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To: Kamyar Guivetchi, DWR, Michael Perrone, DWR, Jennifer Koiford, DWR

CC: B160 Advisory Committee Members

From: Ann Hayden

Date: October 29, 2004

Subject: Recommendations regarding scenarios and application of environmental water "demands" in the State Water Plan Update.

Thank you for the opportunity to provide comments on the substance, direction, and role of environmental water use, including unmet objectives, for the State Water Plan update. We appreciated the opportunity to discuss this issue with DWR staff last August 17, and would now like to provide comments on how the Plan can more clearly address environmental water use. We recognize and appreciate the progress made in addressing unmet environmental objectives in the Plan, and we hope the material can be more clearly presented and incorporated into the various scenarios. In this memo, we provide recommendations for how this material can best be incorporated in the current structure of the Plan.

Past State Water Plans have not adequately addressed unmet environmental objectives. Last year Environmental Defense, at DWR's request, analyzed certain locations where flow and water delivery objectives for environmental uses were identified as unmet. Our findings are outlined in the attached memo, "Quantification of Unmet Environmental Objectives in State Water Plan 2003 using actual flow data for 1998, 2000, and 2001." The memo clearly states that the analysis was conducted for a limited set of environmental objectives, and recommends that DWR conduct a more comprehensive analysis of environmental objectives throughout California. The results from our analysis are *not* to be interpreted as the outcome of a comprehensive assessment. Therefore, the use of our estimates in the Plan must be accompanied with a clear statement of their limited scope.

It is particularly important to acknowledge the limited nature of our analysis since it appears our estimates will be used to represent environmental demand in the "Quantified Narrative Scenarios" for Chapter 3. In addition, it is necessary to clarify that environmental objectives (or "Environmental Demand") and environmental uses are two different things. To this end, the "Initial Conditions" should include both current

environmental uses and current environmental objectives, and therefore indicate current unmet objectives as well. It should be clearly stated in the Plan that a more comprehensive analysis of objectives would likely result in a higher level of environmental demand. Likewise, it should emphasized that in the future these environmental objectives may change in one direction or another, but it might be too speculative to suggest the direction of any such changes at this time.

In the draft text we reviewed, the scenarios are not clearly defined. If the Plan is to be a useful document, it is imperative that readers understand what each scenario represents.

Based on our understanding of what the scenarios represent, we provide the following recommendations for both better describing the scenarios and characterizing environmental demands:

- The “Current Trends” scenario should represent a future if the present trend continues. Under this scenario, environmental objectives (on a limited set of streams and wetlands) would not change, but only one half (50%) of the environmental objectives would be achieved.
- The “Resource Sustainability” scenario should represent a future with a greater level of environmental protection. Under this scenario, objectives (on a limited set of streams and wetlands) would not change and 100 percent of the environmental objectives would be achieved.
- The “Resource Intensive” scenario should represent a future with less water available to the environment. Under this scenario, neither the current environmental objectives (on a limited set of streams and wetlands) nor the degree to which they are met would change.

Adopting these recommendations and incorporating the suggested clarifications will, in our opinion, result in a much more transparent, accurate, and useful State Water Plan. We look forward to continuing to work with your staff to help improve the Plan.

Sincerely,

Ann Hayden
Water Resource Analyst

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To: Kamyar Guivetchi, DWR

CC: Michael Perrone, DWR, B160 Advisory Committee Members

From: Spreck Rosekrans and Ann Hayden

Date: December 8, 2003

Subject: Quantification of Unmet Environmental Objectives in State Water Plan 2003 using actual flow data for 1998, 2000, and 2001.

As requested, we are re-submitting the following summary of our preliminary analysis of existing unmet environmental flow objectives. We greatly appreciate the feedback we recently received from DWR staff and have incorporated suggestions accordingly, which will be discussed in greater detail below. Due to time constraints, this analysis was conducted on only a partial list of objectives; we strongly encourage DWR to conduct a more rigorous analysis of unmet environmental objectives statewide.

Statewide, numerous environmental flow objectives exist that continue to go unmet, such as federal and State legal mandates to double salmon populations. The purpose of our analysis is to identify and quantify these gaps. Whether these objectives are adequately met under these alternative scenarios in the State Water Plan update is a matter for staff and AC consideration, but we hope that providing a quantified summary of such objectives will shed some light on what is actually occurring.

At the core of many of these environmental flow objectives is the goal of re-creating the natural hydrograph in systems impaired by water storage projects. By establishing appropriate flows, riverine ecosystems processes can be maintained, such as channel and riparian vegetation corridor maintenance, and ultimately the maintenance of aquatic species populations can occur.

The primary difference between this updated analysis and our previous analysis is the use of actual flow data for 1998, 2000, and 2001 representing a wet, normal and dry year, respectively. This approach is in contrast to our previous application of CALSIM, a model based on historical flow. Since there are many unresolved issues at to how CALSIM should be used in the State Water Plan update, we decided for the sake of consistency we would use actual flow data. It should be noted, however, that there are some limitations or possible inaccuracies when using actual flows. For instance, higher B2 flows were in place in 1999 before the new policy came out which significantly

changed how the water was accounted for; therefore, some of the unmet flow needs may appear to be lower using actual flow data that they would be today.

As a preliminary analysis, we chose the following objectives to be quantified:

- Trinity River flows consistent with Trinity River Mainstem Restoration Plan ROD (fall 2000).
- Additional water required meeting the flow objectives in the "Final Restoration Plan for the Anadromous Fish Restoration Program" (2001).
- A level of protection in the Bay-Delta that is equivalent to that specified by CALFED ROD, and required for long-term ESA assurances. This includes a viable Environmental Water Account, the Interior decision for CVPIA B2 water that allows crediting within metrics (i.e. pre offset-reset ruling) and a fully functional Tier 3.
- San Joaquin flows needed to comply with the federal court order to restore the salmon fishery below Friant Dam.
- All Level 4 Refuge Supplies.
- The Ecosystem Restoration Program purchases identified in the CALFED ROD for Stage One implementation to be used to meet the flow objectives outlined in the CALFED Final EIR/EIS (July 2000).
- San Joaquin River flows at Vernalis consistent with levels specified in the 1995 Water Quality Control Plan.

A preliminary assessment of quantified unmet environmental objectives for these locations is provided in a summary table and discussion below. It's worth mentioning that there is considerable variability in the extent to which there is conflict between meeting these objectives and meeting water delivery objectives for the urban and agricultural sectors.

Summary

Our analysis suggests the following quantities for the selected unmet objectives. Note that in some cases, there would be an effect on consumptive use and in other cases no effect. For example, American River flows might be recaptured in the Delta, while Trinity River flows would not be recaptured.

	American (Nimbus)	Stanislaus (Goodwin)	ERP #1 Flow Obj.	ERP #2 Flow Obj.	ERP #4 Freeport (Dayflow)	Trinity (Lewiston)	SJR at Vernalis (Dayflow)	SJR below Friant	Level 4 Refuges	Total (TAF)
WY 1998	25	7	0	0	0	168	97	0	125	422
WY 2000	55	34	0	65	0	344	96	268	125	987
WY 2001	81	0	0	76	242	99	62	313	125	998

American River

Existing American River flows were identified on the California Date Exchange Center (CDED) database website as the flows below Nimbus reservoir. Objectives for the American River are outlined in the Anadromous Fish Restoration Program[1]. This analysis determined an annual average deficiency of environmental flows of 25 TAF in 1998, 55 TAF in 2000, and 81 TAF in 2001.

Stanislaus River

Existing Stanislaus River flows were identified on the CDEC database as the flows below Goodwin dam. Objectives for the Stanislaus River are outlined in the AFRP. This analysis determined an annual average deficiency of environmental flows of 7 TAF in 1998, 34 TAF in 2000, and 0 TAF in 2001.

Ecosystem Restoration Program

The CALFED Ecosystem Restoration Program focuses on the connection between meeting the flow needs on the Sacramento, Feather, Yuba, American, Mokelumne, Tuolumne, and Merced Rivers and the freshwater inflow needs in the Delta. The ERP includes three quantifiable flow objectives for each year type, including Target 1: March outflow, Target 2: late-April to early May outflow, and Target 4: May flows on the Sacramento River[2]. For the purposes of this analysis, for Target 2, we assumed the ERP pulse flow would occur in the wetter period, which typically was in April. For all the targets, the target flows had to occur for ten days and we assumed flat flows across the month. Existing flows for each of these targets are identified using Interagency Estuary Project (IEP) Dayflow database. This analysis determined the following average deficiency of environmental flows: ERP #1: 0 TAF in 1998, 0 TAF in 2000, and 0 TAF for 2001. ERP #2: 0 TAF in 1998, 65 TAF in 2000, and 76TAF in 2001. ERP #4: 0 TAF in 1998, 0 TAF in 2000, and 242 TAF in 2001.

Trinity River

Existing Trinity River flows were identified on the CDEC database as the flows below Lewiston Reservoir.[3] Daily flow objectives for the Trinity River are from the Trinity River ROD. This analysis determined an average deficiency of environmental flows of 168 TAF in 1998, 344 TAF in 2000, and 99 TAF in 2001.

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[1] Final Program for the Anadromous Fish Restoration Program, 2001
[2] "Volume II: Ecosystem Restoration Program Plan, Sacramento-San Joaquin Delta Ecological Management Zone Vision," July 2000, pages 97-99.
[3] http://cdec.water.ca.gov/

San Joaquin River at Vernalis

Existing flows for the San Joaquin at Vernalis were identified using Dayflow data. Flow objectives at Vernalis are identified in the 1995 Water Quality Control Plan and occur from April 15-May 15. This analysis determined an average deficiency of 97 TAF in 1998, 96 TAF in 2000, and 62 TAF in 2001.

San Joaquin River below Friant

San Joaquin River flow objectives are based on a URS Report[4], completed as part of the settlement process between NRDC and the Friant Water Users Authority. Currently, 117 TAF flow are annually released down the San Joaquin River to satisfy downstream prior-right riparian water user and contract objectives.

The environmental flow objectives for the San Joaquin River are provided in the water quality study and determined an annual average deficiency of 0 TAF in 1998, 268 TAF in 2000, and 313 TAF in 2001.

Level 4 Refuges

As prescribed in the CVPIA, Level 4 Refuge Water is the water needed in addition to current average annual water deliveries (Level 2 Refuge Water) to 19 Sacramento and San Joaquin refuges[5]. Incremental Level 4 water is based on 10% increments of water to be delivered to the refuges until year 10 (2002) when it was expected the full amount would be attained. To date, this amount has not been largely due to funding limitations and the growing cost of water (e.g.: average cost of water has increased from $50-60/af in 1995 to $125-$150/af in just eight years). Moreover, necessary construction of refuge conveyance systems has not occurred at a number of refuges, further limiting the supply of water to the refuges. The annual unmet environmental water needs at Level 4 Refuges was 125 TAF for 1998, 2000, and 2001.

EWA and B2

The B2 Account and EWA are environmental obligations prescribed in the CVPIA and CALFED ROD, respectively, to provide benefits to fisheries and aquatic habitat in the Central Valley and Bay-Delta. In terms of B2, Interior's most recent 2003 policy for managing B2 supplies has significantly diminished the amount of water available for protection and restoration. As for the EWA, while protective operations have had some positive effects on aquatic habitat and the health of the Delta's fisheries, gaps in this

[4] "Water Supply Study: Development of Water Supply Alternatives for Use in Habitat Restoration for the San Joaquin River", URS, 2003.
[5] Summary of Refuge Needs, Dale Garrison, USFWS, 2003.

account still exist. The size and operation of the EWA is currently being revised in light of changes to state and federal water operations.

While the above preliminary analysis provides much needed information on unmet needs, there are still many other environmental water objectives that need to be quantified. A truly comprehensive analysis would include environmental water legal mandates that occur statewide, extending from the Klamath River in the north to the Salton Sea in the south. Even in the Bay-Delta, more quantification is necessary. Unfortunately, while data exists to analyze some of these objectives, there are significant gaps in data collection throughout the state--a fact that requires serious attention and action from relevant agencies. We strongly encourage DWR to fill these data gaps where possible and complete a total assessment of unmet environmental objectives throughout the state.