EXPERT REPORT OF DONNA TEGELMAN

1. Introduction and Summary of Opinions:

I have been identified as an expert by the U. S. Department of Justice to provide testimony in NRDC v. Rodgers. I have been asked to express opinions on any matters related to Central Valley Project (CVP) water service contracts, water rights, Federal ownership and management of various properties and facilities, the Environmental Water Account (EWA), water transfers and exchanges, Friant Unit flood flow pump-ins, and water use efficiency.

As a result of my review of those matters, I have reached the following conclusions:

- a. The United States does not own or control many of the facilities identified by Dr. Moyle as impeding fish migration and recommended for removal, modification, re-operation or reconstruction as part of Dr. Moyle's proposed restoration plan. This significantly complicates the ability of the United States to participate in or assume responsibility for Dr. Moyle's proposal.
- b. The proposed restoration flow regime may at times conflict with various contractual and legal water rights.
 - i. In the event of a temporary or permanent interruption that precludes the delivery of a substitute supply by the United States, the Exchange Contractors [Central California Irrigation District (CCID), Columbia Canal Company, San Luis Canal Company and Firebaugh Canal Company] are contractually entitled to various reserved waters at Friant Dam.
 - ii. In some years, particularly wet years, a portion of the Exchange Contractors' contractual entitlement is met with San Joaquin River (SRJ) flows that accumulate at Mendota Pool. iii. The Exchange Contractors did not give up their historic SJR water rights when they entered into the Purchase Contract and Exchange Contract. They simply agreed to not exercise their rights provided they received a substitute supply.
 - iv. The contractual requirement for Reclamation to release flows for delivery to the Mendota Pool from the San Joaquin River and/or Fresno Slough to ensure maintenance of water levels necessary to protect private property and the Mendota Dam and that Mendota Pool diverters can divert their project supplies may be compromised by the introduction of additional flows for fish as proposed by Dr. Moyle.
- c. The reduction in sales of Class 1, Class 2 and surplus water deliveries from the Friant Unit would increase CVP water rates for all CVP contractors.
- d. The reduction in sold CVP water would result in an adverse impact upon the CVPIA Restoration Fund of approximately \$2.7 million per year based upon Dr. Kirby's projected reductions.
- e. Reclamation disputes Dr. Kirby's claim that the urban contractors (such as the City of Orange Cove) would not be severely impacted. In contrast with Dr. Kirby's claims, Reclamation does not provide contractual nor policy priority to Class I M&I users relative to irrigation water users in the Friant Division. The City of Orange Cove, which is located in a severely economically depressed area, has during the past decade expressed considerable concern over the lack of an adequate water supply and the ability to fund their search for and acquisition of additional water supplies. The City is concerned about the affordability of CVP water, which is generally less than that available to the City upon the

open market. Some of Dr. Kirby's Alternative Management Actions are of questionable or limited applicability to the Friant Unit.

- Dr. Kirby's discussion does not demonstrate how a reduction in available Friant Unit water supplies will permit an entity which now has less water to pursue <u>additional exchanges</u>. Most exchanges involve equal quantities of water and are not intended to increase the absolute quantity of water available to any party. <u>Increased transfers</u> to the Friant Unit will be constrained by lack of adequate conveyance capacity to facilitate North of Delta transfers to South of Delta water users, and westside transfers to eastside water users, existing water rights restrictions, including in many cases the lack of storage rights, and the financial feasibility of water purchase and conveyance.
- The primary purpose of the EWA is to provide water to the CVP and State Water Project (SWP) to offset pumping curtailments undertaken by the projects to protect at-risk fish of the Delta; the EWA is not intended to serve principally as an instreamflow program. When possible, and such situations are limited, EWA agencies attempt to make EWA water available for beneficial instream flow purposes prior to diverting at the Delta for the primary purpose. The ability of the EWA to assist in SJR restoration is limited due to: (a) concern that EWA assets acquired from willing sellers within the SJR system would be pumped during the summer by other diverters; (b) most water available for purchase would be available below Mendota Dam and thereby not benefit the SJR below Friant and above Mendota Dam; (c) such water is subject to various conditions before EWA can pick flows up for primary EWA purposes,; and (d) neither the State nor Federal governments have sufficient funding to finance water solely for instream flow purposes without adversely affecting the ability of the EWA to purchase EWA assets to offset reductions in Delta pumping.
- <u>Increased groundwater pumping</u> is indeed only a temporary solution as groundwater overdraft continues to exist throughout much of the Friant Unit service area.
- The RD770 and similar <u>flood flow pump-in proposals</u> are less reliable than Friant Unit contract supplies. Flood flows are generally introduced when the eastside is in a water saturated condition, a time of low demand for such water. Entities having access to groundwater recharge facilities are physically constrained on the amount of water they can take due to limitations on rates of percolation. Accordingly the quantity of water taken by contractors is smaller than the amounts available.
- The opportunities for <u>increased water use efficiency</u> in the east side are limited. The potential for recovering irrecoverable losses in the Friant Unit range from 0 TAF to a maximum of 13 TAF. The Friant Unit is a highly efficient water system in which subsurface residual irrigation waters (canal seepage and farm deep percolation flow into usable groundwater aquifers and are typically recovered by groundwater pumping.
- Dr. Kirby's discussion regarding the possible availability of water as a result, for example, <u>land retirement in the westside</u>, does not address the general inadequacy of water resources throughout the Central Valley. The water needs assessments completed by Reclamation for Year 2025 for the Delta, West San Joaquin and San Felipe Divisions shows an outstanding unmet water demand in those areas of approximately 250,000 acre-feet. That demand assumes a 100 percent project supply available in each and every year, an amount considerably in excess of the average allocation made available during the past years. As a result of the ongoing and anticipated water storage in the Westside, it is questionable whether or not there would be water made available to meet Eastside demands. The availability of

westside water to the eastside is also complicated by the costs and uncertainty of adequate and reliable conveyance from the Westside to the eastside.

Accordingly, I question Dr. Kirby's conclusions that "there are ample opportunities to offset any localized adverse effects. There is sufficient water within the system to offset the net reduction in water available to contractors of the Friant Division, if sufficient resources are applied to implement new water management solutions." I question the productivity of some of the opportunities per se. I also question who will finance, direct and pay for "the sufficient resources" necessary to implement Dr. Kirby's water management solutions.

2. Professional Qualifications.

I have been employed by the United States Bureau of Reclamation for almost 23 years. I have a B. S. Degree in the Natural Sciences, an M. S. in Agricultural Economics and completed two years of graduate studies in water resources management. Further relevant details of my background are shown in Appendix A (attached). My time allocated to this effort is covered by my routine salary as a Federal Reclamation employee.

During the past four years I have been deposed on one occasion. The deposition was taken on September 27, 2002, relative to Sumner Peck Ranch, Inc. v. Bureau of Reclamation, et al. (CV-F-91-048-OWW (E.D. Cal).

3. Data and Other Information Considered in Forming My Opinions:

In forming the opinions set forth herein and in preparing this expert report, I reviewed and considered the following materials:

Santoyo, Mario. On the Role of New Surface and Groundwater Storage in Providing Reliable Water and Power Supplies and Reducing Drought's Impact. April 13, 2005. Testimony Before the Committee on Resources, Subcommittee on Water and Power, United States House of Representatives.

Leu, Mark Randall. Economics-Driven Stimulation of the Friant Division of the Central Valley Project, California, 2001 Proposed Thesis, Master of Science, University of California, Davis.

Bureau of Reclamation. Comparison of Draft and Final Water Needs Assessments for Yr 2025 (CVP) 11/23/04

White, Christopher. Expert Report, NRDC. Rodgers.

Bureau of Reclamation. Table: L4 Agreements in Process (2005)

EWA Program. Table: Environmental Water Account Asset Acquisition, Costs and Use in Water Years (WY) 2001 - 2005

Fujitani, Paul. E-Mail Dated 9/8/05 to Donna Tegelman.

Reclamation. Water delivery data generated by George Bushard on CY 2002-2004 Deliveries, Friant Unit. 2005

California Bay-Delta. Baseline Development ("Common Assumptions") (no date)

California Bay-Delta. Water Use Efficiency Program Plan July 2000, pages A-4aand A-4b

Natural Resources Conservation Service, USEA. On Farm Component, CalFed WUE Program 8/17/05 (Draft)

Commissioner, Bureau of Reclamation. Letter to Mayor Victor Lopez, City of Orange Cove, March 14, 1996

Congressman Calvin Dooley, United States Congress. Letter to the Commissioner of Reclamation, September 15, 1999

Commissioner of Reclamation. Letter to Congressman Richard Lehman, House of Representatives, December 17, 1992

Commissioner of Reclamation. Letter to Mr. Alan Bengyel, City of Orange Cove, September 21, 1992

Bengyel, Alan. Letter to Regional Director, Mid-Pacific Region, Bureau of Reclamation. August 18, 1992.

Curley, Valerie. E-Mail to various Reclamation staff on Status of City of Orange Cove Project. June 5, 2001.

Bureau of Reclamation, Central Valley Project (CVP) Water Needs Assessments: Purpose and Methodology (Attachment 1 to a letter to all CVP contractors) (undated: c 1999.)

Reclamation and the Exchange Contractors. Second Amended Contract for Exchange of Waters. February 14, 1968

Reclamation. Executive Summary, Environmental Assessment: Municipal and Industrial Water Shortage Policy, Central Valley Project, California, August 2005

Reclamation and City of Orange Cove. Long-Term Renewal Contract Between the United States and City of Orange Cove Providing for Project Water Service from Friant Division, February 6, 2001.

Reclamation. Individual Tables showing:

Delta Lands RD 770 Flood Flow Diversion into the Friant-Kern Canals (years 1978 – 1998);

Contractors' Diversions of Delta Lands 770 Flood Flows from the Friant Kern Canal (years 1995, 1997 and 1998).

Surplus and 215 Water Deliveries, Friant Kern Canal, Years 1986/1987-2003/2004

Reclamation. Water Supply Analysis for the Westside Region of the Central Valley Project, Working Draft Version April 4, 2003

4. I have reviewed information included in Dr. Moyle's and Dr. Kirby's expert reports that relate to the subject areas under my purview as the Mid-Pacific Region's Regional Resources Manager. Most of the information provided below is intended to clarify or provide additional facts; identify

weaknesses or discuss differences in opinions relevant to some of the issues and conclusions discussed in the expert reports.

The Dr. Peter Moyle Expert Report:

1. Section C. APPARENT CONSTRAINTS FOR RECOVERY: RECOVERY 1. PASSAGE (pages 27 - 30). Dr. Moyle has identified various structures or physical situations that impede salmon migration, and therefore recovery. It is not my intent to address the value or lack of value in any of the actions identified by Dr. Moyle as important to salmon restoration. However, it is important to note that the United States does not own nor have operational control over any of the structures or physical situations that Dr. Moyle identifies as meriting removal, modification, screening, re-operation or reconstruction. These structures include:

Hills Ferry Weir (operated by California Department of Fish and Game) Sand Slough Control Structure (DWR) The numerous diversions between Mendota Pool and Friant Dam Sack Dam (San Luis Canal Company) Mendota Dam (Central California Irrigation District) Chowchilla Bifurcation Structure (Lower San Joaquin Levee District) The gravel pits between RM 255 and Skaggs Bridge

2. Section E. A FLOW REGIME FOR THE RECONCILED SAN JOAQUIN RIVER. Dr. Moyle's' restoration proposal is contingent upon a flow regime that manifests the basic features of the "natural" flow regime that historically supported fish, including continuous flows all year around in one or more described areas. The restoration plan is highly dependent upon the releases from and fate of the water released by Reclamation from Friant Dam. It is not my intent nor am I qualified to address the merits of Dr Moyle's proposed flow regime for fishery

restoration. It is important, however, to note that the United States does not have (a) absolute claim nor absolute discretionary operational control over water released from Friant Dam, nor (b) control over the Mendota Pool, Mendota Dam, Sack Dam or the Mendota Pool level.

The operation of Friant Dam is subject to a number of constraints, including the Second Amended Contract for Exchange of Waters (Contract IIr-1144, often referred to as the Exchange Contract) between the United States and the Exchange Contractors (specifically, Central California Irrigation District (CCID), Columbia Canal Company, San Luis Canal Company and Firebaugh Canal Company.) The Exchange Contract authorizes the United States to -- in whole or part -store, divert, dispose of and otherwise use, within and without the watershed of the San Joaquin River (SJR) the reserved waters of the SJR for the beneficial use by other than the Contracting Entities [generally South of Delta Central Valley Project (CVP) contractors] as long as the United States delivers to the Exchange Contractors a substitute water supply of an agreed quantity consistent with various flow rates. Traditionally this substitute water supply is made available from the northern CVP water storage facilities and delivered to the Exchange Contractors via the Delta-Mendota Canal.

In some years, particularly wet years, a portion of the Exchange Contractors' contractual entitlement is met with SRJ flows that accumulate at Mendota Dam. In the event of a temporary interruption that precludes the delivery of the substitute supply, the United States is required to

¹ The information in parentheses suggests the probable owner or operator as provided to me by Reclamation realty staff.

deliver to the Exchange Contractors SJR water reserved² under the Purchase Contract³ and under certain criteria releases of stored water from Millerton Lake. In the event of a permanent interruption that precludes the delivery of the substitute supply, the United States is to release the reserved waters at Friant Dam "as specified in said Purchase Contract."

I agree with paragraph F of Mr. Chris White's expert report, including his statement: "It is important to note that the Exchange Contractors did not give up their historic SJR water rights when they entered into the Purchase Contract and the Exchange Contracts. They merely agreed not to exercise their reserved water right on the San Joaquin River so long as the United States delivered substitute water to them at Mendota Pool." Article 16 of the Exchange Contract expressly provides that the contract "shall never be construed as a conveyance, abandonment or waiver of any water right, or right to the use of water of the Contracting Entities.... except to and in favor of the United States to the extent herein specifically provided."

Article 9 of the Exchange Contract requires that the quality of substitute water delivered by the United States to the Exchange Contractors "shall at all times be suitable irrigation water." The contract specifies the quality requirements by which the parties deem such water to be suitable for irrigation purposes. Conditions that may result in the inability of the United States to deliver substitute water in accordance with the water quality requirements could result in a determination of breach of contract, thereby allowing the Exchange Contractors to exercise their SJR water rights as discussed above.

Article 11 of the Exchange Contract recognizes the need of the parties for close mutual cooperation in the operation of the Mendota Pool and associated diversion works, including the desirability to maintain the minimum practical degree of fluctuation in the Mendota Pool water level. However the operation of the Mendota Dam is the responsibility of one of the Exchange Contractors, specifically CCID. The contract establishes very specific elevation goals under various circumstances and requires Reclamation to provide "…nearly uniform rates of flows" in accordance with delivery schedules provided by the Exchange Contractors.

The Dr. Kenneth W. Kirby Expert Report:

In reviewing Dr. Kirby's report, my efforts focused upon statements or presentations that may have a significant impact on the accuracy's of Dr. Kirby's conclusions, principally his section entitled "Likely System Responses." In addition to the below comments there are some errors in Dr. Kirby's presentation that I have elected not to discuss as I do not expect such will have a significant impact on the accuracy of Dr. Kirby's conclusions⁴.

Dr. Kirby's proposal anticipates a reduction of 78 percent in surplus water deliveries, a 22 percent reduction in Class 2 deliveries, and a 4 percent reduction in Class 1 deliveries (paragraph 68. A., page 22.) I have not addressed nor am qualified to address the accuracy of Mr. Kirby's modeling

² Reserved water is certain San Joaquin River water recognized under the Purchase Contract that the Exchange Contractors are entitled to use beneficially despite the conveyance of certain water rights to the United States for the Friant Unit.

³ The Purchase Contract provides for the conveyance of certain rights to the use of waters of the SJR and its tributaries to the United States.

⁴ An example: Reclamation records do not show Consolidated Irrigation District, Corcoran Irrigation District or the Kern Water Bank actually <u>taking deliveries</u> of surplus water. The list should include La Branza Water District.

efforts or modeling conclusions. For the purposes of my report I have assumed that Dr. Kirby's projected reductions are reasonably accurate.

- 1. Paragraph 51, page 17, lines 23 and 24. Dr. Kirby states that surplus water deliveries would be available in 70 percent of the water years based upon records from 1961 2000. Reclamation records shows that surplus water has been available in 10 of the past 20 years (1985 2004).
- 2. Impacts of Dr. Kirby's Projected Reductions on the Long-Term Renewal Contracts and the CVP:
 - a. Article 12(b) of the Friant Unit long-term renewal contracts allows for a condition of shortage for the Contracting Officer to meet legal obligations. Accordingly the integrity of the contracts would be protected if the subject restoration plan were ordered by the Court.
 - b. The reduction in sales of Class 1 and Class 2 deliveries from the Friant Unit would result in an increase in CVP water rates. Future cost allocations made under Article 2(d) would be changed as a result of the loss of water over which to recover CVP costs. The reduction in sales of 215 water would reduce revenues credited to repayment of CVP O&M costs, and thereby result in an additional increase in CVP water rates. Nevertheless the existing construction costs associated with the CVP's existing main project facilities are required to be fully repaid by the year 2030 per Public Law 99-546. The CVP's annual O&M costs would fully covered through increased O&M rates. c. The reduction in sold CVP water would result in an adverse impact upon the CVPIA Restoration Fund. Consistent with Dr. Kirby's projections, the annual average loss of CVPIA Restoration Revenues based upon the FY 2005 Restoration Payment and Friant Surcharge would exceed \$2.7 million. (This estimate is conservative as it does not reflect the higher Restoration Payments applicable to M&I water deliveries, which have accounted in the past three water years for approximately 6 % of all Friant deliveries⁵).

Loss	3		Friant Surcharge	Restoration Funds
Surp	olus deliveries:	106 TAF	\$ 742,000	\$ 318,000
Clas	s 2 Deliveries:	86 TAF	602,000	682,000
Clas	s 1 Deliveries:	28 TAF	<u>196,000</u>	222,000
			\$1,540,000	\$1,222,000

The applicable 2005 rates are:

Friant Surcharge \$ 7.00 /AF Agricultural Restoration Payment \$ 7.93/AF M&I Restoration Payment \$15.87/AF.

- 3. Impacts of Dr. Kirby's Projected Reductions Upon Urban Contractors (Paragraph 68.B., pages 22 23.) Dr. Kirby states "Based on this approximate look at how reductions would be allocated, I do not believe any of the urban contractors (such as the City of Orange Cove) will be severely impacted.....the Bureau gives highest priority to urban users in its contractual shortage provisions." He also states that urban users can make arrangements through transfers and exchanges to make up for shortfalls. Dr. Kirby's conclusions understates the impacts of the lost of water to the Friant Unit. My conclusions reflect the following:
 - a. All Friant M&I contractors receive Class I water, which is the most reliable water on the Friant Unit system. However, Reclamation's water service contracts with the various

 $^5\,\,$ The percent M&I deliveries reflects the quantities delivered in WY 2002 - 2004 per Reclamation's Works Program.

7

Friant Division contractors do not provide priority to M&I water users relative to irrigation water users during any water year, including water short years. This is evidenced by Contract No. 14-05-200-5230-LTR1, specifically Article 12(d)] and The Municipal and Industrial Water Shortage Policy, Central Valley Project, California, Environmental Assessment, August 2005, specifically ES-1.

- b. The loss of M&I water to Friant contractors can not easily be replaced. Water purchased in the San Joaquin Valley is more costly than CVP water and the loss of a significant amount of supply in the Friant Unit could push free market water rates higher than those recently paid by Reclamation. The City of Orange Cove, , which lies in a severely economically depressed area in the Friant Unit service area, has actively sought to identify the most viable sources of critically needed additional water and secure funding to acquire the water that is needed to supplement its existing supply. The City has expended considerable effort solely to locate assistance to finance studies to enhance the local water supply, which is a limiting factor in its economic development. Clearly the impacts on urban entities such as the City of Orange Cove would be particularly onerous in dry years as Dr. Kirby's modeling suggests a worst year of record could result in a reduction of up to a 34 percent reduction in the Class 1 water supply. Because municipal and industrial water users generally require reliable water supplies, even small reductions in the availability of and reliability of Class 1 water could further frustrate the City's ability to develop and diversify local business opportunities.
- 4. Feasibility of Dr. Kirby's Alternative Management Actions. Paragraph 70 of Dr. Kirby's statement identifies: "Some promising management actions to lessen the local effect of the reduction of available water that can be diverted from Friant for use by current Friant Division contractors..." My most immediate reaction to some of Dr. Kirby's alternatives is that they are simply conceptual (text-book). In general these alternatives lack detail. Dr. Kirby fails to address true feasibility based upon timing of implementation, finances, economics, physical limitations, effectiveness and other relevant critical factors as relate specifically to the Friant Unit service area. My comments are limited to those items which relate to my assigned responsibilities.
 - a. Alternative "G. Continue and increase ongoing transfers and exchanges for example, recent Forbearance agreements; Exchange Contractors purchase program and within Division transfers."
 - i. It is unclear to me how a reduction in available Friant Unit water supplies will permit an entity to attempt to increase exchanges when the contractor (the Friant Unit) would have (collectively) less water with which to pursue exchanges. Most exchanges involve similar quantities of water and are not intended to increase the absolute quantity of water available to any party. Likewise, water transfers merely reallocate, but do not increase, existing water supplies from one use to another.
 - ii. The acquisition of water as done through recent forbearance agreements and Exchange Contractors purchases posses several complications that can complicate and in some circumstances impede successful transfers to the Friant Unit, including:

A. Lack of adequate conveyance capacity to facilitate North of Delta transfers to South of Delta water users. The recent (2005) Forbearance agreement mentioned by Dr. Kirby has to date resulted in no water accumulated for transfer South of the Delta. This year there was no pumping capacity available at the Delta during the months of April through August and we anticipate this situation will prevail through most of September. At that time the opportunity to make water available will have passed. Alternatively, in some years water exports are constrained in order to minimize fishery impacts. Accordingly such transfers are unreliable.

- B. Periodic lack of conveyance capacity in non-federal or privately owned facilities necessary to move water available from North of the Delta or the westside of the Central Valley to the eastside of the Central Valley;
- C. Physical inability to move imported water from the Delta or the Westside to the Eastside except at the south end of the Friant Division.
- D. Existing water rights restrictions (e.g., place of use, purpose of use, point of diversion, protection of in-stream beneficial uses). Changes to post-1914 water rights would have to be pursued through and approved by the State Water Resources Control Board. Many pre-1914 water rights do not include a right of storage and subsequently are less firm than Friant Unit Class 1 deliveries. There may be issues related to timing of availability of water and/or ability to store. The latter would be a particular issue relative to reductions in availability of Class 1 Friant Unit water during dry years. All transfers would have to be consistent with applicable state and federal law, including the "no injury" rule⁶. E. The cost of water purchases and conveyance.

Dr. Kirby's proposal does not address the above operational limitations, what parties will pay the associated costs, and whether or not these costs are financially feasible.

- b. Alternative "H. Release EWA (Environmental Water Account) water or other environmental purchase program water down the SJR from Friant or Mendota Pool."
 - i. The primary purpose of the EWA is to provide water to the CVP and SWP to offset pumping curtailments undertaken by the projects to protect at-risk fish of the Delta. The EWA does attempt, whenever biologically desirable and physically possible, to work with the fisheries agencies to make EWA water releases from upstream reservoirs available for beneficial instream flow purposes prior to diverting at the Delta for its primary purpose. To date the opportunities have been somewhat limited (releases from New Bullards Bar Reservoir for Yuba River fisheries and a release in 2001 from Folsom Reservoir to aid proper spawning temperatures in the American River.)
 - ii. There are several constraints which limit the availability of EWA water or other environmental water for SJR fishery restoration:
 - a. Timing Constraints. EWA generally requests SJR willing sellers to make water available to the EWA in early fall(generally October) as the EWA Agencies are concerned that EWA water made available in the summers would be pumped by other diverters and not reach the Delta. Such transferred water would then be of no use to the EWA.
 - b. Location of Available Water Sources. Much of the water that may be available for purchase would be available at or below Mendota Dam, such as sources within the Merced, Tuolumne, Stanislaus, and Calaveras river systems. Accordingly these flows would not benefit that portion of the SJR below Friant and above Mendota Dam.
 - c. Delta and Related Conditions. The SJR system is considered "upstream of the Delta" in relation to the CVP and SWP export pumps. Accordingly water purchased and transferred from willing SJR system

-

⁶ The "no injury" rule is a principle applicable to water transfers in which a person or entity seeking to change the use of a water right (the way it is used, place of use, point of diversion, purpose or time of use) is able to do so subject to the condition that a change must not impair uses by other legal water rights holders.

sellers is subject to Delta conditions being in a "balanced" state (usually during the summer months and perhaps early October) and without other complications such as weed growth at the SWP Skinner Fish Facility, water level and water quality and the presence of at-risk fish species and any other factors that may be problematic for water transfers. d. Financial Limitations. Most of the time it is impossible to use a given EWA asset for both instream flow and delta pumping offsets. At this time neither the State nor Federal governments have sufficient funding for the EWA to finance water solely for instream flow purposes without adversely affecting the ability of the EWA to purchase EWA assets to offset reductions in delta pumping. Neither the State nor Federal governments anticipate significant future available revenues to augment the EWA program for releases down the SJR. The CVP is similarly financially constrained relative to the availability of moneys to fund environmental water purchases⁸. Currently, water transfer market prices for water purchased from willing sellers in the export services areas of the CVP and SWP range from \$120 - \$200/AF, including, when applicable, costs for banking. (Reclamation does not have significant experience with water purchases from eastside contractors.) Prices of course will vary in accordance with the hydrologic year types and shifts in demand.

c. Alternative "I. Temporarily increase groundwater pumping. Sometimes this is a viable solution to system change, depending on local conditions."

Despite the success of the Friant Division as a conjunctive use project, groundwater overdraft continues to exist throughout much of the service area. Increased pumping is only a temporary solution since groundwater levels will continue to drop in the absence of significant increases in surface water supplies and/or reductions in groundwater pumping. A significant short term over draft of the groundwater supplies may require multiple wet years to recover.

7

⁷ "Balanced water conditions" are periods when it is agreed that releases from upstream reservoirs plus unregulated flow approximately equal the water supply needed to meet Sacramento Valley inbasin uses, plus CVP/SWP exports. In accordance with this concept, the EWA would be able to release water from upstream reservoirs for instream fishery purposes and recapture it at the CVP/SWP export facilities, because such water would be in addition to what is required to meet Sacramento Valley water user demands and CVP/SWP demands in their respective export service areas. The projects are able to track and account for the EWA water as it moves across the Delta.

The average annual cost for EWA water purchases is approximately \$34 million (M), which typically buys from 200,000 to 300,000 AF of water, and is shared between Federal and State funds. The Federal contribution in years 2001 through 2005 was \$0M, \$13M, \$2.5M, \$2.1M and \$0.9M respectively (Draft California Bay-Delta Program Environmental Water Account Multi-Year Program Plan, Years 2006-2009 (July 2005). In each of these years, state funds provided the difference. For fiscal year 2006, the federal contribution may be up to \$10M (President's FY 2006 Budget) and the state's contribution is approximately \$18.5M for a total of \$28.5 M for water and power purchases, program staff labor costs and environmental compliance. Presently, no Federal or State funds have been identified for the EWA for 2007 and beyond. The funding (Federal, State and user contribution) of a longer-term EWA program, or its equivalent, is a topic of ongoing discussions by Federal and State legislators and agency managers.

d. Alternative "J. The pump-in of flood flows from Tulare Basin/eastside rivers into the Friant-Kern Canal, as identified in the Water Supply Study and already being pursued by the Bureau (see recent NEPA/CEQA documentation for Reclamation District 770 project)"

Proposals such as the RD 770 proposal and the conveyance of eastside river flood flows can increase the available water supply to the Friant Unit. Reclamation encourages the use of such water supplies by Friant Division and other entities.

However, flood flows are less reliable and therefore less valuable than Friant Unit contract supplies. In some years there are no flood flows. When present, the value of flood flows is limited as a result of several factors. First, flood flows are generally introduced into the Friant System when the eastside is in a water saturated condition – a time of low demand for such water. Some entities try to use these flows for groundwater recharge, if and when facilities are available to them. However, groundwater recharge is a relatively slow, low-volume process due to limitations on rates of percolation; the rates of percolation limit the quantities of water that can be put in recharge basins.

Available data relative to Delta Lands 770 actions in 1995, 1997 and 1998, shows the Friant Unit contractors in the Friant Unit service area taking approximately 40 percent of the Delta lands 770 pump-in water.

Friant contractors having Class 1 supplies may be constrained relative to diverting flood or Delta Lands 770 flows as a result of lack of access to sufficient storage or groundwater pumping facilities. Water users may have limited financial incentive to pay high rates to bank water and thus may simply increase reliance upon groundwater pumping, provided it is less costly than paying for groundwater banking. Accordingly the quantity of water taken by contractors is usually considerably smaller than the amounts available as a result of high flows or pump-in programs such as Delta Lands 770. The increase in groundwater pumping will likely increase the rate of groundwater overdraft.

e. Alternative "L. Improve urban and agricultural water use efficiency – can reduce diversion and pumping requirements and provide some additional supply where irrecoverable losses can be reduced."

Dr. Kirby's expert statement does not provide any specific references nor estimates of quantities to be made available under the identified actions. The below contradict Dr. Kirby's opinion that improved water use efficiency may be a promising action to help mitigate the loss of CVP water to the Friant Unit.

The Friant Unit was expressly authorized by the Congress as a conjunctive use program. A number of the Friant Unit contractors aggressively store water in the aquifers during periods of high flow and pump during low yield years to supplement storage. Other contractors without access to percolation

basins use in –lieu groundwater storage and benefit from deep percolation or canal seepage.

The Friant Unit is recognized as a highly efficient water system as it is underlain by usable groundwater aquifers. The National Resources Conservation Service's draft final report (8/17/05) of the On Farm Component of the CALFED WUE Program (Exhibit) states, in part, relative to the east side of the San Joaquin Valley that: "Subsurface residual irrigation waters (e.g., canal seepage and farm deep percolation) flow into these" (usable groundwater) "aquifers and are typically recovered by groundwater pumping."

The CALFED Water Use Efficiency Program Plan, which was published in July 2000 calculates the determination of potential for recovering currently irrecoverable losses in the Friant Unit as ranging from 0 TAF to a maximum of 13 TAF.

f. Alternative "E. Integrate solutions for multiple challenges being faced by CVP – for example, if land is retired in CVP west-side districts to help address drainage problems, CVP can manage the reduced demand for water in that region in ways that are beneficial to Westside and Eastside interests.

The water needs assessments completed by Reclamation for Year 2025 for the Delta, West San Joaquin and San Felipe Divisions shows an outstanding unmet water demand in those areas of approximately 250,000 acre-feet. That demand assumes a 100 percent project supply available in each and every year, an amount considerably in excess of the average allocation made available during the past years. As a result of the ongoing and anticipated water storage in the Westside, it is questionable whether or not there would be water made available to meet Eastside demands. The availability of Westside water to the eastside is also complicated by the costs and uncertainty of adequate and reliable conveyance from the Westside to the eastside.

The transfer of water from the westside to the eastside will be costly. Dr. Kirby fails to explain these costs, who will pay them, and whether such costs are financially feasible. During the past year, water transfer market prices for water purchased from willing sellers in the export services areas of the CVP and SWP ranged from \$120 - \$200/AF. In addition, water purchased from Westside entities would likely be subject to additional conveyance charges for delivery to the eastside.

Dated: September 20, 2005

Donna E. Tegelman