spillway Newsletter

Stacy Sullivan
Assembly Local Government Committee

Susan Tatayon
Saracino-Kirby-Snow, Inc.

Donna Tegelman
U. S. Bureau of Reclamation

Greg Thomas
Natural Heritage Institute

Gwyn-Mohr Tully
Saracino-Kirby-Snow, Inc.

Bob Turner
U. S. Bureau of Reclamation

Claire Ursino
U. S. Bureau of Reclamation

Marc Van Camp
MBK Engineers

Mike Wade
California Farm Water Coalition

Michael Warburton
Community Water Rights Project

Ed Winkler
Regional Water Authority

Arlene Wong
Pacific Institute

Peter Yolles
The Nature Conservancy

Jim Yost
West Yost & Associates

Greg Young
Kirby- Saracino-Snow

Judy Zavadil
East Bay Municipal Utility
District

Appendix 3: The "No Injury" Rule as it Relates to Water Transfers

A. Background

This outline is a result of a review of the California Water Code, as well as cases and SWRCB Decisions/Orders identified via LEXIS database searches. Few cases discussed the "no-injury" rule other than generally. The following is a summary only of the "no-injury" rule as it currently exists, and is not meant as an exhaustive discussion of all aspects of the rule or of the requirements for a water transfer. It does not cover related topics, such as the definition of a "legal user of water" under Water Code section 1702 or public interest concerns related to a proposed transfer.

B. Water Code Statements of the Rule

1. Generally, the change must not injure any legal user of the water. [See, e.g., Wat. Code § 1435(b)(2) (temporary urgent change), 1702 (change petition), 1706 (change other than under Water Commission Act), 1725 (temporary change); see also 23 Cal. Code Regs. §791(a) (change petition)]

2. Long-term transfers are subject to a different standard. They only require that the change not result in "substantial injury" to any legal user of water. (Wat. Code §1736) See discussion in Section D.4. below as to whether this differs from, or is the same as, the general "no injury" rule.

3. Applicability: The rule applies to modern water rights through Water Code section 1702 and to pre-1914 rights through section 1706.

C. Decisional Definitions of the "No Injury" Rule

1. Common law. An appropriator may change the point of diversion of water, place of use or purpose of use of water so long as others are not injured by the change. [*Ramelli v. Irish*, 96 Cal. 214, 217 (1892); *Barton v. Riverside Water Co.*, 155 Cal. 509, 517 (1909); *City of San Bernardino v. City of Riverside*, 186 Cal. 7, 28-29 (1921)]

2. The "no injury" rule is based on a common law rule designed to protect the rights of third-party water right holders when a water right is changed. It includes the protection against changes in senior rights that would have the effect of enlarging those rights to

the detriment of junior water right holders. (SWRCB Order No. WR 99-002, discussing the "no injury" rule under Water Code §1702; SWRCB Order No. WR 2000-02, §5.1, p. 19)

3. Under the "no injury" rule, the proposed change cannot adversely affect the rights of any other water right holders, including junior appropriators. [Revised SWRCB Decision 1641, §11.2 (2000) (revised pursuant to SWRCB Order No. WR 2000-02)]

D. Applicability of Rule Depending on Type of Water Involved

1. Imported water: Water users generally do not have a prior legal claim to imported water, therefore cannot be injured in the legal sense by the transfer. (Guide to Water Transfers, p. 8-1.)

2. Conserved water: According to SWRCB Order No. WR 99-012, all of the substantive requirements of a standard water transfer apply to a conserved water transfer under Water Code § 1011.

3. Surface water: Recaptured historical surface return flows from agricultural activities can be applied to land within a new place of use so long as the "no injury" rule is not violated. (Guide to Water Transfers, p. 3-8.)

E. Other Examples of Application of the Rule

1. Downstream users could be adversely affected by a decrease in the amount of water flowing down the San Joaquin River. A decrease could result if the proposed change would cause a net increase in the diversion and beneficial use of water, either under the licensee (petitioner)'s license alone or in combination with other diversions of water that would affect the amount of downstream flow. MID demonstrated that reductions in use in the existing service area would offset the increase in use in the proposed additional place of use. (SWRCB Order No. WR 93-2, *In the Matter of the Licensed Application 16186 of Merced Irrigation District*)

2. The "no injury" rule would generally prohibit a change in place of use that would reduce the return flow relied upon by a downstream user. (Example § 5.0 of SWRCB Order No. WR 99-12, Natomas Central Mutual Water Company, discussing temporary transfers)

3. Article X, section 2. At least one court has concluded that the "no injury" rule is a factor in determining whether a proposal is an acceptable physical solution in a water rights litigation. In *City of Lodi v. EBMUD*, 7 Cal.2d 316, 339-340 (1936), non-party lands were between the City's existing wells and a river. EBMUD proposed that the City install new wells, closer to the river than the intervening non-party lands. The court concluded that the City could not be required to so change its well locations when it would affect the rights of the other property owners.

4. Amount of Injury Prohibited. Case law primarily focussing on the doctrine of reasonable use, and Article X section 2, supports the conclusion that not all injury is prohibited; junior rights holders may be required to endure modest or de minimus injury in order to maximize the beneficial uses of water. Excerpts of language used in some of the cases is as follows:

   - "Unreasonably and adversely affecting" prior appropriators vested right *City of Lodi v. EBMUD; Rancho Santa Margarita v. Vail.*

   - Interference with the prior right which would cause "substantial damage" is actionable. *Peabody v. City of Vallejo.*

   - The "substantial enjoyment" of the paramount right is the protected interest. Id.

   - "Unreasonable injury" is prohibited. *San Bernardino* v. *Riverside,* addressing rights of groundwater pumpers.

     See also attachment 1 hereto.

F. Examples of Injury

1. Third-party impacts are not part of the "no injury" rule analysis, but are a separate factor which may be relevant to the SWRCB's determination whether to approve a change associated with a transfer. Water Code section 386 describes this analysis as whether the proposed change would "unreasonably affect the overall economy of the area from which the water is being transferred."

   In some circumstances, the SWRCB is not authorized to consider third-party impacts that are outside the "no injury" rule or public trust considerations (e.g. Water Code section 1735 changes not involving a transfer subject to Water Code section 380 et seq.). In others, the SWRCB may be authorized to consider these impacts under its public interest authority. In still others, the SWRCB may be required to consider these impacts (transfers that would not be authorized but for Water Code section 380 et seq.).

2. Additional common forms of injury include the following:*

   Reduction in return flows/increase in consumption
   Stream conveyance losses
   Reduction in water quality
   Loss of natural subirrigation where lands are taken out of production
   Loss of soil moisture during periods of nonirrigation (for instance, when water is instead used for power production)

*From George A. Gould, Water Rights Transfers and Third-Party Effects, 23 Land & Water L. Rev. 1, 13-19 (1988).

ATTACHMENT 1

"No Injury" Rule - Quantum of Injury
Sample "Physical Solution" Case Excer;pts**

City of Lodi v. EBMUD (1936) 7 Cal.2d 316, 338-340 ("Unreasonably and adversely affecting" prior appropriator's vested right):

> But *Miller v. Bay Cities Water Co*., supra, in so far as it held that the full flow of a stream may be used to force a relatively small quantity of water into adjoining underground basins, and that a prior appropriator is entitled to an injunction to maintain this natural condition even where the prior appropriator's right may be fully protected by the use of a much smaller quantity of water, is no longer the law of this state. In *Peabody v. City of Vallejo*, 2 Cal.2d 351 [40 P.2d 486], after discussing the major changes in the water law of this state made necessary by the 1928 constitutional amendment, and after pointing out the theory and effect of that amendment on riparian rights, and after pointing out that overlying owners or appropriators, under the theory of *Katz v. Walkinshaw*, 141 Cal. 116 [70 P. 663, 74 P. 766, 99 Am.St.Rep. 35, 64 L.R.A. 236], possess rights analogous to those possessed by riparian owners, and after discussing at length the rules of law set forth in *Miller v. Bay Cities Water Co*., supra, this court stated:
>
> "Notwithstanding the common-law rule to the contrary, this court, in the cases referred to, accorded to the underlying and percolating water right a status analogous to the riparian right. The attitude of some of the plaintiffs herein in effect is that, possessing that status, they are entitled to have the underground waters flow and percolate as in a state of nature regardless of the quantity of the supply or the reasonableness of use. But since the riparian right as against an appropriator has by the new state policy been subjected to the **doctrine of reasonable use**, no good reason has been advanced why the asserted underground and percolating water right should not be subjected to the same regulation as against an appropriator. In whatever respects the Miller case, or any other case, may be said to hold otherwise, they must be deemed to yield to the new constitutional policy with reference to the use of the waters of the state." For other discussions of the effect of the 1928 constitutional amendment see *Gin S. Chow v. City of Santa Barbara*, 217 Cal. 673 [22 P.2d 5]; *Tulare Irr. Dist*. **[7 Cal.2d 339]** *v. Lindsay-Strathmore Irr. Dist*., 3 Cal.2d 489 [45 P.2d 972]. It should be noted that the decision of the trial court in the present case, although rendered after the adoption of the 1928 constitutional amendment, was rendered before this court finally decided the Peabody case.

**Note: This is a short sampling of cases with excepts. This is not an exhaustive review of relevant case law.

> We are now called upon to determine what the correlative rights of prior and subsequent appropriators are under the 1928 constitutional amendment, under facts as are here disclosed. The problem presented in this case is somewhat different from that involved in the Peabody case. In that case there was no evidence of material damage to the overlying owners traceable to the impounding of a portion of the flow. In the present case under the findings already held to be supported, it appears that the defendant District's method of proposed operation will, over a period of years, lower the water table to the material injury of Lodi. Moreover, it appears that under existing conditions Lodi's method of diversion is reasonable, and that the use to which the water is put is a reasonable beneficial use. If natural conditions are to be maintained artificially, the method of operation as fixed by the trial court must be enforced. The mere fact, so often emphasized by the District, that Lodi's right is small as compared either with the District's wants or the flow of the stream, in no way detracts from that right, which is entitled to both legal and equitable protection. (*Peabody v. City of Vallejo*, supra, p. 374.) The District is a subsequent appropriator, and the duty rests upon it, after the plaintiff has proved the extent of its right, to prove the existence of a surplus. (*Peabody v. City of Vallejo*, supra, p. 381; *Tulare Irr. Dist. v. Lindsay-Strathmore Irr. Dist*., supra, p. 535.) The question is, can the right of the city be fully protected without requiring the tremendous releases entailed in this decree? Those releases, after they serve the purpose of forcing a relatively small quantity of water into the surrounding underground water table, for the most part, waste into the sea. Under such circumstances the 1928 constitutional amendment, as applied by this court in the cases cited, compels the trial court, before issuing a decree entailing such waste of water, to ascertain whether there exists a **physical solution** of the problem presented that will avoid the waste, and that will at the same time **not unreasonably [7 Cal.2d 340] and adversely affect the prior appropriator's vested property right**. In attempting to work out such a solution the policy which is now part of the fundamental law of the state must be adhered to. It is declared in section 3 of article XIV of the Constitution:
>
> > "It is hereby declared that because of the conditions prevailing in this state the general welfare requires that the water resources of the state be put to beneficial use to the fullest extent of which they are capable, and that the waste or unreasonable use or unreasonable method of use of water be prevented, and that the conservation of such waters is to be exercised with a view to the reasonable and beneficial use thereof in the interest of the people and for the public welfare ..."
>
> (Emphasis and page break references added.)

At page 341:

> If a physical solution is to be worked out which would require the city to change its method of appropriation, any substantial expense incidental thereto should be

borne by the District. The city is a prior appropriator and as such cannot be compelled to incur any material expense in order to accommodate the subsequent appropriator. (*Tulare Irr. Dist. v. Lindsay-Strathmore Irr. Dist*., supra, p. 574.) Although the prior appropriator may be required to make minor changes in its method of appropriation in order to render available water for subsequent appropriators, it cannot be compelled to make major changes or to incur substantial expense. (*Peabody v. City of Vallejo*, supra, p. 376.)

Peabody v. Vallejo (1935) 2 Cal.2d 351, 376-377:

Relying further on the Antioch case the defendant contends that mere inconvenience or extra expense suffered by the overlying land owner would not justify an absolute injunction, nor require that damages for the interference with the right be paid. The claim is too broad. The correct rule is stated with its appropriate limitations in the italicized words in the following language of the District Court of Appeal in Waterford Irr. Dist. v. Turlock Irr. Dist. 50 Cal.App. 213, at page 221 [194 P. 757]: "The mere inconvenience, or even the matter of extra expense, *within limits which are not unreasonable*, to which a prior user may be subjected, will not avail to prevent a subsequent appropriator from utilizing his right." The further statement in the Antioch case that the city, by moving its pump a few miles up the river, could obtain water free from saline **[2 Cal.2d 377]** solution, and therefore, inferentially, had no actionable grievance, should be considered in connection with the unusual factual background of that case and should not be taken as a guide as to the extent of inconvenience or damage to which the owner of a paramount right might be put without compensation. Here again we state that any interference with the prior right which would cause **substantial damage** is actionable. (Emphasis and page break reference added.)

At 2 Cal.2d at 383-384:

We therefore conclude: …
5. That if a physical solution be ascertainable, the court has the power to make and should make reasonable regulations for the use of the water by the respective parties, provided they be adequate to protect the one having the paramount right in the **substantial enjoyment** thereof and to prevent its ultimate destruction, and in this connection the court has the power to and should reserve unto itself the right to change and modify its orders and decree as occasion **[2 Cal.2d 384]** may demand, either on its own motion or on motion of any party. (*See City of San Bernardino v. Riverside*, supra, and other cases cited to like effect.) (Emphasis and page break reference added)

Rancho Santa Margarita v. Vail (1938) 11 Cal.2d 501, 558-559:

> ... it seems quite clear that, in ascertaining whether a lower riparian has suffered damage by reason of an upper riparian's diversion sufficient to warrant an injunction, the trial court should take into consideration all of the water available to either party from the river, and then determine, considering the entire supply, the needs of the parties, their methods of use and methods of diversion and other necessary factors, whether the lower riparian has in fact suffered damage. This the trial court failed to do. The trial court proceeded on the theory that it had only to deal with the surface stream, and that it was not necessary for it to deal with the extent of the supply available to respondent for reasonable use in the underground basins.
>
> [24] Another point that should be mentioned is that, in considering whether an injunction should be granted in such a case, it is the duty of the trial court to ascertain whether there is a physical solution of the problem that will avoid waste and which will not **unreasonably or adversely affec**t **[11 Cal.2d 559]** the rights of the parties. No injunction should be granted if its effect will be to waste water that can be used. (Emphasis and page break reference added)

At pages 561-562:

> ... considering all the required factors, the lower owner cannot be expected or required to endure an unreasonable inconvenience or to incur an unreasonable expense in order to make more water available for the use of the upper riparian. If on the new trial it shall develop that the only feasible physical solution will involve the expenditure of large sums of money by respondent, and that the sum required, when all the facts, including the necessities and uses of the parties, are considered, is unreasonable, the trial court has full power to make its injunctive order conditional so as to require appellants to bear a portion of the expense. In other words the trial court, if the facts warrant it, can grant an injunction in favor of respondent unless appellants agree to bear a fair proportion of the expense necessary to construct the required improvements on respondent's ranch. This would appear to be a fair, just and equitable rule. If appellants, as upstream owners, desire to use more than their fair share of the available flow, and if they desire to require respondent to supply its needs in whole or in part from the underground basins or from storage, and if this would impose an unreasonable expense on respondent, appellants should be required, **[11 Cal.2d 562]** if they want the water, to bear their reasonable share of the expense in making it available. All these matters can be thoroughly investigated on the retrial. (Page break reference added)

San Bernardino v. Riverside (1921) 186 Cal. 7, 15:

> ... each owner of land overlying the same general underground supply of water may take such water on his own land for any beneficial use thereon, so long as such taking works no unreasonable injury to other land overlying such waters; ... .

This case goes further to state that such water cannot be used on lands outside of the watershed if it would deprive lands within the basin of water. (Id.) Note that the discussion from which the excerpt is taken does not involve physical solutions.

Appendix 4. Digest of State Water Resources Control Board Decisions and Orders Regarding Water Transfers (2000-2001)

SWRCB Order WR 2000-14-DWR, dated October 19, 2000, authorized the temporary transfer of up to 25,000 acre-feet from Merced Irrigation District, under its License 11395 (Application 16186) to the USBR's CVPIA Water Acquisition Program. Water was intended for several wildlife refuges within the San Joaquin Valley. Additionally, for the duration of the transfer, the Merced River below Lake McClure, the San Joaquin River, and the Delta were added to the place of use for the purpose of fish and wildlife enhancement pursuant to Water Code section 1707.

SWRCB Order WR 2000-16-DWR, dated December 8, 2000, authorized the temporary transfer of up to 10,000 acre-feet from Oroville-Wyandotte Irrigation District, under its Permits 1267 and 2492 (Applications 1651 and 2778), to the Environmental Water Account for use within the SWP and CVP service areas.

By Orders dated June 12, 2000 and May 31, 2001, the SWRCB approved a long-term change in place of use under Oakdale Irrigation District and South San Joaquin Irrigation District's (OID/SSJID) Licenses 3986, 7856, 7857, and 10166 (Applications 10978, 10872, 11105, and 12490) to allow up to 22,000 afa to be transferred to Merced Irrigation District (MID). The long-term change is effective through year 2011. OID/SSJID, as parties to the San Joaquin River Agreement (Agreement), are responsible for supplying up to 22,000 afa (11,000 afa each from OID and SSJID) of the Agreement flow contributions to the San Joaquin River for the Vernalis Adaptive Management Plan. However, due to flow restrictions in the lower Stanislaus River, OID/SSJID may unable to meet their flow obligations under the Agreement using the Stanislaus River channel. The solution to this problem, outlined in SWRCB Decision 1641, was to have MID supply OID's and SSJID's Agreement flow obligations via the Tuolumne River with OID and SSJID repaying MID with a like amount of water during the following irrigation season. This long-term change was required for OID/SSJID to payback MID for any Agreement flows supplied on its behalf.

SWRCB Order WR 2001-03-DWR, dated March 3, 2001, authorized the temporary transfer of up to 50,000 acre-feet from Yuba County Water Agency, under its Permit 15086 (Application 5632), to the Environmental Water Account for use within the SWP and CVP service areas.

SWRCB Order WR 2001-10-DWR, dated June 20, 2001, authorized the temporary transfer of up to 1,267 acre-feet from Natomas Central Mutual Water Company, under its Licenses 2814 and 3109 (Applications 1056 and 1203), to users within the Contra Costa Water District, North

Bay Aqueduct, SWP, and CVP. The water approved for transfer under this Order consisted of water conserved by the petitioner using a weed control program, pursuant to Water Code section 1011.

SWRCB Order WR 2001-11-DWR, dated June 20, 2001, authorized the temporary transfer of up to 1,732 acre-feet from Sutter Mutual Water Company, under its License 8547A (Application 12470A), to users within the Contra Costa Water District, North Bay Aqueduct, SWP and CVP service areas. The water approved for transfer under this Order consisted of water conserved by the petitioner using a weed control program, pursuant to Water Code section 1011.

SWRCB Order WR 2001-12-DWR, dated June 20, 2001, authorized the temporary transfer of up to 3,642 acre-feet from Reclamation District 108 under its License 3066 (Application 763) to users within the Contra Costa Water District, North Bay Aqueduct, SWP and CVP service areas. The water approved for transfer under this Order consisted of water conserved by the petitioner using a weed control program, pursuant to Water Code section 1011.

SWRCB Order WR 2001-15-DWR, dated July 5, 2001, authorized the temporary transfer of up to 3,975 acre-feet from the Department of Water Resources, under its Permit 16482 (Application 17512), to the Westlands Water District (Westlands), the majority of which is located within the CVP service area. The water approved for transfer under this Order consists of SWP water scheduled for delivery to land owners with holdings in both the Tulare Lake Basin Water Storage District (located within the SWP place of use) and Westlands. The aforementioned landowners requested that their SWP allotment be delivered instead to their holdings in Westlands, requiring the temporary change in place of use.

SWRCB Order WR 2001-16-DWR, dated July 16, 2001, authorized the temporary transfer of up to a total of 114,052 acre-feet from Yuba County Water Agency to the Department of Water Resources for use within the SWP and CVP service areas. Of the transfer total, 52,912 acre-feet consisted of water previously stored under the provisions of its Permit 15086 (Application 5632), and the remaining 61,140 acre-feet consisted of water made available through a groundwater substitution program initiated by Yuba County Water Agency.

SWRCB Order WR 2001-17-DWR, dated August 2, 2001, authorized the temporary transfer of up to a total of 8,000 acre-feet from Browns Valley Irrigation District (BVID) to DWR for use within the SWP and CVP or for instream use within the Delta, pursuant to Water Code section 1707. Of the transfer total, 3,500 acre-feet consisted of water previously stored under the provisions of BVID's Permit 8649 (Application 13130). The basis of right for the remaining 4,500 acre-feet of water was BVID's pre-1914 water right. BVID included its pre-1914 water right in this temporary change petition to ensure that potential diverters within the instream place of use were made aware that BVID might be releasing flows for instream use.

SWRCB Order WR 2001-18-DWR, dated August 2, 2001, authorized the temporary transfer of up to 20,000 acre-feet from Placer County Water Agency, under its Permits 13856 and 13858 (Applications 18085 and 18087), to the Environmental Water Account for use within the SWP and CVP.

SWRCB Order WR 2001-19-DWR, dated August 10, 2001, authorized the temporary transfer of up to 35,428 acre-feet from the Department of Water Resources under its Permit 16482 (Application 17512) to five water districts located within the CVP place of use in the San Joaquin Valley. In November 2000, the five CVP districts transferred 35,428 acre-feet of CVP water stored in San Luis Reservoir to the Kern County Water Agency (located in both the CVP and SWP places of use) between November 2000, and April 2001. In exchange for the CVP water, Kern County Water Agency agreed to make available for transfer a like amount of its SWP water in return at a later date. This petition was filed to complete the exchange.

SWRCB Order WR 2001-25-DWR, dated October 19, 2000, authorized the temporary transfer of up to 25,000 acre-feet from Merced Irrigation District, under its License 11395 (Application 16186) to the Environmental Water Account for use within the SWP and CVP service areas. Additionally, for the duration of the transfer, the Merced River below Lake McClure, the San Joaquin River, and the Delta were added to the place of use for the purpose of fish and wildlife enhancement in accordance with Water Code section 1707. The water approved for transfer was made available through a groundwater substitution program initiated by MID.

Appendix 5: Relevant Documents Regarding Water Transfers

California Water Code Provisions

Water Code sections 1725 through 1732 govern temporary changes for the purpose of facilitating the transfer of water. Summarized below are some of the major requirements of these code sections:

1. A permittee or licensee may temporarily change the point of diversion, place of use, or purpose of use due to the transfer or exchange of water or water rights. This is conditioned on the following:

    - The transfer will only involve the amount of water that would have been consumptively used or stored by the permittee or licensee in the absence of the proposed temporary change (or conserved in accordance with Water Code section 1011);

    - The transfer will not injure any legal user of the water; and,

    - The transfer will not unreasonably affect fish, wildlife, or other instream beneficial uses.

2. The permittee or licensee must submit a petition to the SWRCB to accomplish the temporary change.

3. Within ten days of the submittal of a complete petition for temporary change, public notice of the petition must be mailed to the Department of Fish and Game (DFG), the board of supervisors of the county or counties within which the water is currently stored or used and within which the water is to be transferred to, and others on file with the SWRCB with the potential to be affected by the transfer. The notice must also be published in a newspaper with general circulation in the county or counties within which the petitioner currently stores the water proposed for transfer and the counties within which the water is proposed for use.

4. Interested parties have 30 days from the date the notice is published to file comments on the proposed temporary change.

5. During the comment period, the SWRCB is directed to commence an investigation to determine if the proposed temporary change meets the requirements delineated above in Item 1.

6. The SWRCB has up to 35 days from the date the notice is published to render a decision on the proposed temporary change. If comments are received, or for any other good cause, the SWRCB may extend the date of its decision for up to 20 days.

7. The SWRCB may schedule a hearing if it decides that one is necessary to make the findings required to approve the petition.

8. The petitioner is required to make a prima facie case that the proposed temporary change meets the requirements outlined above in Item 1. If the SWRCB determines that the petitioner has made a prima facie case in support of the petition, the burden of proof shifts to any commentor to prove that the temporary change does not meet the aforementioned requirements.

9. The SWRCB shall explain its decision regarding a petition for temporary change in writing and mail a copy of the decision to the petitioner, DFG and the board of supervisors of the counties identified above in Item 3.

10. Temporary changes are effective from the date of the approving Order up to one year. Water diverted to offstream storage outside of its originating watershed during the initial year of approval may be put to beneficial use after the Order has expired in accordance with the changes made in the Order.

11. Temporary changes are exempt from the requirements of the California Environmental Quality Act (CEQA).

12. The SWRCB may not modify any term or condition of the underlying water rights intended for change, except as they specifically apply to the proposed change.

13. The underlying water rights changed as a result of the temporary transfer revert back to their initial conditions automatically once the transfer period has expired.

Water Code sections 1735 through 1737 govern long-term changes for the purpose of facilitating the transfer of water. Summarized below are some of the major requirements outlined in these code sections:

1. A permittee or licensee may petition the SWRCB to change the point of diversion, place of use, or purpose of use for the purpose of transferring water or water rights for a period in excess of one year.

2. After providing notice and an opportunity for hearing, the SWRCB may approve a petition for long-term change if the change would not result in substantial injury to other legal users of water and would not unreasonably affect fish, wildlife, and other instream beneficial uses.

3. The underlying water rights changed as a result of the long-term transfer revert back to their initial conditions automatically once the transfer period has expired.

4. Long-term transfers of water must comply with the requirements of CEQA.

The CALFED Programmatic Record of Decision (August 28, 2000)

CALFED has prepared a Programmatic Record of Decision (ROD) in support of its final selection of a long-term plan (Preferred Program Alternative) to restore ecological health and improve water management for beneficial uses of the Bay-Delta hydrologic system. The ROD includes specific actions intended to restore and improve the Bay-Delta, describes a strategy for implementing the plan, and identifies complementary actions the CALFED agencies will also pursue. These actions also depend upon subsequent project-specific environmental analyses and on subsequent review of financial and legislative proposals by the State and Federal legislative and executive branches of government.

Streamlining the Transfer Approval Process (December 2000, Unpublished)

The ROD includes an action to convene a panel of stakeholders to draft recommendations for a streamlined transfer process. Accordingly, the Water Transfer Streamlining Subcommittee has prepared *Draft Recommendations to Streamline State and Federal Water Transfer Approval Processes in California*. This document contains recommendations for SWRCB, DWR, and USBR to implement policies and procedures to streamline the water transfer approval process.

The SWRCB Guide to Water Transfers, Draft (July 1999)

SWRCB staff prepared a document, titled *A Guide to Water Transfers, Draft* (July 1999), which is intended to help parties understand the processes involved and the information needed to complete water transfers in California. It includes discussion and conclusions regarding the definition of transferable water, determination of consumptive use, application of refill criteria, and evaluation of water transfer impacts on groundwater users and others. Though the observations contained in this document reflect the view of SWRCB staff at the time of its preparation, it did not establish any rules or guidelines for water transfers and was not intended to be given any regulatory effect.

The Legislative Analyst's Report on Water Transfers (September 8, 1999)

On September 8, 1999, the Legislative Analyst Office issued a report titled *The Role of Water Transfers in Meeting California's Water Needs*. This report was prepared to address the issues of clarity and consistency in water transfer law, protection of third parties with the potential to be affected by water transfers, the current capacity of the water supply infrastructure to accommodate water transfers, and a lack of information regarding current transfers and their effects upon the water community. This report made several recommendations including consolidating water transfer law into a single act, expanding public disclosure of certain proposed transfers, strengthening the statutory protection of the underlying water right upon which a transfer is based, clarifying the statutory definition of "fair compensation" with respect

to the use of public conveyance facilities to facilitate water transfers, and assessing a transfer fee to ensure that adequate review of proposed water transfer is conducted by the appropriate state agencies.

The Critical Water Shortage Contingency Plan (December 29, 2000)

The ROD included an additional action to convene a panel of stakeholders to prepare a contingency plan to reduce the impacts of critical water shortages, primarily for agricultural and urban water users. Accordingly, the Governor's Advisory Drought Planning Panel has prepared a *Critical Water Shortage Contingency Plan*, dated December 29, 2000. This document contains background information regarding changes in water management conditions within California since the most recent statewide water shortage resulting from the 1987-1992 drought. Further, the report contains recommendations for action that State government could take to reduce the impacts of critical water shortages.

DWR's Groundwater Management in California Report (1999)

In 1999, DWR issued a report titled "Groundwater Management in California." The document summarizes the six methods currently used for managing groundwater resources in California. These include (1) overlying water rights, (2) local agency authority, (3) adjudicated basins, (4) groundwater management agency authority, (5) AB 3030, and (6) City and County Ordinances.

"Water Transfers in California: Translating Concept Into Reality," DWR (1993)

This paper, written after the experience of the 1991 Water Bank, describes water transfer issues related to environmental impacts, economic impacts, and State Water Project and Central Valley Project concerns that need to be addressed in developing a water transfer. It also provides a description of various types of water transfers and a description of future challenges related to water transfers.

Paper on Water Transfers, Governor's Commission on Water Rights (1977)

In December 1977, the Governor's Commission to Review California Water Rights Law released a study on water right transfers, the fifth in a series of background and issue papers prepared by the Commission staff. This study, prepared by Clifford T. Lee, discusses legal impediments to water right transfers in California and reviews several recent transfers. The Final Report of the Governor's Commission to Review California Water Rights Law, issued in December 1978, includes recommendations to encourage voluntary transfers, most of which were later enacted.

Papers Regarding Water Transfers in 2002, DWR (2002)

The Water Transfer Office of DWR has prepared the following papers regarding water transfers involving DWR: (1) "Information to Parties Interested In Making Water Available to the Environmental Water Account (EWA) or the State's 2002 Dry Year Water Purchase Program";

(2) “Groundwater Substitution Transfers”; and (3) “Water Transfers Based on Crop Shifting and Crop Idling.” This set of papers was prepared to provide technical guidance to local parties who wish to sell water to DWR or use its facilities for water transfers in 2002. The focus of these papers is the transfer of water from the greater Sacramento Valley to areas south and west of the Sacramento-San Joaquin Delta.

Review of the Laws Establishing the SWRCB's Permitting Authority Over Appropriations of Groundwater Classified As Subterranean Streams and the SWRCB's Implementation of Those Laws, 2002

This report, also known as “The Sax Report,” analyzes the legal classification of groundwater based on the Water Commission Act of 1913; statutory water rights law; the SWRCB’s current implementation of the law governing subterranean streams flowing through known and definite channels; groundwater law in other states; and the management of groundwater outside of Water Code section 1200. Professor Joseph L. Sax prepared the report under contract with the SWRCB.